REFLECTIONS:
PAPERS ON SOUTHWESTERN CULTURE HISTORY
In Honor of Charles H. Lange

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Cover Photo: Navajo sarape of about 1860. In the mid-19th century, such sarapes sold for about fifty or sixty dollars. (UCM 26620).

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EDITOR'S NOTE

For many reasons, this has been a special volume to bring to press. It is an extra in the Archaeological Society of New Mexico's series of annual publications, and the challenges in putting it together were somewhat unique. With this volume, I turn over the ASNM editor's responsibilities to David T. Kirkpatrick, and I wish him well. Authors and readers should know that the bulk of the work in producing the ASNM Collected Papers is done by volunteers who donate their time to the society, believing the series contributes meaningfully to anthropology/archaeology and helps honor those who have given much to the fields. I offer sincere thanks to Regge Wiseman. His encouragement and help went far beyond his duties as chairman of the ASNM Publications Committee in producing By Hands Unknown, Secrets of a City, and now finally Reflections. My thanks go also to Cherry Burns of Albuquerque for her cheerful assistance. To the ASNM Board of Trustees and its indomitable publications committee in particular, pax vobiscum: Regge, Jerry Brody, Al Schroeder, Dick Bice, Bill Sundt, Betty Ayer, and Gordon Page.
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Charles H. Lange was born July 3, 1917, in Janesville, Wisconsin, and received his early education there. In 1935 he entered the University of Wisconsin at Madison, intending to follow in the career footsteps of his father and elder brother, both of whom were attorneys. He came to realize that his interests did not lie in law and the undergraduate work prerequisite to it, and he left the university in 1938. A long-standing interest in Indians of the Plains and the Southwest became the leading factor in his change of plans, and he decided to study anthropology. He came to New Mexico to enroll in the University of New Mexico although he did not know anyone in the state. Finding pleasant associations with faculty and students, he had his first glimpse of field possibilities when he visited Jemez Pueblo. There he attended a feast day dance, going with anthropologist Wesley Hurt on the pueblo's feast day, San Diego, November 12.

This was the beginning of a long series of visits to several pueblos, where the young student was welcomed, finding hospitality at Cochiti, Santo Domingo and other pueblos on various feast days. With a major in anthropology and a minor in German, he graduated in 1940 with honors and distinction. He then continued at the University of New Mexico in graduate school with a major in anthropology and a minor in sociology. His master's thesis described the Evans Site in the Gallina area of northern New Mexico. In 1942 he and his wife, the former Elizabeth March, received their master of arts degrees.

That summer he worked as a National Park Service ranger at Chaco Canyon National Monument, the university field school holding a one-month session there. The next three years Lange spent in the army, serving one year in the ETO in Germany. Following the war he decided he would continue his graduate work at the University of New Mexico. In this decision he was influenced by the very area itself, the opportunities for research, and the strong faculty in anthropology at the university.

Lange's long and productive association with Cochiti Pueblo began with a meeting with the pueblo governor and lieutenant governor arranged by one of his professors. He wanted to center his research work at Cochiti because it was one of the smaller pueblos, had a reputation as a fairly hospitable place and had a long history of archaeological research done there. It was the principal site of work by Adolph F. Bandelier and others in both the 19th and 20th centuries. Thus the project, which would be completed as an economic study of Cochiti Pueblo, began with the approval by the governor and lieutenant governor of his visits to the pueblo, where he might make his own arrangements with local men who would be willing to be informants. While he might converse freely in the village, he might not wander around outside lest he stumble on special sacred places. He was present at holiday feast days in the pueblo and was invited to meet the new pueblo governor.
at his inauguration, January 6, 1947. He listened with them to the inaugural speech of the governor of New Mexico by radio from Santa Fe.

During the spring of 1947 he made numerous visits during the weekends, talking with various informants about past and present days, changes in agriculture, hunting and other activities with a view toward an economic picture of the pueblo. In establishing relationships with his informants, Lange adopted an attitude of pursuing safe topics, with the thought of gradually expanding the scope of "safe." He knew that there would be taboo subjects.

As he became a familiar figure at Cochiti he worked with a number of informants. He was able to visit the fabled stone lions of Cochiti, ancient animal figures sculpted into the bedrock, the tuff, in Bandelier National Monument. In the summer of 1947, he was invited to bring his family to live in a house in the pueblo while its usual occupants were at their ranchito across the river attending to their fields and orchard. As a family man he had a better status in the community and with a car he was able to carry out commissions in town for pueblo residents. At the end of the summer he felt that the experience had been valuable, but that there was still much to be learned. That fall he accepted an instructorship at the University of Texas at Austin, and was later assistant professor of anthropology at that institution (1947 to 1955). Thus work at Cochiti became limited to vacation times.

Lange's great ability to make friends and maintain good personal contacts with people of many cultures and races served him well in his years of work at the pueblo, where lasting friendships were formed with informants. Returning to Cochiti in summers, he completed and presented to the faculty of the University of New Mexico his dissertation "An Evaluation of Economic Factors in Cochiti Pueblo Culture Change," his doctoral degree being awarded in 1951. The study was published by the University of Texas Press in 1959 as "Cochiti, A New Mexico Pueblo, Past and Present," and subsequently in a paperback edition by the University of Southern Illinois Press in 1968. The book became well known to the people of the pueblo, many of whom owned copies and on the whole approved of what it said about them.

In 1955 Lange left Austin for the position of assistant professor of anthropology at Southern Illinois University at Carbondale where he was also curator of anthropology at the museum. He then advanced to associate professor and then professor and head of the department. While at Southern Illinois he went to Germany 1960-61 for a NATO post doctoral fellowship in science (Cultural Changes in Postwar Germany). In 1971 he changed positions, going to Northern Illinois University in DeKalb, also as chairman of the anthropology department. While teaching there he spent part of one year, 1975, with the Northern Illinois program at Salzburg College, Salzburg, Austria. He became professor emeritus at Northern Illinois in 1979, working there as part-time professor in 1979-1980.

Coming to New Mexico in the summer, the Lange family spent research time at Cochiti Pueblo, 1958, Cochiti Dam Archaeo-
logical Project, 1963-1966, at Bandelier National Monument 1958 and 1959, and as director of an archaeological program on the James Webb Young Ranch in collaboration with the University of New Mexico, 1969-1973. Lange also was a research expert for the Caddo Indian Tribe of Oklahoma before the Indian Claims Commission, 1954-75. An archaeological survey was undertaken at Bandelier National Monument in 1958 by Lange as a National Park Service collaborator with the aid of his oldest son Fred.

Of all the figures peopling the Cochiti scene in the past, Lange had been most drawn to Adolph F. Bandelier, a midwesterner of Swiss ancestry, who had first come to New Mexico in 1880. He wrote his monumental Southwestern Journals in 1880 to 1890. In these diaries he described current life, customs and ceremonies he witnessed in the pueblos, especially Cochiti, gave accounts of events reported to him by natives and also delved into the archaeological past of the area. These diaries had been printed with little editing by the Archaeological Institute of America 1890-92. Lange began in 1958 the work, also monumental, of editing and annotating the Journals for modern publication.

Working with a colleague from Southern Illinois University, Carroll L. Riley, and with Mrs. Lange assisting as editor, Lange had the first volume ready in 1966. This major project occupied much research time until 1984, when the fourth and final volume appeared, all published by the University of New Mexico Press. Bandelier himself still has a place in the region he visited so long ago, Bandelier National Monument having been named in his honor.

Another large undertaking was the completion and readying for publication of W.W. Hill's work, An Ethnography of Santa Clara Pueblo, New Mexico, left unfinished at Hill's death. Hill had been chairman of the committee at the University of New Mexico under whose aegis Lange had completed his doctoral work, and the two had remained friends in the years following. The University of New Mexico Press published this volume in 1982.

The Lange family moved to Santa Fe for permanent residence after Lange became professor emeritus at Northern Illinois and built a beautiful home southeast of Santa Fe. Lange continued teaching with classes at the Los Alamos Branch of the University of New Mexico, 1981, and at Highlands University at Las Vegas, 1985. He was also a research associate at the Laboratory of Anthropology, Museum of New Mexico. The three Lange sons, Frederick W., Richard C., and David E. have entered upon careers similar to their father's in the West and Southwest.

Charles Lange's interest in this area is shown by his continuing membership in a number of groups in Santa Fe concerned with history and archaeology. In appreciation of his work, he, together with Carroll L. Riley and Elizabeth Lange, was presented by the Historical Society of New Mexico with the Gaspar Perez de Villagra Award "for the multi-volumed edited series of the Southwestern Journals of Adolph F. Bandelier, April 20, 1985," and the Office of Cultural Affairs, Historic Preservation Division, State of New Mexico presented the Governor's Award of Honor for Historic Preservation to the trio "in recognition of their twenty..."
years work as editors of the Southwestern Journals, May 17, 1985."

This fine picture of retirement changed abruptly with the sudden and tragic death of Elizabeth Lange, April 15, 1986. Charles Lange still lives in his Santa Fe home, surrounded by his library and souvenirs of his long and distinguished career.

Santa Fe

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of 1959 book from the University of Texas Press.)


1975

1976


1977


1978

1979
Articles: "Relations of the Southwest with the Plains and Great Basin" (pp. 201-205); "Cochiti Pueblo" (pp. 366-378); and "Santo Domingo Pueblo" (pp. 379-389) in Handbook of North American Indians, Volume 9, Southwest, William C. Sturtevant, General Editor; Alfonso Ortiz, Volume Editor, Smithsonian Institution, xvi + 701 pp.

1980
"Cochiti Pueblo and the Cochiti Land Development," The Journal of Anthropology, Department of Anthropology, Northern Illinois University, DeKalb, 2(1):22-47.

1981

1982

1983
"1980: An Anniversary Year in Southwestern
One of the pleasures over the years for an archaeologist living in Santa Fe has been the company of fellow workers in the field who came to New Mexico for summer digs and study. Charles H. and Betty Lange were welcomed in their frequent visits as studies at Cochiti Pueblo and later of the Bandelier papers brought them to Santa Fe before they moved to live here permanently. Thus it adds a depth to memories of long association to be asked to write a few words on the life and work of Charles H. Lange.

Charlie Steen
The 19th and early 20th century scientist and author, Adolph F. Bandelier, was married at the age of 20, and remained married except for a period of about a year (December 11, 1892 to December 30, 1893) for the balance of his long life. He proposed to Fanny Ritter only two weeks after Josephine Huegy Bandelier, the first wife, died at the Ritter home in Lima, Peru. Adolph clearly had a strong need for the constant and intimate support of a marital partner. From all the evidence it would seem that both wives reciprocated, and drew strength and sustenance from, the company of their husband.

Joe and Fanny were in many ways different; Joe the retiring and shy individual who functioned best with the support of her family, and most especially her husband, and Fanny, on the other hand, adventurous and intellectually stimulating. She shared her husband's rigorous field experiences in Peru and Bolivia, and worked with him doing archival work in Mexico, Peru, and Spain. She was a scholar in her own right, publishing separately from Bandelier. Fanny was almost certainly a silent partner in some of Bandelier's own later publications, especially the major work from the Bolivian period, *The Islands of Titicaca* and *Koati*.

Unlike Joe, who stayed behind on almost all of Bandelier's field trips, Fanny went virtually everywhere with her husband, no matter how hard the terrain or how harsh and dangerous the conditions of life. And yet, Fanny too -- in the end -- was left alone. Her last 20 years were a constant struggle to keep body and soul together. She seldom had more than enough money to pay the month's rent and often not even that. The years were bitter but, in spite of hardship, she managed to make a considerable contribution to the scholarly world, with articles and with translations from Spanish New World missionaries and explorers.

For all their differences, Joe and Fanny shared one abiding passion, their love for and constant loyalty to Adolph Bandelier. In fact, Bandelier seems to have been a person who both demanded and received loyalty, not only from the wives but also from relatives, friends, and professional colleagues, such as Lewis H. Morgan, Francis Parkman, Joaquin Garcia Icazbalceta, and Charles E. Norton. His friends were generally unswerving in their deep regard for him and at least one, Charles Lummis, viewed him with something like adoration. Even some of the Indians he studied, particularly those of Cochiti Pueblo, became friends, though Bandelier's attitude toward them tended to be condescending. Bandelier was very much a charismatic figure. He was also extraordinarily self-centered, something that strongly shaped Bandelier's relations with his wives and their own attitudes to the world beyond the family circle.

The two women interacted with Bandelier (and for a short time in 1892 with each other), in ways that show their own individuality. Indeed, one
suspects that had she been born a few decades later and in a different social milieu, Fanny would have been a great scholar, perhaps an archaeologist or historian, in her own right. Joe might well have been the same person today as she was in her own lifetime; loyal, monogamous, passive, perhaps frigid.

Though we have detailed and day-to-day information on Adolph and Fanny, and, to a lesser degree, Joe, we get only indirect hints of their sex lives. All three were Victorian to the core. We can say that, unlike Joe, Fanny was good at conversation, delighted in people, certainly was fond of association with men and, we know from her later years, was capable of rather daring dreams of romantic entanglement. A modern, emancipated Fanny might have been a sight to behold, in which case Joe probably would have looked the other way.

Let us start with Joe. She made modest history just by being born. Her birth, on October 11, 1836, was the first to a Swiss couple whose marriage had taken place in the newly formed Swiss community of Highland, Illinois. The child was christened Maria Josepha Huegy though the Joseph was later anglicized to Josephine and from that she acquired the familiar name "Joe." Her husband used that particular sobriquet much of the time, in journals, in letters, and, one supposes, in ordinary conversation. As far as we know, other members of the family and family friends also used the diminutive, "Joe."

Joe Huegy met Bandelier when they were both children according to Bandelier's journal entry of October 6, 1897.

Forty-nine years to-day!--

Since I arrived at Highland
It may be that Adolph, Joe, or perhaps both, were less than wildly enthusiastic about the marriage. Twenty-two years later, in early 1883, Bandelier wrote in his daily journals, "it is only now that I begin to love her, as should have been the case years ago..." (Lange and Riley 1970:11). A letter by Eva Lummis, second wife of Charles Lummis, written about 1890, called Joe a "domestic type," and said that Bandelier "longed for intellectual companionship." Eva's understanding was that the marriage had been arranged by the parents in Switzerland (Fiske and Lummis 1975:62n3). The comment about Switzerland was, of course, off the mark since the Bandeliers and the Huegys met in Highland. However, Eva's comment may have contained a germ of truth about the arrangement.

Although Joe is mentioned hundreds of times in Bandelier's journals and letters it cannot be said that we know her well. Very little of her correspondence has survived though we have indications from Bandelier's journals, from the Morgan and Bandelier correspondence, and from other sources, that Joe wrote numbers of letters especially to Adolph and other family members. The only other document in Joe's handwriting that has been found is a pressed flower book with notations in German script, kept by Joe during a trip through Switzerland in the late summer of 1867. By means of this book one can trace Joe's movements for about two weeks but it contains very little real information (Bandelier, J. 1867). Joe seems to have kept her thoughts to herself, or perhaps she had nothing to say.

Even physically, Joe leaves somewhat of a negative impres-
sion. To quote an upcoming biography of Bandelier:

The earliest photographs of Joe show an attractive and rather placid young woman, her dark hair severely bound, and her face without expression—even beyond the degree demanded by the "blank stare" fashion of nineteenth century portrait photography. She seems to have been fair of skin with light eyes. She appears to have been relatively small and slight in stature. Later photographs show very little change except that of aging (Lange et al. n.d.).

Bandelier's attitude toward Joe was curious. In all the journals, and letters that concern her, there is virtually never a hint of criticism. Over and over the adjectives "good," "dear," and "poor," occur in Bandelier's commentary on Joe. Joe's health greatly concerned Bandelier and is recorded with meticulous care. There was some indication that she had a heart problem. Still Joe was an active homemaker, and from all indications, a rather traditional family-oriented wife. She seems to have been rather shy and retiring in mixed company, though in Santa Fe Joe had a ladies circle or "kranzchen," which met at different members' houses at more or less regular intervals. That she could be assertive is indicated in several journal entries and in letters, though it was the traditional kind of assertiveness that one would expect in an otherwise docile wife. In one of the letters to Lewis H. Morgan, Bandelier jokingly described his wife's attempt to get him to go to church on Christmas day, 1879.

"Now Adolph you must!" and there is a marked impression on the floor by a very small energetic foot, a certain well-known bonnet is put on a particular head with conspicuous and formidable looking little puffs of hair (White 1940:11, 153).

Adolphe E. Bandelier in a letter written in 1868 to a Swiss friend, referred to Joe as "my shy daughter," (Bandelier A.E. 1868). Nevertheless, in later years in Santa Fe, when a cranky and overbearing Bandelier père went to live with Adolph and Joe, the latter could be stern when her father-in-law overstepped the bounds. From the Bandelier Journals, January 19, 1889:

Week before last, Papa grew so ugly and mean that Joe had to give him a very serious talking to. Since then, he was, of course, sick at first, but then he became mild. How long this mildness will last I don't know and don't trust much either. He has been spoiled by everybody, and the poor old man cannot realize that his realm is past, and that we will not any longer submit to his despotism. We are of age—at last!—it is high time at that (Lange et al. 1984:51).

This was unusual action for Joe to take but "Papa" Bandelier was certainly a difficult man. He had deserted the family in Highland, Illinois,
when the F. Ryhiner & Co. bank failed in 1885, fleeing to Venezuela. Bandelier swore at that time to disown his father completely, but by the spring of 1888 when Adolphe E. Bandelier came back to the United States, his son was ready to forgive and to settle father Bandelier in the Bandelier family Santa Fe home. Within a few weeks Bandelier had begun to record his father's misbehavior in considerable detail and by the end of the year he expressed doubts as to the wisdom of receiving the elder Bandelier back.

On December 31, 1888, Adolph stated in his journal:
This is the last day of another so far fortunate year. We have succeeded in bringing Papa back, but with him we have secured a cloud in our otherwise happy sky. Well, God has so disposed, and we must take it as it comes (Lange et al. 1975:319).

What Joe thought of this matter is not recorded. Likely she suffered in silence, at least till early 1889.

In June of 1892 Adolph and Joe sailed from California to do work in Western South America.* This Bandelier expedition was financed by business tycoon, Henry Villard, for the purpose of studying and collecting antiquities from Peru. Joe, for the first time, was to have a part in the proceedings; she planned to help with the collection of plants for Professor N.L. Britton of the Department of Botany, Columbia College. Bandelier began to encourage his wife to assist in excavations, and in addition, Joe was given responsibilities in choosing which collections were to be purchased for Villard.

*Material on the Bandelier stay in South America is drawn from the manuscript Bandelier South American journals, now in the Museum of New Mexico, Santa Fe; additional Bandelier materials at the Museum of New Mexico; Bandelier letters and other documents held by the American Museum of Natural History; and Bandelier documents in the files of the Hispanic Society of America, New York.

We still see nothing of Joe through her own eyes but, probably for the first time since her marriage, Josephine Bandelier was working side by side professionally with her husband.

The Bandeliers arrived in Lima on July 3, 1892. Some six weeks later Bandelier met a family who was to be interlocked with Adolph and Joe for the rest of both of their lives. As per the journal entry of August 20:
Went accidentally to get some beer, and dropped into the business-place of a Mr. Von Ruetti, of BERNE! -- the ladies there are of ZURICH, their name is Ritter, and I immediately led Joe thither. They were charmed at seeing her. So she has--at last--lady friends with whom she can speak and entertain herself (Bandelier, 1892-1903).

The ladies in question were a widow, Henrietta Ritter, with her three daughters, Fanny, Hedwig, and Martha. Fanny, the oldest, had been born on September 24, 1869, so was nearing
Figure 2. Josephine Huegy (Bandelier), first wife of Adolph Bandelier. (Photo courtesy Museum of New Mexico.)

Figure 3. Fanny Ritte (Bandelier), second wife of Adolph Bandelier. (Photo courtesy Museum of New Mexico.)
her 23rd birthday. Hedwig and Martha were somewhat younger, the latter being perhaps 20 and the former in her mid to late teens. The Ritter family had come from Zurich to Lima in 1885 at which time Fanny was a schoolgirl of fifteen. Father Ritter entered a business with Van Ruetti but had died before the Bandeliers arrived in Lima.

By the beginning of December the Bandelier and Ritter families were close friends and Joe occasionally stayed with the Ritters when Bandelier was out of town. Life was flowing smoothly for the Bandeliers, when suddenly, on December 5, Joe was stricken with severe abdominal pains, diagnosed as a "colico miserere," that is, a stricture or blockage in the intestinal area. Joe was taken at once to the Ritters' and several physicians were called in. Though they all agreed on the illness, none of them was willing to operate because Joe was so weak. In the 19th century an abdominal operation was a high-risk procedure even in the European and North American centers of medicine. Joe rallied somewhat on December 7 and Bandelier was a bit optimistic in his journal entry of that day, the last entry for a week. That recovery did not last more than a few hours, however, and on the morning of Sunday, December 11, Josephine Bandelier died. She left a stunned and unbelieving husband.

The shock is still within me and I am still more or less wandering about in a kind of trance. She died so sweetly. Her last audible word was: Adolph!!!—Now a new and distinct life begins. I am utterly alone now, for Papa is very old and feeble, and after him, there is nothing left for me to care. Yet, I do owe the Ritters' my friendship and assistance. I am too indebted to that family for what they did for Joe. They acted like Angels. Goodby my love, my past life, -- but do not forsake me, now that you are in heaven. God loved you too well to leave you to me (Bandelier, A. 1892-1903).

These last lines indicate a new status and a new responsibility for Joe. From this point on she becomes the guardian angel of Adolph and is the object of petition and prayer. Especially during the 11-year stay in South America Bandelier calls on this angel again and again to succor and guide him and Fanny. Even granting the emotional religiosity of late Victorian times, Bandelier's attitude is excessive. He clearly considered Joe as a patron saint.

Bandelier's mood of despair lasted for a fortnight. However, on Christmas eve he made a rather startling decision:

I am beginning to resolve, that I should propose to Fanny. It is fearfully soon after the catastrophe but, it seems to me, that dear Joe almost expects me to take this step. The girl is a lovely prize, worthy in every respect. Joe loved her, and why, then, did she join our hands on her deathbed. Spent the evening with OUR, now at MY folks (Bandelier, A. 1892-1903).

When Bandelier proposed on Christmas morning, Fanny accepted him without hesitation. At first sight it may seem strange that this young and inexperienced
girl would wish to marry a man two weeks a widower and more than twice her age, and one whom she had known for only four months. Probably one reason was the fact that the Ritters were in very serious financial straits; indeed, De Ruetti, the partner of the deceased father Ritter went bankrupt in May of 1893. Fanny's decision, however, involved more than the desire for a secure financial future. It is clear from her letters, journals, stories, and from the memories of her friends that Fanny was an intense romantic, and a woman who positively craved high adventure. An account of her first field trip, called "My Initiation into Archaeological Research," begins with the words:

"With a heart full of love and romance, a bride of a few months, I stood by my husband's side on deck of the S: S: "Mapocho," as she steamed slowly out of the beautiful bay of Callao, port of Lima, Peru bent on a long journey into the realms of research among the remains of ancient races in Bolivia. I could hardly wait to don my smart riding habit and the bloomers specially designed for climbing hills and deep ravines in search of antiquities, adventure and--Indians! (Bandelier, F. n.d.a).

To Fanny, marriage to the glamorous archaeologist Adolph Bandelier with his worldly sophistication must have been a girlhood dream come true. Fanny had led a sheltered life, as was customary among upper class women in urban Latin America in the 19th century and perhaps even more true of European settlers in Latin American countries. For example, on March 26, 1896, Bandelier makes the following observation:

"Went to the theatre. Fanny for the FIRST TIME IN HER LIFE!! -- This is certainly rare in our days, for a married woman, of her education, not to go to the theatre except at her 26th year. (Bandelier, A. 1892-1903).

For all her naivety, Fanny made a splendid field companion. She and Adolph explored and mapped ruins in Bolivia following the slopes of the mountains up to 15,000 feet and more. They spent many days working in the small islands of Titicaca and Koati in storm-ridden Lake Titicaca and tracing settlements around the rugged eastern shores of the lake. When in La Paz, however, the Bandeliers often lived well; Villard's contract with Adolph had been taken over by the American Museum of Natural History whose support in the first years was generous. The Bandelier couple entertained and were entertained by Bolivian high society. They met and became friends with the American Minister, Thomas Moonlight. When Moonlight returned to the United States there was some thought that Bandelier might be offered the position, but a physician who had been active in Republican party politics, a Dr. George H. Bridgman, was chosen. Fanny and Adolph immediately took the new minister under their wing and on April 23, 1889, gave a gala ball for the Bridgman family with both the international community and the social elite of La Paz invited. It was a smashing success.

However, the Bandeliers were coming to the end of their successful field work in Bolivia.
Funding from the AMNH was beginning to dry up and increasing Indian unrest made fieldwork dangerous; especially so since Bandelier hated the Aymara Indians and made no secret of it. What Fanny felt about the Indians is not clear, though in later years she spoke of certain individuals with affection.

By the beginning years of the new century, Bandelier was in an almost perpetual black mood. He abominated the Indians, despised the Bolivian society people, and was bitter at God for reverses. His only loyalties were to Fanny and to the apotheosized Joe, who more and more was asked to intercede with the Almighty for the couple. At times Bandelier was haunted with the idea that Joe might be angered by his marriage to Fanny and, in his journals, explains to this angelic first wife why she should help the pair; both Adolph and Fanny love Joe and they show it in every way they can. Bandelier confided to his journals that Joe's death was, perhaps, a divine action. In the brutal environment of back-country Bolivia, only Fanny, young, healthy, and enthusiastic could have kept the pace of research set by Adolph.

Early in his marriage to Fanny, Adolph remarks on Joe's new status. In the entry for December 30, 1893 he says:

On the 30th of December at 8 1/2 P.M: -- Fanny and I were duly MARRIED--. A new life begins again.

May God be our guide and staff and may SHE -- who has been my Angel upon earth before remain OUR ANGEL now and watch over us and pray for us in HEAVEN. (Bandelier, A. 1892-1903)

Even in the later part of the South American stay when Bandelier had scathing things to say about an uncaring God, he never lost the devotion to Joe.

On All Souls Day, November 1, 1900, he had this comment:

I should think of HER who is our angel above. She did so much for me, and she left me as a legacy, my Fanny. Poor, dear Josephe. How much have I sinned against Thee! -- I pray Thee to forgive me where Thou art now, in Heaven and to look down upon us mercifully, poor children of the earth (Bandelier, A. 1892-1903).

One wonders what Fanny thought of all this. Fanny seldom mentioned Joe in letters or journals and we have no evidence that Fanny ever believed her predecessor to be a powerful spirit. Indeed, three decades later, when Fanny, herself, was attempting to contact spirits of dead loved ones (through automatic writing), she seems never to have called on Joe.

In 1903 the Bandeliers came back to the United States where Adolph worked first with the American Museum and then with the Hispanic Society of America. During these years Bandelier suffered various infirmities of age, including serious eye problems. Fanny served as cook and housekeeper, nurse, and reader, and also had time to do research on her own. In 1911 Bandelier received funding from the Carnegie Institution for a year's trip to Mexico to work in the archives there. Then late in 1913 the pair made their last trip together, a sea voyage to Spain for research in the Seville Archives of the Indies. Adolph Bandelier worked for only a short time; his rather fragile health took a downturn.
and he died on March 18, 1914.

Fanny remained on, working at the Archives -- indeed the great collection later published in three large volumes by the Carnegie Institution are mainly documents collected by her. She and the family dog, Dodo, a brown mongrel obtained in Mexico, stayed in Spain till October 1915, when the end of Carnegie funding forced Fanny to return home.

Bandelier had never been financially secure since the F. Rhyhiner & Co. Bank failure of 1885 and, like Joe before her, Fanny had been forced to scrape together a living with her husband, sometimes comfortably well off but often near the poverty line. Now, on her own, with no estate left by Bandelier's death, Fanny spent years in desperate struggle against destitution. Friends helped somewhat, but for the most part Fanny did translating to keep head above water. In 1918 she sold off part of the Bandelier library, partly to meet her lease payments on a small New York apartment.

A curious romantic episode occurred in 1919. Some 22 years earlier, while in La Paz, the Bandeliers had met an American landscape artist named Charles T. Wilson who, in a short time, became an intimate friend. However, in March of 1898, Wilson married a local Bolivian girl whose social background displeased the Bandeliers (or at least Adolph) and so the two families quickly lost contact with each other. Wilson left Bolivia in 1900 and eventually came back to the states, his wife dying sometime around 1903. A few years later he married a woman whom he had known in childhood. In 1919, now living in Eureka, California, where he had a career of painting redwoods, Wilson was in the process of getting a divorce from his second wife. At this point he somehow learned of Fanny's whereabouts in New York and began a letter campaign to persuade her to marry him. The letters begin in May and break off in late June of 1919 at which time Wilson was planning a trip to see Fanny and to exhibit some of his paintings (Bandelier F. 1919). Wilson did come to New York, probably in very late August or early September 1919, but soon developed "a lingering illness" (Hughes 1986:507). At some point between his arrival and early January 1920, he married Fanny Bandelier. The marriage was a short one, for Wilson died on January 3, 1920 (New York Times, 1920:1-4, 23/8). Fanny fell back into her routine and in subsequent years Wilson is never mentioned by her nor by her friends in any extant correspondence.

In 1925 Fanny Bandelier, still desperately poor, went to Mexico at the invitation of Mexico City friends, the Herbert Gerber family. She also was invited by the Mexican archaeologist and historian, Dr. Nicolas Leon, to give a series of lectures at the Museo Nacional. Fanny remained in Mexico for about three years, working with the Museum and giving Spanish lessons to such dignitaries as Episcopal Bishop Frank W. Creighton, missionary bishop to Mexico, and to the American Consul General, Alexander W. Weddell. During this same period she became an American citizen. About this time Fanny began to dabble in automatic or spirit writing and carefully kept the letters that she believed came from the other-world. Through automatic writing Adolph Ban-
delier told her of the protection of friends in the spirit world, described his nearness when Fanny took a trip to Bandelier's old research haunts near Puebla, and comforted her in her fear and loneliness. Charles Wilson appears briefly on one occasion when Adolph was otherwise engaged and declares his love beyond the barrier of death. Joe, however, never writes nor is she mentioned in the letters of Adolph. Fanny's correspondents are cheerful and happy and assure her that all is well. They also predict! For example, one of the letters tells her that she will marry Frederick W. Hodge. At another point Fanny seems poised (in her mind anyway) to marry a man named Frank, though which of her acquaintances of that name, we are not sure. Possibly it was Francis "Frank" Philbrick, though he was, himself, married at that time. There really seems to be an air of fantasy about the correspondence, especially the spirit-letters, of this period. Fanny, however, took the matter seriously, for those few answers that were written down are filled with a wrenching despair and fear. She preserved these writings, even though it meant carrying them from Mexico back to the United States (Bandelier, F. 1927).

In the summer of 1928, helped by Paul Radin who offered her a position at Fisk University in Nashville, Tennessee, Fanny returned to the States. The last years of her live were lived mostly in Tennessee and Fanny seemed reasonably happy and contented. She published a translation of a portion of the Spanish text of Sahagun's Florentine Codex in 1932 and sent a copy to Edgar L. Hewett, Museum of New Mexico, who wrote Fanny on November 17 praising the volume (Hewett 1932). Fanny then set to work on a second portion of Sahagun's work and at the same time launched an ambitious plan to publish the section of the Bandelier Southwestern Journals that dealt with the Hemenway expedition. An actual prospectus was issued for this work and the manuscript was sent to a New York publisher, Wilson-Erickson. Meanwhile in 1933 Fanny made her will. By that time Mother Ritter had died and Fanny left her personal property to the two sisters Hedwig (Ritter) Masshardt and Martha Ritter. Her library was willed to Fisk University and the various papers, manuscripts, etc., of Fanny and Adolph were willed to the Museum of New Mexico (more exactly to the "Research Library of Anthropology [Museum] at Santa Fe, New Mexico") (Bandelier, F. 1933).

Fanny probably left Fisk University in spring of 1935, since a letter from Clark Wissler, dated July 3, 1935, mentions that he had just heard the news (Wissler 1935). It is not entirely clear why Fanny left the university but she would have been 65 years old on September 24, 1934, and may simply have reached retirement age.

Fanny died on November 10, 1936. Her death caused little stir, though it was reported in both the Santa Fe and Albuquerque papers (Santa Fe New Mexican 1936:1). Her last project, the publication of parts of the southwestern journals, remained only a dream. There was a flurry of activity surrounding her death as Hewett tried to collect papers and manuscripts. A correspondence between Hewett and Frederick Hodge has an element of
black humor. Hodge pointed out that in 1924 Fanny had sent him a bill of sale which said:

This is to certify that I have this day sold to Frederic W. Hodge for $1.00 and other valuable considerations all my personal effects, the books and furnishings of my home and everything else I own at present and may acquire in the future nobody having any claim against it whatsoever." (Hodge 1938)

Fanny asked Hodge to keep the bill of sale secret and assured him that it was simply in case "I should suddenly be called away." There was no implication of suicide, at least in the covering letter. Hodge, now with the Southwest Museum, produced the letter and bill of sale, sending copies to Hewett and suggesting, probably jokingly, that he should be the recipient of all Fanny's property. Hewett apparently failed to see the humor and went to some length to assure Hodge that such a document had never been recorded and no claim could be made under it (Hewett 1938). In any case much of the Fanny Bandelier material eventually found its way to the Museum of New Mexico.

In 1940, at the centennial of Bandelier's birth celebrated in Santa Fe, a number of tributes were given to Fanny. She was praised for her loyalty and devotion to her husband and also for her own research and for her very great personal drive and charm. That charm comes through in the many letters that Fanny wrote, especially to such good friends as Ina Sizer Cassidy, Frederick Hodge, Frank Bigler, Francis Philbrick and others. In these letters Fanny laughed at her problems, teased, and boasted of small victories often in a tone of mock humility. She often called herself "your little friend," and the tone of her letters was sparkling and happy. A different Fanny emerges with the automatic writing and the letters to her dead husband:

Dolfi: What shall I do?
I cannot help myself any more
Will you let me go to the wall?

(Bandelier F. 1927)

Let us return briefly to the earlier discussion, comparing Joe and Fanny. Joe was enthusiastic about flowers and planted them wherever she lived. Fanny had a passion for animals, most especially dogs, and after she married Bandelier the couple seemed never to be without a dog. Indeed, as Fanny once remarked, she loved all dogs! Still, after the death of Dodo in 1924, it is not clear whether Fanny ever owned another dog.

Joe seems to have made very little impression on anyone but close family. She wrote letters, mostly in the family circle, but hardly a one exists today. Letters from Fanny to Bandelier, not counting the automatic writing, are also non-existent but this was because the two were almost always together. Fanny, unlike Joe, tried her had at a journal: it takes up the year 1896 and then skips to 1904 with sketchy entries for several years. It is handwritten in a flowing, old-style, very difficult German script. In part, the journal chronicles Fanny's everyday relations with friends and family and tells something of her fieldwork. It is, in fact, curious that Fanny used German whereas Adolph's own South
American journals were almost always in English or Spanish. There is some indication that Adolph and Fanny spoke German when alone, at least till the return to New York in 1903. One suspects that Joe also mainly used German; indeed, she may not have been entirely literate in English. Fanny, however, was very much at ease in four languages; English, German, Spanish, and French and spoke and wrote all of them fluently. Her English was far more grammatically correct than that of her husband. As I suggested earlier, Bandelier's last great work, The Islands of Titicaca and Koati may have been partly written, or at least rewritten by Fanny.

The two women appealed to different aspects of Bandelier's nature. Joe was the placid, unintellectual homemaker, not very exciting but an excellent cook. Fanny was also a homemaker but she catered more to the intellectual side of Bandelier, acting as his companion in the field and helpmate in library research and in writing. In 1905 Fanny published a book of her own, a translation of the Naufragios by Alvar Nuñez Cabeza de Vaca, with her husband annotating the volume.

As persons, the two women could not have had very much in common and there is no indication that -- in their few months together -- they became especially good friends. After all, they were a generation apart; at Joe's death she was 56 and Fanny 23.

The two did share a Protestant faith. It should be noted that both the Bandeliers and the Ritters took religion seriously, neither family being much influenced by the intellectual rationalism of the late 19th century. Adolph, himself, had been converted to Catholicism in 1881 and was devout if somewhat unorthodox. However, he made little effort to persuade either wife to join his new church, though he and Fanny were married in a Catholic ceremony, and there is some reason to believe that Joe had a deathbed conversion.

One suspects that Adolph's really bizarre belief that Joe became a personal and powerful patron saint after her death could not have been entirely pleasing to Fanny. Certainly, in later years the younger woman has little to say of her predecessor. Bandelier's mother gets bigger billing! Unfortunately, Fanny's information on Marie Senn Ritter Bandelier is largely nonsense. Mother Bandelier (according to Fanny) was a Russian noblewoman who married a young Swiss army officer named Ritter and for love turned her back on rank and privilege. After Ritter's death she became attached to the young and dashing Adolphe E. Bandelier and this marriage produced baby Adolph. In point of fact Marie was an ordinary Swiss girl from Bern who went to Russia as a governess. There she met a Swiss tutor and ex-Swiss army officer named Ritter and married him either in Russia or shortly after the two returned home to Switzerland. After Ritter's death, Marie Senn established a boarding house and met Bandelier's father when he took up lodgings with her.

Fanny produced other romantic misinformation about her husband and his family. For example, she claimed that Adolph and Marie Senn first reached Highland traveling from New York in a covered wagon. Joe, on the other hand, received
very little attention in Fanny's revisionist version of the Bandelier family history.

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ADOLPH BANDELIER AND THE SWISS CONNECTION

MADELEINE TURRELL RODACK

It is, of course, a fact well known to Bandelier scholars that Adolph Francis Bandelier, historian, archaeologist, anthropologist, and ethnologist extraordinary, was born in Berne, Switzerland. He arrived in Highland, Illinois in 1848 at the age of eight. But the circumstances of his arrival have often been a subject for discussion and even controversy. It is also known that his father, Adolphe Eugène Bandelier, had traveled from Switzerland to Brazil and thence, in due course, to the United States, gravitating to that colony of Swiss settlers established in 1831 near St. Louis under the leadership of Dr. Caspar Koepfli. However, details concerning Adolph's father and especially his mother have not been widely known.

Early in 1982 a series of events took shape such as perhaps only detectives, investigative reporters and researchers can truly appreciate. In a chance conversation with Bernard Fontana at the University of Arizona, the present writer learned that Dr. Fontana remembered having heard some years before that a certain Edouard Bandelier, a banker from Switzerland, had been traveling through New Mexico seeking information on a distant member of his family whom he spoke of (erroneously) as "Uncle Adolph." He had talked with John Wilson, then at the Museum of New Mexico, and left a Swiss address where he could be reached.

In hopes of arousing some interest in financing the publication of Bandelier's great opus, History of the Civilization and Missions of Sonora, Chihuahua, New Mexico and Arizona to the Year 1700, which the present writer had been translating from the French for the Arizona State Museum of the University of Arizona, an attempt was made to communicate with this Edouard Bandelier. The address was obtained and a letter sent forthwith.

Alas, too late! A reply arrived from a Madame Simone Bandelier Sarasin, daughter of Edouard, saying that her father had just died the previous month. Madame Sarasin was unable to help with the publication problem at that time, but in the course of a continuing correspondence she came up with an amazing amount of assorted information on the Bandelier family, including a genealogical chart, and said that she and her father were descendants of a brother of Adolph Bandelier's grandfather. She also spoke of a "family book" that her father had compiled and sent copies of pages concerning Adolph and his father Adolphe Eugène.

These pages, after discussing the political situation in Switzerland during the elder Bandelier's student years as described in letters from his brother Gustave to their father, goes on to mention Adolphe Eugène's living arrangements while studying law at the University of Berne. He was staying in a pension run by a lady named Marianne Ritter. This was the Marie who later would become his wife and Adolph's mother. He describes her to his father:
A subject which will interest you more will be what I shall tell you of the people I live with, that is to say, Madame Ritter, the mistress of the pension, Madame Senn, her mother and Mademoiselle Senn, her sister. Madame Ritter...is an excellent woman, pious, a piety which could easily become exaltation were she not so occupied, and which anyway may be attributed to a frail constitution, exacting, a good housekeeper; she demands morality, neatness and an orderly way of life on the part of the people who wish to live with her. Her education seems to have been first rate. Russia was her first destination. While traveling, she met Mr. Ritter with whom she became acquainted. After their arrival in Moscow, Mr. Ritter convinced her to return to Switzerland where they were married. But Mr. Ritter died, unfortunately, a short time later. ...his death must have had a great effect on her physical health and spirit. She lays claim to true Christian charity, she loves us like her own children, looks after us and, unobtrusively, observes us, and gives us that kind of indirect advice that makes an impression; these qualities together with a gentleness through which much firmness may be perceived, makes up for the beauty which she lacks to some degree, that is to say that poor health has robbed her of. She may be about thirty years old.

It seems that she gave lessons to young people of the higher class. She is of Vaudois origin [from Canton Vaux].

So much for the woman he would eventually marry. No date is given on these letters, but it is mentioned that he wrote to his father from this same pension in November 1831, so he knew Marie some years before their marriage on March 5, 1838.

The "book," after touching on Adolphe Eugène's political career, which is a matter of record, discusses his decision to emigrate and cites passages from letters written to his brother Alphonse from Brazil where he had hoped to settle as a coffee planter. It quotes from a pamphlet by Charles Junod which discusses the Brazilian episode and ends with his decision to go to the United States.

Also included is an interesting letter from the young Adolph Francis Bandelier, written from Highland, Illinois, February 25, 1858 to his aunt in Switzerland, Cécile Bandelier-Morel, asking her to use her influence to keep the Swiss Consulate in Highland rather than allow it to move to St. Louis. His father was giving up the position of Consul which he had held for many years and the town wanted a local man to replace him. Some sidelights on life in Highland are included and the young man refers to his interest in science. He mentions that the rocks, of which he has happy memories, arrived safely through customs, implying that he had been to Europe where he had collected them. The letter remains incomplete.

But the correspondence with Madame Sarasin did not end there.
She later wrote: "Some weeks ago my stepmother (second wife of my father) was asked if she wanted to buy a booklet, part of a series about famous Swiss people. The volume recommended to her is dedicated to Adolphe-Francois Bandelier. As I think it may be of interest to you I ordered another copy for you...."

This booklet was written by a protestant pastor from Bienne, Switzerland, Eric Rufener, whose address she obtained. And then began another stage of the Bandelier research adventure. Mr. Rufener replied most courteously and answered all requests concerning his sources. He also accepted graciously certain criticism, for indeed his booklet does contain a few errors. However, it includes many details on Bandelier's father's earlier life.

Rufener's book makes one serious mistake in stating that Bandelier senior had visited the United States as a young man, having been somehow in the American army under Andrew Jackson. He bases this on a letter from brother Alphonse which says that his personal exploits have been published and adds "The American newspapers have just announced to us your promotion to the grade of lieutenant in the 2nd Light Cavalry Company of 'foot and horse'."

Queried on this, Mr. Rufener came up with a number of letters obtained from the archives of the village of Corgèmont where Alphonse had spent some years as pastor. He was kind enough to again visit these archives and make copies of 18 letters which he promptly forwarded. Among them is the one containing the above quote. Upon analysis, it is obvious that Alphonse was writing with a bit of tongue in cheek, and that his reference to the American papers simply involved Swiss newspapers in America, which reported news of the homeland. In other words, Adolphe Eugene had been promoted in the Swiss army and this was news to people in the New World who might have known his family. Mr. Rufener immediately realized his error and admitted that his imagination had perhaps carried him away. This, however, is no reason to suspect other items in his booklet which seem to be suitably documented. At this point he also forwarded an extensive genealogical chart of the Bandelier family.

All this information opened up a whole new outlook. The letters are of several types, but most relate to Papa Bandelier's decision to go to the New World. They are as follows:

1. The letter above mentioned, written March 4, 1838, at the time of Adolphe Eugene's marriage, long before his plans to emigrate. Alphonse writes that everything is ready for the wedding the following Thursday. He informs his brother of what papers he will need and congratulates him on his military promotion.

2. From Alphonse also to his brother, February 21, 1847, from St. Imier where Alphonse was pastor at the time. At this point Adolphe Eugene, in Berne, seems to have already decided to emigrate. It appears that a Mr. Meyrat, who had emigrated to Brazil, had returned for a visit. As the letter is written, Adolphe Eugene is planning to accompany him back to Brazil. Alphonse discusses the transatlantic fare and informs his brother that there will be a discount for a group of three (the other being a Mr.
Balsiger who is going also). Alphonse advises his brother to sell most of his belongings, since their value will quickly drop, and not to leave his wife and son in large quarters which she could only maintain by renting rooms, a precarious project at best. Alphonse would love some of his brother's books, but is unable to come and select them, so he advises selling them as well. After a short discussion of finances, he closes saying that his son Alphonse is ill.

3. February 23, 1847. A short letter from Cecile Sauvant, Adolphe Eugene's niece, who is sorry to hear that her uncle is leaving. She regrets the circumstances leading him to go (implying they are political) and mentions that her father has lost his job. She thanks him for all his kindnesses and bids him farewell.

4. Alphonse to his brother, March 1, 1847. Meyrat is leaving in two days for Antwerp and Amsterdam to settle his business affairs, after which he will go to Paris on the 21st where he will make arrangements for the trip to Brazil. Apparently Balsiger is not sure of going, as Alphonse advises his brother to let Meyrat know at once if his friend should change his mind. There will also be a young lady, a Mademoiselle Tissot, who will be joining the group. If Adolphe's baggage has not yet gone it should be sent express at once if it is to arrive in time. He closes by saying that his wife is now ill, but his son is better.

5. Alphonse to Adolphe Eugene, March 8, 1847. He encloses a sum of money he says he had promised and hopes more will follow soon. Meyrat has left but, he repeats, should be notified if Balsiger changes his mind. He says he has been reading up on Brazil and advises his brother to look into coffee growing. He thinks Bahia would be a good place if the climate were not so unhealthy. The soil is rich and the locale would attract him if he were going. Also Porto Alegre in Rio Grande del Sur would be a fine area, since its climate is similar to that of Languedoc in France. However, he realizes that probably the best thing at the beginning is to stay in the Rio de Janeiro area. Alphonse says that if he had no family he would cash in his assets and go to Brazil too. He fears he cannot get to Berne to see his brother before he leaves and wants to know the status of his preparations for departure.

6. Alphonse to Adolphe Eugene, March 29, 1847. His brother's departure has been delayed, for which he is glad since the weather will be better for the crossing later in April and they will have time to see each other again. He wants to know whether Adolphe will come see him before Easter, and also go to Bienne and Pontenet (where there are also family members). Alphonse's wife, Cecile, would like Adolphe to bring some beet seed when he comes as it is planting time and they do not have enough. If he is delayed they ask that he send it by mail.

Alphonse then goes into a long discussion of the political problems of the day. He thinks that the time has not yet come for revolutionary opposition to the government. There is no point in adding to the country's troubles, but opponents should bide their time until more of the people are aware of the incompetence of the regime.
Figure 1. Geneological Chart of the Bandelier family, including new information supplied by Simone Sarasin and Eric Rufener.
He, as well as some other protestant ministers, feels that too direct an opposition would be untimely, but he nevertheless lets it be known from his pulpit that he is a dissenter. However, if the opposition goes off half cocked without proper organization and support it would be sure to risk failure. The "little tyrants" must eventually hang themselves and more of the people will realize their incompetence and turn against them. Meanwhile, he feels in a very precarious position, even in danger of being removed from his office, but he is willing to take the risk.

7. Apparently a continuation of the previous letter, but presented on separate sheets. Rufener says that it is dated March 30, 1847, though this date does not appear on the copy of the original. Alphonse goes on to discuss his political attitudes. He says that he read to his congregation a government proclamation which he personally opposed, but he made his own sentiments clear. He thinks a spy was present who might well report him, but he doesn't care. However, he will go no farther, but will await the day when the people will wake up. To date they are only getting what they deserve. Meanwhile, the clergy must be prudent and act with moderation, for so far there is no organization, thus no strength, and it is wise to be cautious. The time is not ripe for great undertakings.

8. Marie Bandelier to Alphonse, September 5, 1847. Adolphe Eugene has now left for Brazil and Marie writes to tell her brother-in-law that she had had word of his safe arrival. She says:

"Thanks be to God, Adolf arrived safely at Rio. Yesterday evening I received a short letter announcing his arrival. He was not seasick. The crossing was a good one and lasted 70 days; they had no mishaps except that in the Channel they were thrown first onto the coasts of France and then onto those of England."

So the great adventure is finally under way! She continues the letter by mentioning that her son has fallen ill again and she plans to take him to the country to avoid the winter. She also speaks of the arrangements that her husband had made to have his brother send her money from time to time.

9. Next comes a letter from Brazil from Adolphe Eugene to his brother, dated July 30, 1847. This, he says, is the fourth letter that he has written home after his arrival. It should be quoted in full were it not for its extreme length. It contains the whole key to the Brazil problem and discusses in detail the situation in that country. Adolphe Eugene begins with the schedule of ships carrying mail to and from Europe and explains the delay in his correspondence due to having missed a ship. He received a letter from his wife three days after his arrival, so at least knows all was well on June 1 when she wrote it. He is concerned that his family might have been worried about him since his ship had arrived in Rio two weeks late. People there had indeed thought it might be lost. Since then he has been sending "masses of paper" home, so that if one letter doesn't arrive another will. The political news from home is bad. He feels almost more
patriotic now that he is far away. However, there in Brazil, the Swiss, though they profess patriotism, are not terribly concerned. They are businessmen and say "we are after all pretty well off here, we make money without much effort and we live well; we don't give a damn about politics; it is better to go about one's business. If everyone did as we do things would be better in Switzerland."
The life of the Swiss businessmen in Brazil is interesting: 
...the attitude of the Swiss businessmen in this city is, with few exceptions, very fine from a material point of view. Either from habit, developed when they were first starting in business, or by design, so as not to arouse the envy of the Brazilians who easily become jealous, they do not flaunt their riches; but they live well and know how to obtain many amenities which make for the privations of the first years. Their circle, the shooting club with its dinners, its luncheons, the welfare society, are all things that, while reminding them of their country and keeping certain Swiss instincts alive, afford them many moments of recreation...In the country, the planters do not find themselves, generally speaking, in such a glowing position.

In countries where there are free workers, either domestic or day-laborers, the yield from the property reimburses the owner for the cost of their labor. The work is only paid for as it is completed. Here, where the Negroes are relied upon, the work of a man's whole lifetime must be paid for all at once and in advance and at a rate based on the average length of a worker's life, requiring a considerable capital investment, so considerable that most cannot take it out of their own pockets. (Emphasis in original)

Often the planter has to borrow at rates of 12%, 18% and even 24%. In order to speed up his profit he may overplant, neglecting older crops and "rendering some of his virgin land useless because he does not have enough help to harvest everything. Adolphe advises: To wait for a good opportunity, or to only buy what can be paid for without borrowing, to live economically, to increase the labor force from revenues in proportion to these revenues, to regulate both the sales and the purchases, so as to profit by favorable periods. To take good care of the crops already planted and to start new ones only to the extent that there is sufficient labor to cultivate them. That, in a few words, is what seems to me to be the course that men who do not have large amounts of capital at their disposal should take in this country...

He is prepared to take his own advice and sets out with Bal-siger to investigate the situation in different parts of the country. They are leaving for the Parahybo the next day on muleback. He has already visited plantations in the Rio area and found nothing suitable for coffee growing. Negroes are cheap at the moment but they require
Mon bien cher fils,

M. Maugars vient d’ici pendant deux
dans à Paris de décéder de appartenant à notre
un moment. De là à Roche de Remondonn, il y quai
appartenaient
la pension de la II de juro et la tente compter
la retour à Paris où il est encore le rendre tout
étété. Il arrivera aujourd'hui. Le vaisseau qui
est vont partir. Je cherchais quelque chose
à changer dans le projet. M. Maltebaud en demanda
trop de se balancer pour que M. il faut que
soye au lieu de celle-ci en écrire à M. Maugars à l’abord,
à Paris qu’il l’a déjà pour que il n’attaque
jusqu’être de toute manière l’appartenant être
faisant trouver deux mots à son arrivée à Paris
pour l’appeler. Donn l’Ill était de la France fondé
qui va prendre son retenue dans le boîtier du voyage. Il y a été de temps pour encore partir.
La saura apprendant-le expédier par montage acerbe
t’enverra que il ne veut rendre à partager s’ran.
celle lors d’arrivée est

[Signature]

Paris 1er Mai 1847.
much care, for after all they are the backbone of the plantation. The way they are treated "reminds me of the solicitude of a Bernese peasant for his cows." They are clothed and given good health care and clean dwellings, because they represent a considerable financial investment.

Adolphe Eugene goes on to discuss the crops and outlines the procedure for "washing" the coffee beans which he describes at length, explaining how they are then dried, separated by size and bagged. He points out that the planter's life can be pleasant. He has independence, is an initiator rather than a follower and can enjoy the contemplation of Nature renewing itself.

But there is also a bad side: "The intellectual needs of the civilized man are not satisfied; society with its pleasures and stimuli is lacking to him. His need to be useful to mankind and to society, to a people, to a country, vainly seeks an outlet..." As for the blacks:

Their extreme laziness seems to explain Providence's point of view in tolerating slavery. It would be a blasphemous thought if I were by that trying to justify slavery, but all I am trying to say is: God extracts good from the evil that men do. Laziness must be conquered, these unfortunates must forcibly submit to the law of the human race imposed as a result of the sins of our first fathers: you will earn your bread by the sweat of your brow. If I ever have blacks, I will not forget my duty as a man and as a Christian, and I will not limit my mission to forcing the body to work; there are minds to unfold, souls to save.

He deplores the fact that many planters have become dissolute and live a disorderly life, many taking black mistresses, though he hastens to add that few of these men are Swiss! There is also talk of abolishing slavery, but he comments, "the Brazilians themselves are too lazy for the introduction of free labor to succeed!"

Finally, one major problem in Brazil involves various venomous serpents and unbearable insects called "bourachoutes" which relieve the nocturnal mosquitoes during the day. There are also rats and fleas and Adolphe complains that his hands are swollen from insect bites.

He and Balsiger are spending every moment acquiring information. They go out, dressed "in the style of the country," heavy leather hip boots, felt hat, leather saddlebags and pistols. Life is expensive, but they are looking to buy some small property as soon as one can be found.

At various points Adolphe Eugene mentions a journal that he is sending to his wife. It is not known what may have happened to this journal, but its discovery would certainly be of great interest in giving more insight into Papa Bandelier's Brazilian episode!

10. On October 21-22, 1847 Adolphe Eugene writes again to his brother from Brazil. Now things have changed. The letter is sent from Rio, but says that he and Balsiger are on the eve of their departure for New Orleans and will go from there to St. Louis, "a central point
He is sending more of his "Journal" by the next French ship, but the letter is going by a faster English packet.

He has become disillusioned with Brazil. The sum needed to get started there would be too great. Coffee is the only good crop, but does not grow well near the ports of embarkation, and inland, where the land is fertile, it costs too much to transport it. Profits seem uncertain. Adolphe Eugene also feels that the future is not sure in this country. "The principal capital lies in men; the work of a whole lifetime is paid for in advance; and these men often die before improving; and these men may at last realize that they are men. So many things indicate an explosion, more or less distant, but certain." The country in general is backward.

What future is there in a country where the laws are not enforced, where within a certain 19th century constitutional framework, there is a country that is passing from barbarism to medieval feudalism, with the bad morality of all ages and the refined spiritual corruption and the religious and moral indifference of our fine century, in a country where the white man who works is almost despised; no, in spite of the beauty of the country, in spite of the good reception that we received, in spite of the inexhaustible richness of the soil—that is not where I would seek a homeland for my child...I trembled at the thought that I might bury his fine gifts in this country, without bringing them to fruition...that I might cast him on this soil where he would find no support, no moral or religious stimulus. He and Balsiger, along with a Mr. Renard and family are embarking on the "Leland" for New Orleans.

We have lost time and money. But the former is not lost entirely; we have gained something by making this trip, which after all I have found very interesting; I am far from regretting this detour, and am all the more prepared to settle in the future in a country where religion is at the root of all social relations, where laws are laws, where industry supports and seconds all efforts, predisposes to work; where roads lead into virgin lands, and where, according to all appearances, the future field for civilization fleeing before the return of barbarism in Europe is being prepared in a surprisingly active manner. We will find irritating things there as well. But it is not the comparison that caused our decision. Not having seen both countries, we could not compare.

11. Meanwhile, back in Switzerland, unaware that her husband is leaving Brazil, Marie writes to Alphonse on October 23, 1847, that she has received from Adolphe Eugene a journal which he asked her to give to Alphonse to edit. People keep asking what he says in it, but she knows that her husband does not want this given out since he hopes to publish it. She
hates to be impolite, but will say nothing until Alphonse can tell her whether he plans to follow through on this. She thinks there would be a good market for it since there is currently so much emigration.

12. Marie to Alphonse, January 4, 1848. She passes on to him news that she received from the Balsigers who had heard from their son. Her husband and his friend had visited the Parahybo and found nothing suitable there. After consulting many businessmen and other friends, they had finally left for New Orleans. They had sailed October 21, but the ship had begun to take on water and they were obliged to return for repairs after sailing 80 leagues from "Baia." This mention of "Baia" seems strange since Adolphe Eugene's letter had been written as he was sailing from Rio on that very date. In any case, the ship was repaired and they sailed again on November 6.

13. Marie writes to Alphonse again on January 25, 1848, apologizing for the delay, but says:

As a result of the upset condition caused and perpetuated by last year's emotions, I have developed a sickness in my heart that causes me less pain than anguish and from which I am having trouble recovering. The news of Adolf's departure for the North, his rashness in sailing again on the same ship, that, added to my weakness, has dealt me a blow which I was unable to ward off. I too am cruelly concerned for our dear Adolf, but, just think that if you had not advised him to go to Brazil and in North America his hopes had not been realized, who knows...he might have gone to Brazil from there. Now that he has seen that widely touted El Dorado he can judge it seriously and make correct comparisons, and tired of roving about, he will try to make a place for himself, if not a brilliant one, at least a solid and modest one suitable to his needs. Adolf never aimed at anything brilliant anyway, I knew that. A quiet corner was what he sought. He reminds me of a dove looking for an olive tree on which to alight.

14. Marie sends Alphonse the first installment of her husband's journal on February 9, 1848. The second has just arrived and she promises to send it as soon as her poor eyesight will allow her to finish reading it. She asks him to show it to the Sauvant family (that of her husband's sister) and be sure to see that they take good care of it, since so many people will be handling it. She complains that many people are sick in Berne and asks if it is the same in St. Imier. Her son is ill again.

15. Marie to Alphonse, April 22, 1848. This letter is mainly to console her sister-in-law for her great loss—probably Cecile's father who had been quite ill. She says she will send the rest of the journal in a day or two. She is awaiting instructions from her husband as to when she should join him.

16. Marie to Alphonse, July 20, 1848. She had been ready to go but postponed her departure due to her son's indisposition. He is now better so she will make reservations for the eighth
to go from Mulhausen to Paris. The ship schedule has been changed which is good because it gives her an extra day. Almost everything has been sold. She is returning some money to Alphonse but is keeping enough to get her to Le Havre. She has not found any traveling companions, but feels that God will look after her. She expects to leave on the 18th or 19th. She is glad that all the hassle is over and hopes to rest on the ship, but fears other problems await her. A letter just received from her husband discusses instructions for the trip. Apparently she intends to stop at Corgemont, where Alphonse now is (the letter gives no address but Rufener says it is to Corgemont), as she says she will see his family soon.

In addition to these letters dealing with the emigration to the New World, Rufener also sent two others of real interest. One is the same as that included in Madame Sarasin's "book," from the young Adolph to his aunt Cecile Bandelier-Morel, February 25, 1858, about the Swiss consulate, but now we have the complete letter. The end of the letter discusses his studies. He says that he is principally occupied with rocks, though the heavens are also drawing his interest. He is hoping to take up mathematics, which he needs for these studies, and also languages. In addition, at his father's request, he has written rebuttals to some articles in eastern papers that deprecated Switzerland. So here are young Bandelier's first attempts at writing!

The other letter is in German, written by the father to a Pastor A. Haller-v. Greysers in Berne, on January 21,
1868. It was translated with the assistance of Daniel S. Matson of the Arizona State Museum. The elder Bandelier has recently received a personal report from his son on Pastor Haller's family in Switzerland where Adolph and his wife had been visiting. He thanks the Pastor for taking such good care of the "children" and feels that the visit has greatly broadened their experience. He says:

The stay in Berne and the contacts with so many noble friends has had a enlivening and cheering effect on my shy daughter and has enriched her spirit...Adolf was exposed to a still stronger and, God willing, more successful influence. He has grown greatly in maturity and steadfastness of spirit and, what I value far more highly than the usual fruits of an intelligently undertaken journey, he has acquired a broader viewpoint, and a greater experience in practical external living and the like, and he has discovered a steadier basis for the present and the eternal life to come. I say no more. You are certainly aware of what he lacked and how his curious mind was wandering about on extremely uncertain deceptive paths. He is still not steady but his feet are on solid ground.

These two letters are of interest because of the insight they give into the character of the younger Bandelier. Even at the age of 18 he was very involved in the "politics" of Highland as seen by his interest in the consulate. His early scientific studies are confirmed and his rebuttals in defense of Switzerland represent perhaps his earliest writings. He speaks of his cousin Alphonse as though he had the opportunity to form a friendly relationship with him in person. This would imply that he had indeed visited his relatives when he was about 17 years old, a matter which had been a subject of some controversy.

The elder Bandelier's letter to the pastor definitely confirms the later visit of Adolph and his wife to Switzerland ten years later. This too, has been a subject for debate, but this letter leaves no room for doubt. It has been said that at this time he studied at the University of Berne, but Rufener again came to the rescue by checking the records and assures us that the person who was registered there at that time was Alphonse, Adolph's cousin.

The letters written at the time of the emigration to the New World also clarify a number of uncertain points. There was originally some question as to whether the elder Bandelier's family had accompanied him to Brazil. Now we know that they unquestionably did not. The reasons for the transfer from Brazil to the United States are clearly spelled out, and the route by which the elder Bandelier traveled to Highland becomes evident.

The chain of events that led to the discovery of these letters is a fascinating one. As a result the background on the life of Adolph Francis Bandelier has been greatly enriched with the help of the "Swiss Connection."

Tucson, Arizona
### REFERENCES

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38
Alphonse Bandelier to Adolphe Eugene Bandelier, March 4, 1838.

Cecile Sauvant to Adolphe Eugene Bandelier, February 21, 1847.

Alphonse Bandelier to Adolphe Eugene Bandelier, March 1, 1847.

Alphonse Bandelier to Adolphe Eugene Bandelier, March 8, 1847.

Alphonse Bandelier to Adolphe Eugene Bandelier, March 29, 1847.

Alphonse Bandelier to Adolphe Eugene Bandelier, March 30, 1847.

Adolphe Eugene Bandelier to Alphonse Bandelier, July 30, 1847.

Adolphe Eugene Bandelier to Alphonse Bandelier, October 21-22, 1847.

Marie Bandelier to Alphonse Bandelier, September 5, 1847.

Marie Bandelier to Alphonse Bandelier, October 23, 1847.

Marie Bandelier to Alphonse Bandelier, January 4, 1848.

Marie Bandelier to Alphonse Bandelier, January 9, 1848.

Marie Bandelier to Alphonse Bandelier, January 25, 1848.

Marie Bandelier to Alphonse Bandelier, April 22, 1848.

Marie Bandelier to Alphonse Bandelier, July 20, 1848.

Adolph Francis Bandelier to Cecile Morel-Bandelier, February 25, 1858.

Adolphe Eugene Bandelier to A. Haller-v. Greyers, January 21, 1868.

All these letters were written in French except for the last one which is in German.
The following notes, taken 50 years ago by an unprofessional ethnographer, are of uncertain value. But because the informants are long gone and may not have been revisited by a more highly trained recorder, and because their descendants are living differently and may not remember what grandfather told them, I transcribe those notes in ink while I can still decipher the fading penciled words. The words were written in a pocket notebook in 1938 when I was a member of a party of University of New Mexico students adrift on the Mackenzie River drainage in northwest Canada.

Kahntah Village (confluence of Kahntah and Fontas Rivers, northeast British Columbia)

Kahntah is a collection of ten cabins, 11 small outbuildings and caches, and two larger cabins used as storehouses by traders. Many of the log cabins occupied by related families are built end-to-end with a covered dogtrot connecting them. The population of 35, including seven hunters, was once larger. Tuberculosis has killed many--four in the past year--and a small child looks like it doesn't have long to live. The closest medical care is a government doctor at Fort Simpson, 500 miles downstream, though Etsuka, who has a camp down the Fontas a few miles, is said to practice some traditional medicine. Etsuka doesn't live in Kahntah, but he is considered to be a member of this community, as is Needehleh, who camps with his wife and a daughter and her husband farther down the Fontas where it joins the Sikanni River.

Behind the cabins are small garden patches fenced with poles where potatoes and turnips are grown, but hunting is the major occupation and the backbone of the economy. Moose are killed in the fall for their hides as well as for food. The smoked and tanned hides are made into moccasins which everyone wears, and which are sold to the traders for resale to the white trappers. Moose meat is also fed to the dogs which are kept for pulling tobaggans in the winter. The only cash income is derived from fur trapping in two hunts. From December through February fine fur is taken: fox, lynx, wolf, coyote, wolverine, marten, and fisher. A shorter spring hunt after the ice breaks up is for beaver, and a good hunter will take in $800 a year in trade goods. Fishing is done with gillnets and traps as well as with hook and line.

Just behind the gardens, on the fringes of the forest, are several graves. The bodies have been laid directly on the ground then covered with a pitched roof of poles or small logs covered with spruce bark. A tall pole was planted at the head of each carrying a tin cup, a hat or a small bundle. Another grave seen at Etsuka's was a split and hollowed log laid across two topped trees about ten feet off the ground--a version of a scaffold burial. It is said to have been a still-born child.

The headman of the settlement is Matsuleh, but it is Tom White Head who is more willing to talk. Most of the Athapaskan-speaking people who occupy northern British Columbia and
Alberta, Northwest Territory, and the Yukon are lumped together as "Slaveys" by whites. "Slave" is apparently a loose translation of a name given them by the Crees who, after getting guns from British traders, spread north and west pushing more poorly armed Athapaskans ahead of them. The latter, like Navajos and Apaches in New Mexico, called themselves Tineh, Dineh, or the "people." Different groups of the "people" are recognized. These at Kahntah stem from those who once lived on the shores of Great Slave Lake, thus they are called Tuchodineh, "Big Water People." The population here came originally from the Hay Lake country about 100 miles east when, after a dispute over hunting rights, they were led onto the Fontas drainage by White Head's great-grandfather 80 years ago. When they arrived here they had to fight the Tsadineh (Beavers) for a foothold.

Summer travel is almost entirely by water in small canoes made of spruce bark. When the boggy forests dry out enough for overland travel, dogs are used to carry small packs, though at Kahntah there are a half-dozen horses. Horses are "klicho"--literally big dog. As Southwesterners with about a dozen words of Navajo between us, we are struck, nevertheless, by the similarity of those few words and by the sound of the language.

Franceways (at mouth of Fish Creek on Liard River, extreme north British Columbia)

Franceways (a corruption of Francois) is a collection of 16 unusually large cabins and 40 people with ten hunters. The settlement was established in the 1880s by Francois, who moved up from the vicinity of Fort Liard with his family, eventually to be joined by several other
families. At the time of our visit most of the men were away at Fish Lake, about 25 miles east, drying whitefish and jackfish for summer dog food. They went in over the snow to return down-river later in the spring with spruce-bark and moose-hide-covered canoes. We met Francois downstream at Fort Liard where he was visiting.

Francois, who was given that name by a French missionary, told us that his real name is Inseh, or "Bull Moose." We spent the better part of two days with him and he seemed to be pleased to talk about old days and ways, speaking through Billy McLeod, a Scottish-Cree.

Inseh, said to be 86, tells us that in his grandfather's time the Tuchodineh lived way to the southeast between Great Slave and Lesser Slave Lakes where they killed buffalo "so big that one man couldn't turn one over," but the Crees came with guns when the Dineh had only bows and arrows and drove them to the country around Hay Lake. In his father's time many Slaveys moved onto the Nelson and Liard Rivers where they often had to fight the Tsadineh or the Nahanni. They seldom went far enough south to have any trouble with the Sikanni ("stones that slide low"). Their first settlements were on high points where one could see a long way up and down the river for protection, particularly from the Nahannis who would come down out of the western mountains to raid for captives, clothing, and other plunder. Inseh couldn't remember a time when iron wasn't available for making arrow points, but his grandfather used to make them of bone, or sometimes traded with skilled craftsmen who made them of quartzite.

In the old days when Inseh

Figure 2. Mary making moccasins at Fort Nelson.
was young, some men had guns, but to save the cost of powder and ball, and later, cartridges, many men still hunted with the bow. White men's things were not easy to get and fires were built with bow-drill or with flint and steel, and stews were boiled in bark wogans covered with mud. They lived in moosehide or bark tipis and dressed entirely in moosehide clothes, tanned with the hair on for winter and worn with capes or coats of beaver fur. Fur turbans were worn in winter and a favorite summer head-gear was the skin of a lynx head. Eagle feathers were often worn on a hat to get some of the eagle's power.

The acquisition of power was of prime importance in Inseh's youth, when almost all men and a few women had some medicine, but since the priests came very few men acquired medicine. Many young men pretend but really know nothing at all. Inseh himself learned medicine from his stepfather who had considerable power. Once a Hudson Bay Company man discredited his medicine so the old man hung his coat on a stump and had the trader shoot at it. No holes appeared. Of course medicine is useful for maintaining health, and for ridding one of evil which is the chief cause of poor health, but charms are also useful, if not necessary, for good luck in hunting and war. In times of starvation a shaman could summon up game. For his first hunt a boy will often purchase a special hunting song from a shaman, and will look for a beetle or grub in a moose track to eat for luck. A hunter also used to take an eyelash from over each eye of a slain moose to add to the collection in his pouch to make finding the next one easier, just as taking a bit of hair.
from a fallen enemy made slaying another one a little surer.

Some animals also have medicine. Wolf and wolverine have human characteristics and in the old days were never killed. They have the ability to take on human form and work bad medicine on people. Baptiste Jacob at Fort Liard has wolf medicine and has no fear of a wolf. They say that he will release a live wolf from his traps without being bitten. Mink, otter, and bear also have power, but it is of a benign nature and is sometimes shared with shamans. Certain greatly feared shamans with much power might eat a bit of flesh from the thigh of a murdered man or one killed in battle. (The Navajo "wolf-man" and his "corpse poison" must have been concepts brought from the north long ago.) Though this ritualistic nibbling of human flesh is known to exist, it is not generally approved of, and cannibalism was forbidden by Yamateya, a culture hero who told the Dineh that man-meat would make them sick and they would break out in sores.

Long ago when monstrous animals roamed the earth, giant beavers build dams across the Mackenzie at the Ramparts near Fort Good Hope, across the Liard at the big rapids, and at a series of rapids on Slave River near Fort Smith. The dams backed up to create lakes which threatened to drown out the habitable earth. Yamateya, a giant himself, broke the dams and killed the beaver. He then taught the people how to live, how to make fire, to catch a beaver by placing nets over the entrance to his lodge and to beat on it with sticks to drive him into the net. He told the people that when a man takes a wife he must ask her mother and give her a present, and if he wants another wife he must marry his wife's unmarried sister. Though he is invisible, Yamateya still wanders over the north doing good for the Dineh.

Billy McLeod confirmed the continued practice of old-time medicine with this story: A 50-year-old woman named Scar Forehead, who lives 60 miles northeast of Fort Liard at Trout Lake, once was walking across a muskeg prairie covered with flowers. The flowers talked to her and gave her power. Just last winter an old bitch of her's followed her brother Ned out on his trap-line. Ned repeatedly tried to make her go back but she refused and kept following his team of dogs so Ned shot her. Scar Forehead was very angry about this and told him he would pay for his actions—she would make him sick. Not long after, when he was out on his line again, the back of his neck swelled up and large secreting sores appeared. He became dizzy and "crazy" and was prevented from hunting the rest of the year. He first planned to complain to the police but instead he went to another man with "power" and paid him to work counter-medicine. It worked, Ned got well and Scar Forehead fell sick.

Portal, Arizona
The American Southwest has been a magnet for exploration and research since it was acquired from Mexico in 1848. The first fieldwork was government sponsored, as the United States surveyed and mapped this vast area's resources. A byproduct was information on both the prehistoric and contemporary inhabitants, which laid the foundation for future scientific investigation. This was led initially by the Smithsonian, some of whose personnel then participated in the first privately sponsored anthropological expedition—that undertaken a century ago by Mary Porter Tileston Hemenway of Boston.

Mrs. Hemenway, whose interest and enthusiasm were matched by not inconsiderable wealth, was the first of six women who had both the vision and the financial means to make a lasting impact on anthropology in the Southwest. They supported the creation and growth of scholarly and public institutions, and some also carried on scientific research. These six are, besides Mrs. Hemenway, Mary-Russell Ferrell Colton, Mary Cabot Wheelwright, Florence Dibell Bartlett, Amelia Elizabeth White, and Elsie Clews Parsons. Because of space limits for this essay, we have focused on the first five. Parsons, the only professional anthropologist in the group, is better known in the profession at large. Her anonymous support of many anthropologists' work in the 1920s and 30s, through her informal and very personal Southwest Society, made possible extensive field research and publication. Her own work, such as Pueblo Indian Religion (1939) and Hopi Journal of Alexander M. Stephen (1936), are models of research and are still important sources today. Her career is well recounted in Hare's recent (1985) biography.

Mary Hemenway was born in 1820 in New York City, the daughter of a shipping merchant. At age 20 she married Augustus Hemenway of Boston, also a shipping merchant. After his death, in 1876, she continued even more energetically with her philanthropic work—schools in the Reconstruction South, sewing instruction in the Boston schools, the Boston Normal School of Cooking, and a school of gymnastics which later became part of Wellesley College. Her expanding interest in American history resulted in the Hemenway Southwestern Archaeological Expedition, in 1886. More practical than some philanthropists, she provided in her will for support of many of her interests for 15 years, by which time they would presumably be on a permanent basis.

Mary Hemenway's interest in the Southwest was ignited by Frank Hamilton Cushing, described by Fred Eggan (1968:125) as "probably the first professional ethnologist." Cushing, as an assistant ethnologist with the Bureau of American Ethnology, was sent to the Pueblo of Zuni in 1879 and, at his own invitation, stayed 4 1/2 years. In 1882, urged by his Zuni hosts and to further his own interests, Cushing came East with five
Indians (four Zunis and a Hopi), who made public appearances from Washington to Boston. The group met Mrs. Hemenway, described by Cushing to the Secretary of the Smithsonian as one of the "ladies of Boston" enthusiastic about the tour. Four years later, on sick leave in the East, Cushing was offered a cottage on the Hemenway estate in Manchester, Massachusetts. Mrs. Hemenway, her interest whetted by Cushing, arranged for a second visit by Zunis in August 1886. In this setting evolved the Hemenway Southwestern Expedition of 1886-89, to which Cushing was seconded from the Bureau of American Ethnology as leader, and Frederick Webb Hodge as secretary. In his foreword to Emil Haury's study of the expedition's collections, Hodge wrote:

...it should not be overlooked that the first avowedly scientific work in the ancient remains of that region was that of the expedition sponsored by Mrs. Hemenway, with an equipment and with facilities never before equalled...Chiefly through the lack of means—for archaeological excavation is expensive—all research of the kind in the Southwest had hitherto been largely in the nature of reconnaissance and was therefore superficial (Hodge 1945: vii).

Not only did Cushing emphasize excavation rather than reconnaissance, he recognized the importance of a multidisciplinary approach. He himself assumed the positions of archaeologist and ethnologist, and secured a physical anthropologist, a historiographer (Adolph F. Bandelier), and a cartographer. Better staffed and equipped than any other previous field party in the history of Southwestern, or indeed of United States, anthropology, the expedition headed west in December 1886. The plan had been to start at Zuni but weather dictated otherwise and they proceeded to the Salt River Valley near Phoenix. Cushing, always delicate, was in such poor health in the spring of 1887 that Mary Hemenway arranged for Washington Matthews, the U.S. Army surgeon, to visit the camp. While there he noted that skeletal material was not being preserved, and arranged for the Army Medical Museum to send out an anatomist to remove and preserve the burials. The physical anthropologist, Herman F.C. ten Kate of the Netherlands, arrived in November and proceeded with observations on the local Pima population. These were reported in the Journal of American Ethnology and Archaeology, which was presumably subsidized by Hemenway. The journal also published other results of the Expedition.

In May 1888 camp was moved to New Mexico, near Zuni, but Cushing's failing health, as well as his lack of administrative ability, prevented the full excavation program from being carried out. He retired as director and was replaced by J.W. Fewkes, a Harvard trained zoologist who had become interested in Indians when studying shellfish in California. His emphasis was on ethnological studies, particularly among the Hopi. Although excellent Hopi ethnography had been done by Thomas Keam and Alexander Stephen, Fewkes proved a capable organizer and energetically carried out Mary Hemenway's wish that data on Native Americans, past and present, be
obtained before it was too late. Fewkes published extensively on the Hopi in the next few years.

At this time Hemenway, still interested in archaeology, joined actively in petitioning Congress to preserve the Casa Grande ruin, southeast of Phoenix, and to place it under federal protection. This was accomplished in 1889, creating what is today Casa Grande National Monument.

Inspired by the tales, songs, and dances that Cushing's Zuni visitors had brought to her estate, Hemenway arranged for recordings to be part of the Southwest expedition's work. To this end she equipped Fewkes with an Edisonphone and the wax cylinders then used and sent him to record among the Abnaki Indians of Maine in the winter of 1889-90, as a test of the technique. In the Southwest Fewkes filled many cylinders with Hopi and Zuni music, recordings which still survive today. In 1890 she established a fellowship in American ethnology and archaeology at the Peabody Museum of Harvard, which has continued to the present.

Although her death in 1894 brought the Expedition's fieldwork to an end, her will provided money for further publication. The bulk of the archaeological material had gone to the Hemenway Room at the Peabody Museum and some was exhibited in 1892 at the Madrid Exposition and at the Columbian Exposition in Chicago. At the disbanding of the Hemenway Expedition, Fewkes joined the Bureau of American Ethnology and shifted from his study of Hopi traditions to digging Hopi sites, then the Mesa Verde ruins, and later the antiquities of the Caribbean. His career in anthropology was formed, supported, and directed through Mary Hemenway's interest and generosity. Although the Salt River Valley excavations seemed for many years to have contributed little for all their extent, they formed the basis in 1934 of Emil W. Haury's doctoral dissertation (published in 1945), which immediately became one of the cornerstones of our understanding of Hohokam archaeology. Mary Hemenway's support of anthropology had varied, long lasting, and significant results, even though she did not live to see all of them.

When Mary-Russell Ferrell Colton and Harold Sellers Colton began in 1912 to spend their summers in Flagstaff, they probably had no idea that one day they would play the leading roles in founding a museum that has become a major Southwestern scientific, artistic, and educational center. Mary-Russell Colton, born in Louisville, Kentucky, in 1889, grew up in Germantown, Pennsylvania, and on the Virginia coast. At the age of 15 she entered the Philadelphia School of Design for Women (now the Moore Institute of Art and Industry), studying both oil and watercolor painting. Five years later, graduating with honors, she opened her own studio and soon became one of the highly regarded "Ten Philadelphia Painters." She married Harold Colton, a zoologist at the University of Pennsylvania, in 1912 and on their honeymoon they stopped in Flagstaff, climbed the San Francisco Peaks, and were immediately attracted by the area. In 1926, after many summer holidays in Flagstaff, they moved there permanently. Beginning in their first summers in the area Mrs. Colton took an active part in the archaeological surveys that Dr. Colton began. Although self-trained in archae-
ogy, they immediately set high standards in both recording data and in making systematic surface collections.

When the Coltons and others formed the Northern Arizona Society of Science and Art, the organizational base of the Museum of Northern Arizona, it was Mrs. Colton who insisted that art have an important place not only in the title but in the activities of the fledgling society. From then on her dual role consisted of substantial financial support to the museum and planning and directing programs in art and education that complemented those in botany, geology, and archaeology. The Museum began in 1928 in space provided by the Flagstaff Women's Club, but in 1934 Mrs. Colton gave 33 acres of land to the Society, located three miles north of town. This was accompanied by a gift of $5,800 to construct the first portion of a museum building at this new location. In addition, Mrs. Colton had purchased a 10-room house across Fort Valley Road from the museum site, and rented this to the society for a dollar a year, for additional research space.

Another major expansion came in 1946 when she donated to the Museum her Antelope Valley Ranch, greatly expanding the Museum's lands to the east and south. The half dozen or more ranch buildings were converted to housing for staff and students and for a geology laboratory—the beginning of the present Research Center. Without Mary-Russell Colton's foresight and generosity the development of the Museum would have been far slower, even though Dr. Colton also gave important financial support through those years, as well as scientific leadership. Both the Coltons carried on their philanthropy unobtrusively, and its full extent was probably never realized by more than a few of their closest associates.

Mrs. Colton's activities in art and education, however, were immediately conspicuous from the first months of the Museum. Her aims were threefold: "First, to bring into our community art influences from both East and West. Second, to encourage and develop the existing art interests of the community, and third, to stimulate the native Indian arts and crafts of northern Arizona" (Colton 1956:62). Exhibits were held to bring to Flagstaff the best of contemporary art from all parts of the country. In 1929 the annual Arizona Arts and Crafts exhibits began, offering Arizona artists a chance for their work to be seen (and purchased). In 1930 the first of the annual Hopi Craftsman Exhibitions was held, providing both tourists and the local population a chance to see and buy the best work of the Hopi, who had long suffered from a lack of outlets for their arts and crafts, except for the support of a few interested traders. In 1930 Mrs. Colton began the Junior Art Shows, to encourage younger (4th to 8th grade) artists in all the schools of northern Arizona. The next year the Junior Indian Art Shows began and in 1936 the annual Navajo Craftsman Exhibition started, providing visibility and support to another group of Native Americans of the region. Another annual event, Arizona Photographers, began in 1939. Each of these shows received extensive planning and supervision from Mary-Russell Colton, who was deeply concerned with both encouraging high quality and an opportunity for craftsmen.
and artists in all media to show their work to the public.

As a professional artist, Mary-Russell Colton was also deeply concerned that art education begin early and be done well in the public schools. To make the results of her work in the local schools widely available, she published in 1934 "Art for the Schools of the Southwest: An Outline for the Public and Indian Schools," with extensive, specific information for art teachers, including materials, sources of supply, and curricula. This monograph exemplifies Colton's combination of the practical and the aesthetic. If the beauties of the world were to be appreciated and communicated it must be through practical means, such as exhibits and school classes.

Her practicality also included concern for the livelihood of artists and craftsmen. This is exemplified in her Hopi silver project, for developing distinctive Hopi designs for Hopi silversmiths, who had the necessary skills but tended to follow Navajo patterns. Her aim, which was successful, was to make Hopi silver distinct from Navajo so that it could better compete for discriminating buyers. Designs based on Hopi pottery, weaving, and basketry were created at the Museum in 1939 and provided to 18 Hopi silversmiths. Several of them began taking this new direction in their work, and gradually a uniquely Hopi tradition of silver work developed, including the distinctive overlay technique (Wright 1972).

One more expression of Mary-Russell Colton's realization that high quality, distinctive Hopi crafts depended on practical considerations, in this case dyes, is her publication in 1965 of Hopi Dyes. It is based on careful field and laboratory work extending from 1930 to 1945, identifying plants and minerals that could be used for the dyes needed for textiles and basketry. Each dye has a complete recipe, beginning with the Hopi and the scientific names of a plant and proceeding through all the steps needed to produce and use the dye.

A woman of boundless, but sharply focused, energy and enthusiasm, her generosity was carefully directed to goals consistent with the broad purposes of the Museum of Northern Arizona. Her activities on behalf of art and education combined esthetic vision with the down-to-earth, step-by-step approach that brought one substantial achievement after another. She successfully combined the roles of artist, administrator, ethnographer, and applied anthropologist.

Mary Cabot Wheelwright "found" anthropology relatively late in life but made up for that delay by the intensity of her work collecting records of Navajo ceremonies. She was born in Boston in 1878, the only child of a wealthy merchant, and, although she received little formal education, she studied singing and the piano and travelled with her mother in Europe, Egypt, and Greece.

"For forty years Wheelwright remained the dutiful Victorian daughter, devoting herself to good works, especially a settlement-house music school in the South End of Boston" (Whitehill 1980:687). Only after her mother's death in 1917 did she begin to lead an independent life, including a New Mexico camping trip with a female cousin. Her delight in the Southwest was added to her fondness for the Maine Coast, where she sailed...
nearly every summer, and for the Mediterranean, where she bought a farm on Mallorca. But by 1923 she had acquired the Los Luceros ranch near Alcalde, New Mexico, as a permanent western home.

Wheelwright has described her "discovery" of Navajo ceremonialism:

On a camping trip in 1920 I stayed at the Nava trading post [65 miles north of Gallup and now called Newcomb after the traders who ran it for many years], having just seen my first Navajo ceremony, and I asked many questions and found both Mr. and Mrs. Newcomb really interested in the Indians' ceremonies which was most unusual, as few traders at that time took any interest in them. They were very fond of Hosteen Klah, one of the most respected of the medicine men, who lived nearby and who also was fond of the Newcombs. I urged Mrs. [Franc J.] Newcomb to make a study of the Indian religion, as she could draw well and had such a wonderful opportunity through Klah's friendship to understand and possibly record the religion...(Wheelwright 1956a:3).

Klah agreed and Franc Newcomb began observing and memorizing the patterns of the sand paintings used in curing ceremonies--Klah forbade them to take notes or make sketches during a ceremony. Mary Wheelwright "recorded the ritual and myth." This began an intensive decade of collecting detailed records of the pictorial and vocal aspects of Navajo curing ceremonies, during which Wheelwright and Newcomb successfully collaborated with 56 singers (Meadows 1986:8-9). In order to preserve permanently Franc Newcomb's reproductions of sand paintings, Klah's thirteen remarkable woven replicas of sand paintings, the written texts, and the tape recordings, Wheelwright established the House of Navajo Religion in Santa Fe in 1937. In 1939 it was renamed the Museum of Navajo Ceremonial Art and then in 1977 the Wheelwright Museum of the American Indian. But Wheelwright was handicapped in endowing the museum satisfactorily, as she was "victim of a prudent Boston family trust...[having] a handsome income for life but no control of the capital" (Whitehill 1980:688).

In spite of her success in preserving records of Navajo ceremonies, her lack of anthropological and linguistic training led to two problems in her work. In a review of one or more of her important publications, Leland C. Wyman, an authority on Navajo ceremonialism, comments that "Miss Wheelwright still employs her bizarre and often absurd transliteration of Navajo words. English renderings of Navajo terms would be more appropriate in a translation, but if special orthography must be used, it should at least have internal consistency...[and] a little attention to pertinent data in other publications would have increased the usefulness of the book for serious students of Navajo ceremonialism" (Wyman 1957:755-756).

A different kind of problem is represented by her efforts to link the symbols of Navajo sand paintings to symbols in other cultures and times, in the hope of finding common meanings for them. She describes
this work in one of her last publications:

In 1940 I went to India, partly to see if I could find any connections there with the Navajo religion. I took with me several small colored drawings of sand paintings...General Kaisar Shumsu of Nepal...was much interested in the American Indian religion, and expressed the conviction that it came from the same sources as the ancient religion of India...Professor Chatterjee, after examining the Navajo material, expressed the opinion that it was a very ancient ritual, and thought it might go back to the cradle of the Aryan race in northwest India...Each year the Tibetan government sends out...a proclamation called Tsa-tsik. This root word for general rules of conduct recalled the Navajo word Tsa-tlai, which appears in the Creation Story of the First World as one of the first laws given there (Wheelwright 1956b:91-93).

But far more important than this rather naive and inconclusive search for Old World parallels to Navajo myth and symbolism was her determination to collect and preserve as completely as possible the rituals that she and others feared would gradually be lost and forgotten. New generations of Navajo might not be willing to devote months and years to learning the chants and sand paintings for each of the scores of rituals the Navajo traditionally practiced. Her encouragement and support of Franc Newcomb and her ability to cross cultural barriers and secure the trust and cooperation of Hosteen Klah permitted her to make a unique and permanent contribution to anthropology. In 1956 the Navajo Tribal Council thanked her "for undertaking with courage what could only be accomplished in the most intangible awareness of spiritual tranquility and symbolic beauty. She has accomplished this and she had done this well. The Navajo people will be forever grateful..." (Whitehill 1980:688).

Two years later Mary Wheelwright died at her Maine home, at the age of 79. Although she started her anthropological career late and unprepared, she succeeded, through her own energy, enthusiasm, and generosity, and the cooperation she secured from others, in completing splendidly what she set out to do.

Florence Dibell Bartlett, like others discussed here, and indeed like most aficionados of the Southwest, came to the region after growing up elsewhere. She was born in Chicago in 1881 into a prosperous and well-educated family. After graduating from Smith College in 1904 she began a career devoted to the welfare of others, first through the Eleanor Association of Chicago, which found shelter and friends for young women coming to Chicago to work. She preferred to call herself a "civic worker" rather than a philanthropist, although as time went on the latter term became more and more appropriate. She also loved travel and became active in the American-Scandinavian Foundation, receiving a gold medal from the King of Sweden in 1933 in recognition of her service (Sellars 1978:10).

Like the rest of the family, she was an art lover and collector. Her brother gave his collection of French Impressionists
to the Art Institute of Chicago, and her sister Maie, with her husband, Dwight B. Heard, established the Heard Museum in Phoenix. Florence Bartlett lent or donated art from her growing collection to the Art Institute and sponsored lectures there for 17 years. Sometimes she herself lectured, dressed in a folk costume suitable to her subject. Gradually her interest in art focused on folk art, an interest further stimulated by the setting of her summer home, El Mirador, which she built in the 1920s in Alcalde, New Mexico. Quickly it began to fill with folk art from around the world, acquired during her travels. For 20 years she summered at El Mirador and began plans to make her ranch home an outdoor folk-art museum in the Scandinavian style. By 1949 she had decided that this was not practical and in discussions with Boaz Long and others at the Museum of New Mexico, the idea of a Museum of International Folk Art (MOIFA) took shape. She offered to provide the museum building to house her collection—and others—and to create a foundation to provide permanent support. The museum was to be part of the Museum of New Mexico, and as she wrote:

...my thought has been that it may contribute toward a greater mutual understanding among the various people of the world...The aim of the Folk Art Museum is that it should be a world center for the study of crafts where students of different countries can come to procure a knowledge of each other's culture (Bartlett 1953: 309).

Miss Bartlett asked John Gaw Meem to design the museum and he created a structure that, while modern in style, harmonized with the traditional Santa Fe style of other buildings nearby. She took a keen personal interest in every aspect of the planning and staffing, and approved such costly new technology as complete temperature and humidity control. The structure provided about 8,000 square feet of exhibit space and 11,000 square feet for storage (Walter and Anderson 1953:322-324). The Museum had a gala opening on September 5, 1953, with Miss Bartlett's statement over its entrance, "The art of the craftsman is a bond between the people of the world." Of the 4,000 objects that began the MOIFA collections, representing 55 countries, half came from her own collection. Others were long-term loans or gifts from the University Museum of the University of Pennsylvania, the Peabody Museum of Harvard, the Ryksmuseum voor Volkskunde of the Netherlands, and the French Government. Since then, many other additions have expanded the collections to more than 120,000 specimens.

Tragically, Florence Bartlett died unexpectedly only seven months after her museum opened, but in a very real sense her aims had been accomplished. The Museum had grown, prospered, and become the international center she envisioned. Although folk art is sometimes regarded as, at best, peripheral to anthropology, the MOIFA began and has continued with a strong anthropological orientation. Early in the planning stage Robert Bruce Inverarity, an authority on the aboriginal arts and crafts of the Northwest Coast, was appointed director. In addition, Frances Raynolds of the Taylor Museum of Colorado
Springs and Per Ernst Guldbeck, an anthropologist and artist from the National Park Service, were added to the professional staff. With support from the Wenner-Gren Foundation for Anthropological Research, Inverarity toured the museums of Europe in 1951, studying their folk art and ethnographic collections, and secured valuable ideas and advice as well as contributions of specimens of publications.

In a 1963 tribute to Miss Bartlett by John B. Jackson her skills as a folk art collector were described:

...she was neither a trained ethnologist nor an art historian; but, with an instinctive feel for the popular and simple, she collected in the course of years objects of great rarity along with some of everyday availability, handmade objects that were strictly speaking museum pieces, as well as machine made, mass produced articles often little more than imitations or poor adaptations of traditional forms...[Her] manner of choosing, far from being haphazard, showed a sure instinct for what was truly living folk art... (Sellers 1978:11).

And at the time of her death Edward R. Murrow summed up her achievements, saying that she "put her love of folk art and her fellow humans into practice" (Sellars 1978:13).

The total solar eclipse of September 10, 1923, not only changed the lives of Amelia Elizabeth White and her younger sister Martha, but eventually resulted in important changes in Santa Fe as an anthropological and humanistic center. In order to see the eclipse in California the White sisters set out from their home in New York to cross the country in their Lincoln touring car, with the unforeseen results described below.

Amelia White was born in New York in 1878, the oldest daughter of Horace White, who as a young reporter in Springfield, Illinois, had interviewed a local politician named Abraham Lincoln. White's career in journalism eventually led to the editorship of the Chicago Tribune (Anonymous 1985). Amelia has been described as "a small person of incredible vitality" (Meadows 1986:11). Her interests included music, Indian health, dogs, art, archaeology, pack trips, amateur theatricals, and much else. While she and Martha stopped in Santa Fe on their way west in 1923, they purchased property on Garcia Street, then hardly more than a dirt trail. The Santa Fe painter William Penhollow Henderson designed the Whites' estate, which they named El Delirio, reflecting their delirious delight with their adopted home. The town's population was then less than 10,000 and El Delirio became a center for artistic and social activities of great variety and vitality, with guests as varied as Jacques Cartier, Harry Mera, John Sloan, and Sylvanus Morley (Love 1981: 8). The estate had Santa Fe's first swimming pool and tennis court. Amelia and Martha White introduced the first Afghan Hounds to the United States and in World War II the kennels on Garcia Street were used to train Dogs for Defense.

Long before this Amelia's interest in Indian art had led her to open an Indian art shop in New York City--at a time when Indian art was little known and poorly regarded. The store eventually failed and she donated
its inventory to museums that had little or no Indian art in their collections. Later, in Santa Fe, in 1925, she was one of the founders of the Indian Arts Pottery Fund (originally the Pueblo Pottery Fund), along with A.V. Kidder, Mabel Dodge Luhan, F.W. Hodge, Kenneth M. Chapman, Sylvanus G. Morley, and others (Schrader 1983:35, 311 n.35). Her interest in American Indians, which included long horseback trips to Indian dances, did not preclude a variety of other interests. She gave Santa Fe its first animal shelter in 1937, in memory of her sister, who died that year. "She also created the Garcia Street Club as a center of the arts, crafts, and theater for children and gave the city park on Old Santa Fe Trail" (Meadows 1986: 11).

Miss White's most important contribution to anthropology and art was in providing land and resources for three major local institutions. She donated the land on which Miss Wheelwright built her House of Navajo Religion and the land for the Laboratory of Anthropology (Babcock and Parezo 1978:48). On her death in 1972 at the age of 94, El Delirio, by her will, passed to the School of American Research. This permitted the School to move from a small house in downtown Santa Fe, to far larger quarters, making possible the expansion of staff, activities, and physical facilities of the 1970s and 1980s. All three of these institutions have achieved permanent places of importance not only in Santa Fe's cultural and scientific life, but on the national scene.

A recent discussion of Wheelwright, Bartlett, and White comments that all three were adventurous thinkers, world travelers, and generous benefactors. Born to wealth and privilege, they were brought up to be highly cultivated leaders of upperclass society. Yet it was the raw beauty of New Mexico that captivated them. Surrounded by the light-filled New Mexican landscape... each woman found the inspiration to make her dreams a reality... With the passing of Amelia Elizabeth White, a generation of remarkable benefactors ended. Yet their legacy continues, radiating across time. They forged their achievements with the tools of another era, but they achieved results of enduring relevance and value to humanity (Meadows 1986: 7,11).

Although each of our six women of vision was unique, giving of herself and her resources for goals of her own choosing, this appraisal of three of them is a fitting tribute to all six. It is doubtful that today so much of lasting influence could be accomplished by persons fulfilling their own individualistic dreams. Personal philanthropy has not disappeared, but now research and institutional support come from formal programs, whether they be in the dominant public sector or with the private foundations. All the women we have included here are familiar to Southwesternists, but it is only when considered together that their cumulative impact and influence on Southwestern anthropology can be fully felt.

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EARLY TRADE AND COMMERCE IN SOUTHWESTERN TEXTILES
BEFORE THE CURIO SHOP

JOE BEN WHEAT

Trade and commerce have been important aspects of Southwestern weaving since prehistoric times. When Coronado "discovered" the Southwest in 1540 he found a flourishing trade both in raw materials and in finished products. The Spaniards first encountered the Pueblo country at Zuni where Coronado reported that the Zunis "...do not raise cotton because the country is extremely cold..." (Hammond and Rey 1940:171). Nevertheless, the Zunis wove cotton "...bringing it from Totonteac (Hopi)," presumably trading for the raw material (Hammond and Rey 1940:159).

Most of the inter-pueblo trade that existed seems to have been carried out on a person-to-person basis for, almost in passing, the Relation del Sucesso notes that pueblos of the Rio Grande Valley have no markets, that is, no formalized or organized markets such as those held by the Aztecs in Mexico to which the Spanish were accustomed (Hammond and Rey 1940:288).

It is clear that the various garments of native "flax" that Coronado's men acquired at Zuni and those of cotton there and elsewhere were not acquired by trade, but rather as a form of tribute or bribe, often as a result of force or the threat of force. This is probably true, as well, of the Espejo expedition of 1582-1583, where many cotton mantas were "given" to Espejo. At Hopi alone "...they assembled between them more than four thousand cotton mantas, some colored and some white, towels with tassels at the ends, blue and green ores, which they use to color the mantas,..." (Bolton 1908:181). Later they were given guides and people to transport the 4000 mantas, which must have constituted quite a burden (Bolton 1908:181).

The first real information on trade, as such, also comes from the Espejo documents, where we are told that at Acoma the Querechos (probably Navajo) bring "...salt, game, such as deer, rabbits and hares, tanned deer skins, and other things to trade for cotton mantas and other things with which the government pays them," (Bolton 1908:183).

Presumably, some of the earlier Spanish expeditions had carried trinkets of various sorts for trade to the Indians, but it was not until 1598 when Don Juan de Onate undertook the permanent settlement of New Mexico that we have adequate records of such goods, together with inventories of supplies and equipment, taken to implement the settlement.

To barter with the Indians Onate included beads, combs, Bohemian knives, scissors, mirrors, shoemaker's needles, glass earrings, hawksbells, 680 medals of alloy, rings, thimbles, rosaries, necklaces, amulets, Texcoco clay whistles, glass buttons, small flutes, awls, and Paris trumpets. The only textile materials specifically indicated for barter were blue and white Castillian thread, Portuguese thread, fine yarn, and nine small hats (Hammond and Rey 1953:199-308).

In quibbling detail, the final inspection of the Onate party gives an insight into
what the Spanish deemed necessary to provision the new colony. It should also destroy the illusion that the Spanish depended almost entirely on Pueblo weaving to supply their clothing needs.

In 1598 there were 624 yards of cloth plus three rolls of unspecified length and 50 garments for people in Onate’s service alone (Hammond and Rey 1953:199-30). In the 1600 resupply there were 1833 yards of cloth plus 170 pieces of cloth, and 545 ready-made garments. The cloth included various kinds of cottons and woolens produced in Mexico such as Campeche manta, black taffeta, “native London Cloth,” sackcloth and others of mixed materials and various colors. Imported cloths included yellow, green, and iridescent taffeta from China, Holland and Rouen linen, fine Florence cloth, damask, satin, fine buckram, Monk’s cloth, silk grosgrain, and Sinamay. There was also an assortment of blankets, sheets, tablecloths, napkins, towels, as well as yarn, Chinese braid, Portuguese thread, and spun silk in all colors (Hammond and Rey 1953:199-308). The triennial and later annual supply trains from Mexico each included large supplies of cloth. Some cloth was also supplied by the pueblos.

If the Pueblo weavers were not major suppliers of cloth for Spanish needs, what was the significance of their loom products in the Spanish economy? Primarily, Pueblo woven mantas served as tribute; that is a form of taxation, reluctantly paid to the Spanish Crown or to the Religious, theoretically for services rendered to the Pueblos. The 1601 Valverde interrogation into conditions in New Mexico states that

"...every year armed soldiers and even the governor go in person from house to house to collect a blanket from each house or each Indian...The Indians, because of their poverty, part with these things with much feeling" (Hammond and Rey 1953:667). Sometimes blankets were taken by force, leaving their owners naked.

Slightly later, Pueblo mantas had become a form of currency. In 1613, Governor Pedro de Peralta issued decrees establishing payment for damages to Indians by the Spanish citizens in the form of mantas and maize. He fined one encomendero 50 mantas and 50 fanegas of maize for various offenses, whereupon "...seeing that the governor actually executed the decrees, the Indians, greedy for mantas, provoked and invited the Spaniards to commit acts of violence in order to claim damages" (Scholes 1937:40). Still later, because of the scarcity of metallic coin in New Mexico in the late 1700s, the manta became one of the items recognized as "pesos of the country" with a value equivalent to "32 cuartillos of aguardiente at El Paso," (Thomas 1932:113-114).

Pueblo mantas did enter into trade and commerce as well. Francisco de Baeza was Governor of New Mexico in the middle 1630s. "He imposed a heavy burden of labor on the Indians...in all the pueblos the Indians were forced to weave and paint great quantities of mantas, bunting, and hangings... The prices paid for the finished goods represented only one-sixth or one-eighth of the current local values. By the end of 1636 Baeza had accumulated such large quantities of pinon, hides, and locally manufactured goods that nine wagon loads were made
ready for transportation to New Spain" (Scholes 1937:107). The fate of those mantas specifically collected as tribute is not clear, but it is likely that they, like those woven by forced labor in the workshops, were sold in New Spain.

Long before Pueblo woven goods entered into Spanish commerce, however, they had been part of a trading pattern between the Pueblos and the buffalo-hunting tribes of the Great Plains. During the Valverde investigation of 1601 Joseph Brondate testified that the Pueblos did not trade among themselves and had no public places for trading (Hammond and Rey 1953:628). Captain Juan de Ortega testified that:

The Vaqueros come from the Buffalo Plains, which are located forty or fifty leagues from the camp. They come to the pueblos to trade meat, skins, tallow, and fat. They transport all this by loading it on dogs not much larger than water spaniels, which they have for this purpose and for carrying their tents. Most of the dogs are very white, others have black spots. The Indians pitch their tents, carried on the backs of the dogs, about three or four hundred paces from the pueblos, and the natives from the neighborhood come there to trade maize and blankets to the Vaquero Apaches, who on such occasions gather there to the number of four or five hundred... (Hammond and Rey 1953:660-661).

Throughout the Spanish colonies in the New World, it was common practice to introduce sheep to provide wool and looms for weaving into cloth and blankets to meet the everyday requirements of the Spanish colonists. From shortly after the beginning of colonization in 1598 the Spanish in New Mexico appear to have carried on weaving on the horizontal treadle loom. There is no reason to think that looms as such were transported from Mexico, but the knowledge of building and using them together with the sheep to supply them is evident. When the missions were established in the 1620s sheep were given to the Pueblos and one of the duties of the Friars was to train the Pueblos to weave in wool as they had in cotton (Towne and Wentworth 1945:29-30).

Whatever the original intent of the introduction of sheep and looms, commercial weaving very soon became a reality. When Luis de Rosas followed Baeza as governor in 1637 he also followed his example of exploitation of the Pueblos. However, he went a step further by establishing a workshop in Santa Fe. To supply the workshop and to give himself a greater monopoly on textile trade, Rosas seized looms [telarillos, i.e. big looms] from private citizens and used both Indian and Spanish labor (Scholes 1937:147). By 1639, Rosas had accumulated enough goods to make a shipment to Parral, Chihuahua, which included 19 pieces of Sayal, a coarse woolen cloth, each 100 varas (about 92 yards) in length, which could only have been woven on the treadle loom with warp and cloth beams. In addition to the Sayal, there were 49 wall hangings, 126 mantas, 350 large blankets, and miscellaneous other woven items (Bloom 1935:244-245). Thus, whether they wished it or not, both Pueblos and Spanish were involved in the production and trade of textiles.
early in the 17th century.

It is not known precisely when the Navajo learned to weave, but they began to acquire sheep about 1640 in raids along the Rio Grande in retaliation for slaving raids by the Spanish (Worcester 1951:106), raids which increased throughout the 1660s (Hackett III 1937:302). During the same period of time a number of Pueblos fleeing the Spanish in the Rio Grande Valley found refuge among the Navajo. It is probable that these refugees taught the Navajo to weave sometime in the latter half of the 17th century, before the Pueblo Revolt of 1680, for in 1706, less then ten years after the revolt was finally over, the Navajo had already made weaving a cottage industry and were actively trading their surplus woven goods to both the Pueblos and the Spanish settlers. Two documents make this clear.

In 1706 Governor Francisco Cuervo y Valdez stated that the Navajo "...cultivate the soil with great industry, sowing corn, beans, squash, and other seeds, such as those of chile, which they use, having found them in the towns of our Christian Indians of this Kingdom. Yet this is nothing new among these Apaches, for whenever they are sedentary they do the same things. They make their cloths of wool and cotton, sowing the latter and obtaining the former from the flocks which they raise (Hackett III 1937:382)." The Rabal Document is the report of an interrogation of a number of persons who had visited the Navajo country in the period between 1706 and 1743 (Hill 1940:400-440). The report makes it clear that as early as 1706 the Navajo were exchanging basketry, leather, and woven goods, both of wool and cotton, to the Pueblos and Spanish for other articles that they needed. While some of the exchange took place in the camps of the Navajo, it is also evident that the Navajo were attending the trade fairs with their goods. Thus it would appear that the Navajo had mastered weaving during the last half of the 17th century, for by the beginning of the 18th they had embarked on the textile trade in which they became an important factor during the 19th century.

Throughout the 17th century New Mexico was a mission field and the Pueblos in the Rio Grande Valley had been forced to contribute their share of woven goods as taxation to their Spanish overlords. After the Pueblo Revolt and the Spanish Reconquest, New Mexico became a Crown Colony. By 1744 the Spanish settlers in "The Villa of Albuquerque and Village of Atrisco" in the Rio Abajo appear to have established weaving centers. "Both together have something more than a hundred families who are employed in planting and weaving hose and blankets..." (Hackett III 1937:400).

The Pueblo Indians became citizens. Nevertheless, during the mid-1700s the Pueblos were still being given wool by the governors and other civilian officials and forced to process the wool and weave hundreds of blankets, and knit quantities of stockings, which were then disposed of by the government officials (Hackett III:400-485). The western Pueblos carried on a healthy trade with the tribes living farther west and south. In 1746, Sedelmayr reported that: "The...Moquis, who go at times to trade with the Cocomaricopas of the Colorado...went into temporary camps to trade with them..." (Ives 1939:112,
This trade continued into the last half of the 18th century, for the Anza and Garcia diaries of 1774, and Font's diaries of 1775 and 1776, make it clear that the Papagos and Yumas living along the Gila and lower Colorado rivers and the Yavapai of western Arizona wore blankets of black, blue, and white stripes, and blue cloth which they obtained from the Moqui (Hopi) in trade through the Mojaves (Bolton 1930:47, 167; 320). Some of the Yuma traded their blankets to the Spanish soldiers for glass beads (Bolton 1930:107).

Meanwhile, Navajo trade in textiles was being used as a weapon. During the 1770s and 1780s the Spanish were trying to keep the Navajo at peace by separating them from their Gila Apache kinsmen (Thomas 1932). In 1785, in an attempt to put pressure on them the Spanish barred the Navajo from trade with the Pueblos until they turned against the Gila Apache. Once they had done this "...the governor ordered them rewarded opening to them as a sign of appreciation and as a stimulus to the continuation of similar acts, commerce and communication with the pueblos of the province which he had closed to them," (Thomas 1932:260). In addition, money was asked for to provide gifts "...in scarlet cloth, colored bayeta, long sheathed knives, and bridles" (Thomas 1932). As further reward the Navajo were also granted permission to attend the Commanche trade fair at Pecos Pueblo in 1786 (Thomas 1932:350).

Ugarte, in 1786 proposed to Anza that the colonists be encouraged to deal fairly in trade with the Navajo, not to cheat too much, and proposed that tariff regulations be drawn

Figure 1. Common "fresada corriente" Spanish Colonial blanket of the mid-19th century. Patched with Spanish "Jerga." Such fresadas sold for about two dollars in the 1830s. (W/TXC-5).
up to that effect (Thomas 1932:357). He also proposed that the Spanish intermarry with Navajo women, especially with daughters of chiefs to bind them closely to the Spanish: "Perhaps the frequency with which our Christian Indians go and come to their [Navajo] rancherias and they respectively to the pueblos for reasons of commerce, will produce the desire, as well as the protection with which they may see that your lordship safeguards these marriages, dispensing to those who contract them all the advantages and benefactions possible in the places which they might elect for their establishment and residence" (Thomas 1932:357).

The attempt to encourage Navajo weaving continued, for in 1788 Vicente Troncoso escorted Antonio El Pinto, a Navajo headman just released from prison to his village. Troncoso noted that the Navajo women "...make the best and finest serapes that are known, blankets, wraps, cotton cloth, sashes and other <things> for their dress and for sale... (A) proposition I made them ... in order to stimulate them more to work with the interest it will produce for them, which is in essence, their sarapes being so appreciated even by the presidial officers, they might make as much as they can until the departure of the wagon train <to Chihuahua>, they might deliver them to me so that I might send them to be sold and with the proceeds bring them spun wool of several colors in order that with these making them more showy they would command a better price and <be of> equal utility, it seeming to them very well that my plan be executed..." (Correll 1979:85-87). The same document shows the Navajo using imported cloth of cochineal or scarlet, some of which appears to have been raveled and rewoven since "...their dress is of two blankets of black wool with a colored <word illegible> border..." (Correll 1979:85-87).

Only seven years later (1795) Governor Chacon remarked that the Navajo "...work their wool with more delicacy and taste than the Spaniards," (Bloom 1927:233). At any rate, specimens recovered from Massacre Cave show that by 1804 raveled cloth - bayeta - was being rewoven in fine Navajo textiles (Amsden 1934:140). The source of this early bayeta is unknown but in being a thin-threaded worsted yarn, dyed with lac, rather than a thick-threaded woolen yarn dyed with cochineal, it does not correspond to traditional English baize (Wheat 1984:17). Other early raveled yarns may well have come from bayetas or bayetones woven in the Rio Grande Valley (Bailey and Haggard 1942:35,223).

During the late 18th century there appears to have been in the Rio Abajo a continuation of the weaving industry of the mid-1700s, for the census of 1790 lists nearly a hundred professional weavers supported by 37 carders and 16 spinners all in the vicinity of Albuquerque (Olmstead 1975). Furthermore, many of the haciendas and estancias of the lower Rio Grande Valley had some weavers. By contrast there were listed for the entire Rio Arriba only one carder and two weavers, all resident in Santa Fe (Olmstead 1975).

In August 1803, Governor Chacon wrote that:

With respect to arts and trades, it may be said with propriety that there are none in this Province,
there being no apprenticeship, official examination for master-workman, any formality of trades-unions, or other things customary in all parts, but necessity and the natural industry of these inhabitants has led them to exercise some, for example weaving in wool;...The first work on racks narrow bayetones (thick napped baize), long fresadas (blankets), Sarapes, bayetas (thin unnapped baize), sayal (sackcloth) and gergo (carpeting) which weaves they color with indigo and Brazil nut which they import from the outer country, and with some stains and herbs which they know. From cotton they make a kind of domestic sheeting (manta),... (Bloom 1927:233-234).

Because of the poor state of Spanish weaving, especially in the Rio Arriba, the government sent, in 1807, Don Ignacio Bazan and his brother Juan from Mexico City to Santa Fe to instruct the local weavers in proper methods of spinning, designing, and weaving, both in wool and in cotton (SANM:15,16).

Five years later, the Exposicion of Don Pedro Bautista Pino presents a clear picture of the situation in 1812 (Bailey and Haggard 1942). According to Pino:

There is no manufacturing in the Province of New Mexico other than that of wool and cotton. Necessity has compelled the people to weave baize (bayetones), serge, blankets, quilts, zarapes, baize, sackcloth, coarse frieze, cotton hose, and table cloths...within recent years we have witnessed the introduction of fine looms for cotton by an expert sent there by the government. He has given instruction to many people in a remarkably short time. Although I call this fine weaving, I do so with reference to that which was formerly woven, for this fine cloth is hardly better than coarse goods in comparison with the fine materials from China, with which we are familiar...Traders are compelled to export products at their own risk and expense and to seek purchasers in other provinces. In order to go from this province to others it is necessary to join a caravan of 500 or more men; for whoever dares to go out with a smaller number is in great danger...These caravans generally congregate in the month of November (Bailey and Haggard 1942:35-36).

Within a relatively short period of time after the Bazan brothers had completed their training, Spanish weaving had become even more important to the regional economy. New weaving centers were developed in the Rio Arriba to go along with those of the Rio Abajo, and a major trade in woolen textiles developed. New markets were found and old ones expanded, and although coarse woolen cloth of various kinds continued to be made, it was the blanket in all its varieties which became the major item of trade.

Gregg gives a good picture of blankets and the trade:

The New Mexicans are celebrated for their manufacture of coarse blankets, which is an article of considerable traffic between them and the southern provinces, as
also with the neighboring indians, and on some occasions with the United States. The finer articles are curiously woven in handsome figures of various colors. These are of different qualities, the most ordinary being valued at about two dollars apiece, while those of the finest texture, especially their imitations of the sarape Navajo, will sell for twenty dollars or more. There have also been made in New Mexico a few imitations of the Sarape Saltillero, - the blanket of Saltillo, a city of the south celebrated for the manufacture of the most splendid fancy blankets, singularly figured with all the colors of the rainbow. These are often sold for more than fifty dollars each (Gregg 1954:147-148).

During the first half of the 19th century the principal market for New Mexican blankets was in Northern Mexico. The annual caravans carried thousands of sarapes, sarapes atilmadas, fresadas corrientes, frasadas de cama, and other items. The records of this commerce is mainly in the Guias (export permits) in the Spanish and Mexican Archives, and although by no means complete, present an idea of the quantity of goods produced and sold.

Most Spanish weaving took place in the haciendas. The shepherd sheared the sheep and his family spun the yarn, dyed it, and wove it into the yard goods or blankets, which were then taken to the Chihuahua trade fair in the winter to be sold or exchanged (Bailey and Haggard 1942:41). By the late 1830s, thousands of blankets
were being woven every year and most of them were being sold in Chihuahua. In 1837 one family transported three sarapes, two frasadas, one colcha, and 37 varas of Sabanilla; another had 300 fresadas corrientes, 200 varas of gerga, and 11 sarapes altísmados; and still another 1,020 sarapes (MANM, 24:767, 798, 801). The next year, 1838, in addition to quantities of yard goods there were more than 6200 Spanish blankets and some 25 Indian blankets. Eight shipments consisted of less than 10 blankets, and there was one consignment of 1100 sarapes (MANM: 25). In 1840, there were almost 21,000 sarapes and fresadas listed including 16 sarapes labeled as "importantes." Several guías list fewer than 10 sarapes or fresadas, and one lists 2,300 sarapes corrientes, with other figures falling in between (MANM: 28). This market continued beyond 1846 when the Americans took over New Mexico, but it is difficult to assess, since we lack the appropriate trade records.

A second market for Spanish woven goods existed in California. This market began in 1829 when a route was established from Abiquiu in New Mexico to the Los Angeles area of southern California (Hafen and Hafen 1954). The trade was started by New Mexicans, but within a short time American traders joined in the enterprise (Hafen and Hafen 1954:170). Originally, sarapes and fresadas were taken to exchange with the Indians of California for beaver skins and other peltry, but the blankets were traded to the Spanish rancheros for mules and horses (Hafen and Hafen 1954:171). In addition to the livestock, the New Mexicans sometimes carried back silk and other Chinese goods. On one occasion, Jim Waters brought home a load of Abalone shells to be traded to his Indians for beaver pelts (Hafen and Hafen 1954:189). The usual rate of exchange was two blankets for a horse or mule. The caravan normally consisted of about 200 men. Few records exist to show the magnitude of the trade, but the caravan of 1833-1834 took 1645 sarapes, 341 fresadas, 171 colchas, and 4 tirutas (Hafen and Hafen 1954:179). If this figure of about 2100 blankets was near average then over the years the trade existed some 40,000 Rio Grande blankets found their way into California. The last major caravan was in the winter of 1847-48 and consisted of 212 men and boys driving 150 mules laden with blankets and other goods, upon which they were required to pay duties (Hafen and Hafen 1954:191). Most of the mules acquired in this trade were driven across the plains to Missouri (Meining 1971:19).

With the opening of the Santa Fe trail in 1821, Spanish blankets and other woven goods went east. There had long been some trading of Indian and Spanish blankets to the various Indian tribes of the Great Plains. Now, furs, livestock, specie, and even some wool were received in payment for the cotton cloth and other goods transported across the Santa Fe trail by the Americans. "Occasionally, a few loads of coarse Mexican blankets, in some demand on the Missouri frontier, were imported" (Stephens 1917:303). Jerga was in common use for wrapping bales of cargo in the Santa Fe trail trade as well as the California and Chihuahua trade.

The sale of Spanish blankets
to the Plains tribes continued through mid-century. In the winter of 1858-59 "...the Dakotas bought Mexican blankets of John Richard, who brought many wagon-loads of the Mexicans" (Mallery 1893:569). Mallery's figure #809, taken from the Winter-Count of Cloud Shield, depicts a long striped blanket with fringe at the end, a distinctive Spanish trait.

After the United States took over control of New Mexico in 1846, a new customer for Spanish blankets appeared. This was the United States Government, itself, through whatever group was currently in charge of Indian affairs. It had been customary for the Indian agents to give the leading men of the Southwestern tribes English Mackinaw blankets (USNA:T21-2), and this practice continued well into the 1870s (USNA:T21-2-19) . Very quickly the government agents recognized that the locally woven Mexican blankets could be purchased and issued in quantities, not just to the Headmen, but to most of the Indians except the Navajo, who after all, wove their own superior brand of blanket.

In July 1853, Agent Benjamin J. Latz issued eight Mexican blankets to the Apaches and Comanches (USNA:T21-1). This was, in fact, the first distribution; it was a small beginning for what became a major aspect of Indian-Government relations. The following year, Governor and Indian Superintendent Merriwether requested 600 Mexican blankets to be purchased in New Mexico at $2.00 each. In November, 200 of these were issued to the Gila Apache (USNA:T21-25), with the rest, presumably, having been issued to the other Apaches, Utes, and Comanches. In February 1855, Navajo agent, Henry L. Dodge bought two Mexican blankets for his charges, and a little later, merchant Henry Connelly offered the Indian Department 52 common Mexican blankets at $1.75 each and 36 good blankets for $2 1/2. The 36 good Mexican blankets were purchased to be delivered to the Gila Apache, and the common blankets were not purchased (USNA:T21-2).

From 1856 through 1874 a minimum of 21,946 Mexican blankets were purchased by the Indian department for distribution to the Mogollon, Mimbres, Mescalero, Gila, Coyotero, and Jicarilla Apaches, to the Navajo (on two occasions), the Wiminuche, Tabahauache, Capote, and Moache Utes, Paiutes (only a few), and to the Pueblo Indians (USNA:T21-1-16;M234-547-567). Based on the numbers requested and the records of distribution, the actual number purchased for the Indians probably was something over 35,000 blankets during the 18-year period. In 1860, 1079 blankets were distributed to the Tabahauache and Moache Utes at Conejos Agency, and 1280 were issued to the Capote Utes and the Jicarilla Apache at Abiquiu Agency. Distribution points included Forts Stanton, Union, Thorn, Camp Apache, agencies at Cimmaron, Abiquiu, Conejos, Ojo Caliente, Tecolote, Maxwell's Ranch, Bosque Redondo, and the Pueblo Agency in Santa Fe, as well as the Superintendency Office in Santa Fe where blankets were issued to visiting Indians (USNA:various).

In late October 1867, 4000 Mexican blankets were authorized for purchase and distribution to the Navajo at Bosque Redondo. By the time the purchasing agents visited the weaving centers, however, the regular demands for the Utes and Apaches had
nearly exhausted the supply and so only 975 were actually purchased and distributed to the Navajo. Furthermore, because "...Thousands of blankets have been shipped to Colorado Utah California Arizona <sic> - Mexico -" there had been a difficulty in filling the order for the Utes (USNA: M23-554,-555). This statement suggests that, even though we have few data on actual transactions, the trade with Mexico and the California west continued beyond the American takeover in 1846.

The vast majority of the blankets purchased by the Indian Department appears to have been woven in various villages in the Rio Arriba. Some of these were Abiquiu, El Rito, Tierra Amarillo, Cimmaron, Las Vegas, San Juan, and Plaza de Alcalde. There is no mention of a weaving center at Chimayo or of any in the Rio Abajo. Blankets were purchased in lots of something less than 100 up to 600, these quantities usually reflecting the output of a single weaver or a small group of weavers. When purchased from retailers in Santa Fe or Albuquerque, from one to 36 were bought (USNA: various).

A crisis developed in 1870, when not enough blankets were woven to supply the needs of the Indian Department. "The people have stopped the manufacture of blankets, as it is more profitable to them to sell the wool" (USNA: M234-557). Only about 325 blankets were bought even though 2500 had been requested (USNA:T21-11,12; M234:557). In 1871, only 800 of 2300 blankets requested could be found and American commercial blankets were substituted for the others (USNA:T21-15; M234-558). American blankets were used again in 1872, but in 1873, 555 Mexican

Figure 3. Hopi Blanket. Such blankets were woven for trade with tribes west and south and for domestic use. (W/ TXP-3).
Figure 4. Navajo sarape of about 1860. In the mid-19th century, such sarapes sold for about fifty or sixty dollars. (UCM 26620).

blankets were bought for the White Mountain Apache. Only 400 Mexican blankets are recorded for 1874. The end seems to have come in 1875, when a contract was let to furnish blankets with a thread count of at least four threads to the inch, but when the blankets supplied had only two "...simply carded rolls of wool without being spun or twisted," the blankets were rejected, and no more appear to have been requested (USNA:T21-16;M234-563,567).

Between the coming of the railroads in the 1880s and the turn of the century the Spanish-Mexican weaving of utilitarian textiles for the local market had practically ceased. Instead, the Hispanic weavers of the Rio Arriba became producers of a new category of decorative textiles, the Chimayo blankets, for tourist consumption.

The market share of weaving held by the western Pueblos appears to have continued into the 19th century with some modifications, for in a report on the missions of 1808, Custos Josef Pereyro stated that Laguna, Acoma, and Zuni (there was no mission in the Hopi villages) weave various items to "...clothe themselves, and to trade with the settlers and Indians of the other pueblos," and the Rio Grande pueblos had no "industries" besides planting (Boyd 1974:205-206). Boyd takes this to mean that the Rio Grande pueblos were no longer weaving at all. However, virtually every contemporary observer points out that these pueblos were in fact weaving for their own use, as did James in 1821 (James 1962:89), Gregg in 1844 (Gregg 1954:193), Meriwether in 1853 (USNA:M234-546), and others. According to research carried out among the Rio Grande pueblos in the 1930s by the
late F.H. Douglas and published in a series of leaflets by the Denver Art Museum (Leaflets 89-95), most of them continued to weave blankets and other fabrics up until 1870 to 1890. The western pueblos continued to weave and to trade textiles well into the 20th century. However, today, aside from the weaving of sash belts for the curio trade, only the Hopis continue to weave to supply the other pueblos with ceremonial fabrics.

Pueblo trade with the Plains Indians continued to some extent. During the 1860s trading permits were issued to traders from Santa Clara and Santo Domingo to trade with the Comanche (USNA:T21-5,T21-6). We do not have inventories of the trade goods carried on these expeditions, but it is possible that Pueblo woven goods were taken along. In any case, for the most part the pueblos used their own blankets for everyday uses but traded for Navajo blankets to be used on dress up occasions (Stevenson 1904:372).

By early in the 19th century the Spanish government had succeeded so well in its encouragement of Navajo weaving that, in 1812, Pino (Bailey and Haggard 1942:133) was led to state that "...their wool manufactures are the most valuable in our province and in Sonora and Chihuahua." This is, in itself, a very interesting statement, which raises the question, in what way were Navajo textiles the most valuable? It is clear from the export records that numerically, Hispanic weaving far exceeded that of the Navajo. When 6200 Spanish blankets were shipped to the Chihuahua fair in 1838, only 26 Indian textiles seem to have been taken. In 1840, almost 21,000 Spanish blankets were listed but no Indian blankets, unless the 16 "sarapes importantes" were in fact important Navajo sarapes (MANM:25,28).

When compared to the common run of Spanish blankets, which averaged about two dollars each, the Navajo blanket was far more expensive. Gregg stated that the Navajo "...manufacture a singular species of blanket, known as the Sarape Navajo, which is of so close and dense a texture that it will frequently hold water almost equal to gun-elastic cloth. It is therefore highly prized for protection against the rains. Some of the finer qualities are often sold among the Mexicans as high as fifty or sixty dollars each," (Gregg 1954:199). Perhaps Pino was referring to the value of the individual weaving.

Many Navajo blankets were traded into the Great Plains. Chief Blankets were in particular demand by the Plains tribes and the Utes, finding their way as far north as the Blackfoot by 1833 (Bennett 1981:62-69). The winter of 1858-1859 was shown in a number of Winter Count paintings as "Many-Navajo-blankets winter" according to Mallery (1893:325; Fig.415). The blankets were introduced by traders out of New Mexico.

The Navajo themselves carried on trade with some customers. W.C. Powell, who spent the winter of 1871-1872 in the Hopi villages trading for specimens for the government, mentions that from time to time, Navajo traders come to trade blankets to the Hopi, and speaks of "...meeting now and then scattered bands of Navajos on trading expeditions, bound to the white <Mormon> settlements" (Powell 1948:49,480).

Most trade in Navajo blankets, however, was carried out by itinerant traders who exchanged
various domestic goods for Navajo blankets. Navajo blankets were "...used as a medium of traffic with the itinerant traders from the Rio Grande" (Backus 1856:212). "There are no fixed traders among the Navajoes. The few sent to their country in 1851 and 1852, were itinerants with roving licenses" (Backus 1856:214). Typical was the expedition of August Lacome in 1852 (USNA:M234-546). Lacome took indigo, knives, copper wire, handkerchiefs, tobacco, coffee, lead (for bullets), shovels, copper pots, sugar, buffalo and elk hides, Mexican bayeta, and other goods, loaded on seven mules to trade with the Navajo. A month later Lacome returned with some unsold goods, six mules, six horses, 18 deer skins, and 70 blankets, assorted.

Throughout the American occupation and settlement of New Mexico and the Southwest, the Navajo blanket was considered to be a superior product, with a steady demand for all that could be obtained. There is, however, very little information on how many Navajo blankets were woven each year, especially for the earlier periods. In 1871 F.T. Bennett wrote to the Superintendent of Indian Affairs he estimated that "...the number of blankets made will probably average at least 6,000 a year," (USNA:M234-558).

When the Navajo returned to their home country after Bosque Redondo they had become accustomed to the wearing of commercial clothing or clothes made from the cotton and light wool fabrics provided by the Government. Over the years, less and less of their weaving effort was required to clothe themselves. New markets were needed. The seeds that finally led to the production of fabrics for sale to outsiders began at least as early as Bosque Redondo. In 1863, the Navajo Che and his wife, Paulonia <Polonia> were not sent to the Bosque because Paulonia was employed by Lt. Col. Chavez to weave blankets (Kelly 1970:59). Twelve years later Major J.V. Laudervale had Navajo weavers working for him at Ft. Wingate (Pepper n.d.). By the time that Don Lorenzo Hubbell and J.B. Moore began their work with the Navajo near the turn of the century, the Navajo had been supplying the curio trade for three decades.

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The interested and meticulous, lifelong resident of Gary, Indiana, transplanted recently in Santa Fe, was puzzled. She had inquired about the name of the De Vargas Mall and been directed to the Museum of International Folk Art. There, she noted that the text accompanying an exhibit about the Santa Fe Fiesta repeatedly used the form Vargas, while the printed artifacts on display almost all had De Vargas (Pierce 1985). Which, she wanted to know, was correct—Vargas or De Vargas?

There is no question about the correctness of the form Vargas in Spanish. That is the way don Diego de Vargas (1645-1704) used it in his day (Vargas 1695), and that is the way one looks him up in a Spanish encyclopedia in our day, under V, not D (e.g., Diccionario Enciclopedico Salvat 1964; Diccionario de historia 1968; Diccionario Porrua 1964-76). In New Mexico, however, the form De Vargas or de Vargas (with or without the space between De and Vargas), found on businesses, public buildings, and streets, and in a variety of books published by the University of New Mexico Press, has become an accepted regional variation. Very well, but how and when did this come about, the woman from Gary persisted.

Don Diego Jose de Vargas Zapata y Lujan Ponce de Leon y Contreras, Spanish nobleman, governor, and recolonizer of New Mexico in the 1690s, signed the first of his surnames invariably Vargas.

The form of the name implies that it originally derived from a place: Diego from Vargas. There is a village called Vargas in the province of Santander in extreme north-central Spain and a town spelled Bargas (where the carved and inlaid credenzas or desks known as barqueños or varguenos were made) in the province of Toledo (Enciclopedia universal 1907-30). The suggested etymology of the word is quite diverse. In different regions, a varga or barga (plural: vargas or bargas) may mean or may have meant: a straw hut or haystack; a framework of poles for drying fruit; a fenced field used for cultivation in the summer but also, when flooded in the winter, as a fish trap; a hill or slope; or a kind of fish (Corominas 1980-83; Garcia de Diego 1954).

Certain of don Diego's contemporaries, as well as later writers, spelled the surname Bargas, which in Spanish means the same thing and is pronounced precisely the same way as Vargas. No one, it would seem, used De Vargas until nearly the turn of the 20th century.

Susan Wallace, a proper, Victorian lady who came out from Indiana in 1879 to exotic Santa Fe to visit her husband, Gov. Lew Wallace, learned of don Diego de Vargas by chance. To occupy some of her time, she helped the Territorial librarian, Samuel Ellison, dry out and preserve the mistreated and rainwater-damaged Spanish Archives of New Mexico. In so doing, she came to despise the man who figured in so many of the documents. "The brutal instincts of this Vargas (whom I hate, and the judicious reader must hate too)," she wrote in her book, The Land of the Pueblos, "hardened and intensified with
increasing power and advancing years....His position allowed immeasurable sweep for cruelty which we may be sure he enjoyed to the utmost" (Wallace 1889: 137).

Adolph F. Bandelier, the pioneer Swiss-American ethno-historian who came out from Illinois to New Mexico for the first time in 1880, just missing Susan Wallace, would have politely disagreed with her. "Vargas," in his opinion, "was energetic in action, but not cruel" (Bandelier 1880:123). The point here is that both Wallace and Bandelier used the form Vargas, as had writers before them. Among the latter, making it Vargas or Bargas, were Josiah Gregg (1844:Vargas Zapata); W.W.H. Davis (1856: Bargas; 1869: Vargas); James F. Meline (1868: Bargas); and John Gregory Bourke (1881: Vargas).

Vargas remained the preferred form in New Mexico until the 20th century. In 1883, the former chief justice of New Mexico and then president of the Historical Society, L. Bradford Prince, later an irresolute convert to De Vargas, was content with Vargas throughout his Historical Sketches of New Mexico from the Earliest Records to the American Occupation. Others who rendered the surname in the same traditional form were Samuel Ellison (1884), Hubert Howe Bancroft (1889), Charles F. Lummis (1893), Francisco de Thoma (1896), and Archbishop J.B. Salpointe (1898).

Yet, by the 1890s, De Vargas had begun to appear, seemingly as a result of the romantic notion that the preposition conveyed heightened aristocracy, as it can in French, Italian, or German. De Soto had long been popular in the southeastern United States (e.g., Irving 1835)--in Spanish, it is Soto, Hernando de. (The tendency to include the preposition if an article is part of the surname accounts for De la Madrid in contemporary Mexican newspapers.)

In 1891, New Mexico educator Horatio O. Ladd, in The Story of New Mexico, entitled Chapter IX "Campaigns of Vargas and His Successors," and then referred to his subject repeatedly, but not exclusively, as De Vargas. The form De Vargas appeared 32 times, and Vargas 10, suggesting the possibility that a not-very-thorough copy editor at D. Lothrop Company in Boston, not Ladd himself, may have made it De Vargas.

Walter W. Storms, too, in The Story of New Mexico, Briefly Told (1897), used de Vargas. By 1900, former Territorial Governor Prince had swung over to De Vargas (Prince 1900). Aware that there were two forms, writer George B. Anderson, in History of New Mexico: Its Resources and People (1907), could not decide which was the more appropriate. He used them both. The score: De Vargas 10, counting chapter title and running heads, and Vargas 7.

The man who set New Mexico firmly on the path to the De Vargas form, however, seems to have been Ralph Emerson Twitchell, Esq., attorney, self-trained historian, and romantic.

Twitchell's The Leading Facts of New Mexico History, Volume 1 (1911), led the parade of statehood, pre-World War I histories that established De Vargas as the popular favorite in New Mexico. Here, since he was following--almost copying--Bancroft, who used the Vargas form consistently, Twitchell made the conscious choice to be different. Not much later, as coauthor with Dr. Frank H. Roberts, presi-
dent of the New Mexico Normal University, he furthered the cause of De Vargas in History and Civics of New Mexico (1914).

Marching to the same drummer, meantime, and missing only an occasional beat, was fellow lawyer Benjamin M. Read, in Historia Ilustrada de Nuevo Mexico (1911), Illustrated History of New Mexico (1912), and Popular Elementary History of New Mexico (1914). Read's use of De Vargas in his Historia Ilustrada, a work in Spanish, resulted in an aberrant, double possessive: la historia de De Vargas.

Prince, for some reason, hedged. In A Concise History of New Mexico (1912), The Student's History of New Mexico (1913), and Spanish Mission Churches of New Mexico (1915), he employed both forms indiscriminately.

What Twitchell's rule was is hard to say. He did not style Juan de Oñate, founder of the New Mexico colony in 1598, De Oñate (Twitchell 1919), but De Baca, De la Cerda, De la Concha, De la Croix, De Soto, and other similar constructions appear in his works. Curiously, it does not seem to have been Twitchell who made De Anza of 18th century Gov. Juan Bautista de Anza, at least not at first (Twitchell 1911). (Whoever named the De Anza Motor Lodge on old Route 66 in Albuquerque may have got the idea from Santa Fe's De Vargas Hotel, opened in 1924.) Twitchell's role, from 1911 on, as a major booster of a revitalized Santa Fe Fiesta, featuring a reenactment of don Diego's entrada of 1692, put him in a position to influence his contemporaries all the more.

From the teens through the 1920s and into the 1930s, the works of the above mentioned and other authors, propaganda for the burgeoning Santa Fe Fiesta, and the appearance of the name De Vargas on buildings, made it the popular form. During the mid-1930s, however, the most scholarly studies yet written on the subject of Diego de Vargas began to appear in print. Their author, J. Manuel Espinosa, wrote his doctoral dissertation on Vargas under the direction of Prof. Herbert Eugene Bolton at the University of California, Berkeley. At least nine articles followed; as well as an edited volume, First Expedition of Vargas into New Mexico, 1692 (1940); and the solidly documented narrative, Crusaders of the Rio Grande: The Story of Don Diego de Vargas and the Reconquest and Refounding of New Mexico (1942). Espinosa did not hedge. He used the form Vargas throughout.

Since Espinosa, most members of the scholarly community have stayed with Vargas, while most popular writers have favored De Vargas. Without listing all their works, New Mexico historians who have preferred Vargas include George P. Hammond, Lansing B. Bloom, Frank D. Reeve, Cleve Hallenbeck, Warren Beck, and Paul Horgan. Other authors of New Mexico histories have perpetuated De Vargas, among them Charles F. Coan, Myra Ellen Jenkins and Albert H. Schroeder, and Marc Simmons.

Some historians have switched, notably Fray Angelico Chavez, whose earlier works, including "De Vargas' Negro Drummer" (1950), contained that form, while everything since Origins of New Mexico Families (1954) has it Vargas. Simmons, too, changed over to Vargas between New Mexico: A Bicentennial History (1977) and Albuquerque: A Narrative History (1982).
Documentary editors, too, have split. Charles H. Lange, Carroll L. Riley, and Elizabeth M. Lange, whose monumental, four-volume edition of *The Southwestern Journals of Adolph F. Bandelier* (1880-92) appeared between 1966 and 1984, chose the De Vargas form in their progressively helpful and voluminous notes, even though Bandelier always wrote Vargas. Lansing Bloom, on the other hand, editing the Southwestern notebooks of Bandelier's contemporary, Capt. John Gregory Bourke (1881), preferred Vargas (Bloom 1939), as Bourke did. The staff of the long-term Vargas Project at the University of New Mexico, looking toward the publication of a seven-volume, scholarly edition in English translation of the journals of Diego de Vargas (with microfiche of the Spanish transcripts), uses Vargas.

Today in New Mexico we are heirs to two forms, Vargas and De Vargas. Why should we not recognize them both, celebrating in this small way the cultural variety we cherish in so many other areas? Recently, in the excitement over the upcoming Columbian Quincentennial, someone in Florida reiterated the suggestion that discarding DeSoto in favor of Soto would be a positive contribution to the observance.

Surely no one in New Mexico, anticipating 1992, which by fortuitous concurrence is also the Vargas (De Vargas) Tricentennial, will propose a return to the form Vargas on the grounds of imagined purity. Not only are there all those signs for the De Vargas Mall in Santa Fe and all that letterhead, but also in the residential section of the March 1986 Santa Fe telephone directory, besides the 13 individuals and families listed under Vargas, there are 4 who spell their name DeVargas. (The most recent directory in Albuquerque has 65 entries under Vargas and 5 under DeVargas; in Taos, 18 and 2; and in Las Vegas, 1 and 0.) To remove the De from Vargas would be, in my opinion, as inconsiderate as stripping the pitched, tin roof off the church at Santa Cruz de la Cañada so as to "early it up."

So, to the woman from Gary, let us respond ambivalently. Which is correct--Vargas or De Vargas? It is Vargas in Spain and most of the Spanish speaking world. It is De Vargas to many in New Mexico. The choice is hers. With either form, she is in good company.

Editor, The Vargas Project University of New Mexico

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This paper premises substantial agricultural activities among the Gila Apaches of southwestern New Mexico at an early time. It is well known that the Western Apaches in Arizona grew crops, and there is good evidence that farming was also important to their kinsmen in New Mexico as well. Warfare during the 1770s and 1780s brought crop cultivation there to a virtual halt. The Spaniards in the early 19th century and the Southern Apache Indian agent in the 1850s tried to make peaceful farmers of the Apaches. Both attempts failed. The evidence for all of these efforts is presented here.

In the 17th and 18th centuries the Apache groups that lived west of the Rio Grande and south of the Navajo Indians were called Gila Apaches, or more often simply Apaches. The Spaniards introduced distinctions among these Gila Apaches beginning in the late 18th century so that by the early Territorial years we hear of the Mimbres, Mogollon and Copper Mine Apaches in southwestern New Mexico. These bands were collectively known as the Southern Apaches. The names Warm Springs Apaches and Ojo Calientes are later, reservation-period terms first used in the early-middle 1870s (Wilson 1985: 6ff).

Further to the west, the Chiricahua Apaches made their home in the Chiricahua Mountains of southeastern Arizona and the Coyotero or Western Apaches resided along the Gila River east of about where Coolidge Dam now rises and on certain tributaries of the Salt River. These distinctions—Southern, Coyotero or Western, and Chiricahua—correspond with the terminology in reports from the mid-19th century and with approximate divisions recognized by the Indians themselves. Only the Gila Apaches and their descendants within New Mexico, the Southern Apaches, are considered here.

Modern descendants of the Southern Apaches have told anthropologists that their people farmed and also had irrigation in pre-reservation times (Opler 1965:372-374). This tradition may be a long one. As far back as 1630 the Franciscan prelate in New Mexico, Fray Alonso de Benavides, claimed that the Apache nation "... had no cultivated fields but lived by the hunt - although lately we have broken ground for them and taught them to sow" (Forrestal 1954:45). These Indians were either quick students or Fray Alonso's knowledge about them improved rapidly, since his 1634 Memorial reported that "...although their [the Apaches] chief sustenance is derived from hunting, they also plant much corn" (Hodge et al. 1945:81).

Later in the 17th century the Spaniards were concerned almost entirely with Apache raiding, not with their home life. One exception was when New Mexico Governor don Diego de Vargas set out from El Morro, east of Zuni, to return to El Paso in December of 1692. After traveling one league his guide, a Zuni Indian, told don Diego that a mountain visible in the distance, the Pena Larga, was where the Apaches Colorados had
their rancheria and that they planted maize (Espinosa 1940:238).

Apache Indians, including the Gila Apaches, frequently raided south into Mexico during the early 18th century but very little was known about their own lands. Finally in 1747 and again in 1756 Spanish presidial soldiers and their Indian allies scoured the Mimbres and Gila River countries for hostile Apaches. The 1747 expedition was in the field for three months but it wound up a fiasco. Years later Father Vélez de Escalante heard some details about it, including a claim that the San Francisco River below the box canyon, six leagues above its junction with the Gila River, entered a little hollow where one found "...various rancherías of Apaches who cultivate the valley and with the aid of irrigation, harvest much yellow corn," (Thomas 1932:155; Kessell 1971:135-139). Seven years later a Zuni war party evidently reached the middle San Francisco valley, where they discovered "...a little river and on its banks various Apaches who do not roam about or have horses but much yellow corn," (Thomas 1932:156).

In the latter part of 1756 more than 300 soldiers, settlers and Indian auxiliaries from Sonora and Chihuahua penetrated the Gila Apache country once more. The chaplain, Father Bartolomé Sáenz, left an eyewitness account. He was particularly impressed with the country near Todos Santos, which is the area around present-day Cliff and Gila, New Mexico, and the Cañada de Santa Lucía, this being the nearby Mangas Valley. There, "The Apache plant plots of maize from Todos Santos along the entire Rio Gila and in the Cañada de Santa Lucía," (Kessell 1971:149). He saw pueblo ruins and also an irrigation ditch at Todos Santos, but did not say clearly whether this ditch was prehistoric or one in current use by the Apaches (Kessell 1971:147).

Another generation passed and the frontier garrisons in northern New Spain were reorganized, bringing don Hugo O'Conor to the fore as Commander-Inspector of the northern provinces. He campaigned extensively against the Gila Apaches from 1772 to 1776. In early October of 1775 he set out from el paraje del Muerto on the Rio Grande in southern New Mexico and moved generally to the west, finding two cultivated fields a little beyond a place called San Cristóbal. Then he crossed over to the Rio de los Mimbres, where he discovered "...an infinity [infinitas] of cornfields sown by the enemies, and many old huts in which, it is known, they live during harvest-time," all of this somewhere in sight of the peak called the Picacho de los Mimbres (Thomas 1932:11-13; Navarro García 1964:239).

O'Conor and his commanders dealt the Apaches a series of devastating defeats that year and the next. Sometime later he laid out a plan for a campaign that would require ten divisions, from various presidios, to operate in unison. Three of these detachments would unite at a place called el Alemán, north of Janos in northern Chihuahua, and then as quietly as possible,...so as not to be seen beforehand by the enemy, they will reconnoiter the Sierra de la Acha [Hachita Mountains] where, as in the places previously indicated, they will surely
find the enemy making mes-cal, which is a large part
of their sustenance. Provided with what they need
for consumables, they [the Apaches] take their families
to the Sierra de los Mimbres about the middle of April
in order to sow their maize, beans and squash in
the cañasadas of the same range. This likewise
presents an opportunity for their punishment (Gon-
zález and Almada 1952:102). O'Connor's strategy focused
upon disrupting the native and cultivated food resources as
well as punishing the Indians directly.

Spanish troops penetrated the same country a number of
times in the early 1780s, sometimes without finding Indians.
No one ever again described farming on the scale that O'Connor
saw it. When New Mexico Governor Fernando de la Concha scouted
the Gila Apache lands in 1788, he struck the upper Mimbres

...We encountered the beginnings of a stream
which soon becomes a river and further down a cornfield
of the enemy which they had abandoned. It was
already half matured and I had the green ears pulled
off the stalks and trampled by the horses before the
eyes of three Apaches who were on top of the mountain
(Feather 1959:297).

Further down the valley and after crossing the river
seven times he came to one more cornfield. The Governor men-
tioned no fields in other valleys. A remarkable map pro-
bably made in 1803 showed a Labor de Pachetijá at the
approximate location of the spring now known as Apache
Teju, south of Hurley, New Mexico. Labor implies an
irrigated field and Pachetijá was the name of a Gila Apache
cliff during the 1770s (Pazaurtunda 1803; see also Thomas
1932:15-16).

Extensive campaigning by the frontier military in the 1770s
and 1780s brought heavy losses to the Gila Apaches and disrupted
their reliance upon agriculture. Antonio Cordero estimated in
1796 that the Gileños had lost three-quarters of their forces
in the recent wars and that the Mimbrenos had been reduced by
more than half (Matson and Schroeder 1957:352-353). These
two groups were ready to pledge themselves to peace, which they
did around the middle of the year 1790 (Moorhead 1968:199).

A decree issued four years earlier was then in the course
of being implemented. Not only was the frontier military reor-
ganized (again) but a new Indian policy came into effect that
endured for the balance of the colonial period and through the
first decade of Mexican independence. This policy was the
creation of reserves or peace establishments for all Apaches
who would agree to settle in peace near the presidios of the
border zone, which stretched from Coahuila to Arizona.

The essential element of these peace establishments was the
issuance of rations once a week to heads of households.
Apaches living within a four-
league radius of a presidio
were eligible to receive rations
of corn or wheat, meat, brown
sugar, salt, cigarettes and
sometimes other items. This
was expensive but by the adminis-
trators' calculations the price
was lower than the toll of lives
and property exacted by Apache
raids on Spanish settlements,
added to the cost of punitive
campaigns by the military. The Spaniards judged the peace establishments a success, one estimate being that from one-half to two-thirds of the Mescaleros, Chiricahuas and Southern Apaches were brought under the peace establishment system. The Janos presidio, one of the principal reserves, rationed upwards of 800 Apaches in the early years but after 1796 the weekly counts dropped to between 200 and 400 Indians (Griffen 1985).

To help the Apaches become civilized and also to reduce the expense of rationing, the policy sought to teach Apache men to support themselves agriculturally. There were some problems with implementing this, particularly in getting lands for the Indians, so that farming got off to a slow start. Nonetheless, a serious - and diplomatic - effort was underway at Janos by 1803, the Indian men agreeing to apply themselves diligently, but instead being content to watch the corn grow (Griffen n.d.). The results seem a bit curious since the same Indians had presumably been successful farmers in the 1770s. The Spaniards considered the Apache men to be too lazy to take up manual work, but their indifference can also be seen as a consequence of the ration system. With ample foodstuffs, issued regularly, there was no incentive for Apaches at the peace establishments to take up farming. Weekly rations were discontinued in 1832 because of the expense, whereupon the Apaches began abandoning the presidios and resumed their raising. As recently as 1835, Mexican officials engaged in peace negotiations got the Apaches at Santa Rita del Cobre to agree to grow corn (Griffen n.d.).

With the Mexican War and opening of the American period, most Apaches considered that they had already been at war with Mexico for 15 years. References to Apache agriculture in southwestern New Mexico virtually ceased. Captain A.R. Johnston mentioned that "we found two small patches where the Apaches had made corn" as General Kearny's troops came at Santa Lucía late in 1846 (Johnston 1848:579). Instead of returning to farming after they left the presidios, the Apaches developed (or really just enhanced) an economy based primarily upon raiding and collecting. Mexico's government could not exact retribution on the scale the frontier armies had done in the past century. The situation continued, with the Apaches generally having the upper hand.

The Southern Apaches initially did not create problems for Americans; the '49ers who took the southern route to California as well as many who followed them crossed southern New Mexico undisturbed. Early in 1852 the U.S. Army established a post, Fort Webster, at the old Santa Rita del Cobre, but in September of that year they moved it a few miles east to the Mimbres Valley. At about the same time, although by coincidence, William Carr Lane was inaugurated as New Mexico's second territorial governor and Edward H. Wingfield arrived as the first Southern Apache Indian agent.

Lane was ex-officio Superintendent of Indian Affairs for New Mexico and it was partly in this role that he toured southern New Mexico. On April 5, 1853, he wrote a letter from Fort Webster that announced a new policy, one that would continue for some years after his administration ended - I have just
concluded some important ar-
rangements, by which the Apache
Indians of this region, have
consented to abandon a nomade
life, & engage in agriculture.
(Bieber 1928:194).

Under instructions from the
Governor, Wingfield brought about
300 Mimbres Apaches under Ponce
and other chiefs in to Fort
Webster and contracted with his
interpreter, one Francis Fletch-
er, to plant a farm for them on
the Mimbres bottomlands. The
farm program limped through
that year with no more than 25
acres of irrigated cornfields
under cultivation. The modest
harvest had to be parcelled out
among 13 Apache bands. That same
summer the Governor removed Wing-
field from office, charging him
with mismanagement. The former
agent protested his dismissal,
but in vain. One of Lane's
severest criticisms was that
the lands on the Mimbres would
not accommodate the Indians who
were already there, yet the
agent had brought Mangas Color-
do's people and other bands
from their homes on the Gila
River over to the Mimbres.
"Has the agent been Insane?"
the Governor asked (Wingfield
1854; Thrapp 1974:29-37;
University of New Mexico Library,
Special Collections, Lane to
Steck, July 11, 1853, Steck
Papers, Box 1 Folder 1; Steck to
Collins, July 26, 1857, Steck
papers, Box 2 Folder 5 [collection
cited hereafter as "Steck
Papers"]).

By October he was more opti-
mistic. Although they were de-
situte,

The first year at the
Southern Apache Agency had been
a shaky one, but Dr. Michael
Steck became the Indian agent
in May 1854 and he remained for
seven years. Steck established
his agency near Fort Thorn, a
new garrison on the Rio Grande
several miles above present-day
Hatch, New Mexico. During his
tenure, Steck consistently
encouraged the Southern Apaches
to become farmers. The year
1857 was an exception as most
of the Apaches decamped to Janos
to wait out Col. B.L.E. Bonne-
ville's Gila Expedition that
summer.

Steck was no novice at
farming. Early in 1853 he had
tried to get the Jicarilla
Apaches in northern New Mexico
to participate in a similar
agricultural program (Tiller
1983:41-43). The Southern
Apaches were interested and
remained on the Mimbres in
1854, but Steck had very little
to offer them except encour-
agement. In August he wrote

With regard to their farming
operations on the Mimbres
they are very limited and
not likely to be productive
of much good. About fifteen
acres in different patches
have been planted most of
which has been entirely
neglected probably from
the want of implements and
some one to encourage them
(Steck to "Sir", August
22, 1854; Steck Papers,
Box 1 Folder 3).

The Gila Apaches seem
anxious to commence the
cultivation of the soil. All
their principal men
have expressed a willing-
ness to do so and as proof
of their sincerity I saw
in my recent visit to
their camps many acres of
land that had been planted
by them this season. But
inasmuch as they have not
Figure 1. Map of proposed Gila Apache Reservation, 1860. Each side of the reservation is 15 miles long. Present Cliff, N.M., is slightly north of center. The "Old Fort" is Col. Bonneville's depot from his 1857 Gila Expedition. (Courtesy Bureau of Land Management, New Mexico State Office.)
been fed by the Govt. they have been compelled to leave their fields in order to obtain food. They have planted their corn with sticks (as not even a hoe has ever been furnished them to work with & all without an agent or anyone to instruct or encourage them. Under these disadvantages it could not be expected that their farming operations should prosper, yet not withstanding all these disadvantages they have many small patches that they have kept clean with sharp sticks and will yield them some recompence for their labor (Steck to Meriwether, October 4, 1854; Steck Papers, Box 1 Folder 3).

Perhaps not all of their old knowledge of farming had been forgotten after all. Steck, at this period, used the name Gila Apaches as synonymous with Southern Apaches. As an incentive to encourage them to farm, Dr. Steck issued rations, primarily of corn and beef (Reid 1935:171-172, 177; Schroeder 1974:161).

In 1855 the agent proposed to clear off and plant a field for each principal man of the Gila Apache tribe, and he even assisted himself (Steck to Meriwether, April 13, 1855; Steck Papers, Box 1 Folder 4). On April 13th Steck reported that I returned yesterday from a visit to the camp of Cuchillo Negro who is encamped about 45 miles N.W. of this place [Fort Thorn]. He has selected an excellent place for planting on the head of the Rio de los Animos and his Band has cleared without assistance about three acres of land which is now ready for planting (Steck to Meriwether, April 13, 1855; Steck Papers, Box 1 Folder 4).

One month later Steck wrote again to say that he was planting on the Mimbres River as well, for Mangas Colorado, Delgadito, Itan, the family of Ponce and others (Steck to Meriwether, April 13, 1855; Steck Papers, Box 1 Folder 4; Steck to Meriwether, May 9, 1855, Steck Papers, Box 1 Folder 4). Governor Meriwether had allowed him $750 to assist the Mimbres Apaches in planting, and with this money I succeeded in planting a field of corn for the heads of fifty-three different families - principally from the camps of Delgadito & Itan - & Cuchillo Negro & Rinion - some however in each of the different bands. Such as have planted during the whole summer have remained about their fields and show a disposition to do all in their power to make a successful experiment. They cleared off their grounds, assisted in planting and have since watched and tended their fields - and from present prospects they will be richly rewarded for their labour (Steck to Meriwether, July 20, 1855; Steck Papers, Box 1 Folder 5).

The bands of Cuchillo Negro and Rinion totaled 30 lodges and 152 persons while all together the Mimbres Apaches numbered 187 lodges and 893 men, women and children. At the end of the year, Steck proclaimed farming operations in 1855 "successful beyond my expectations (Michael Steck, Quarterly Report dated December
As a result of this success, his funds for 1856 were doubled. With these monies the Mimbres band placed about 200 acres under cultivation, planting and attending the corn mainly with their own hands. The agent contracted with Ammon Barnes of Doña Ana to provide seeds, teams and laborers for 35 days or longer to assist the Indian Agent "in preparing lands, digging Asequias and planting for Mimbres Apache Indians (Michael Steck, Annual Report, August 1856; agreement with Ammon Barnes, April 1, 1856; Davis to Steck, April 21, 1856; Steck Papers, Box 2 Folder 1). Again the Apache farm was a success. Most or all of the farming seems to have been done on the Mimbres, where by the end of June agent Steck had five men assisting the Indians with irrigating and hoeing corn (Steck to Manypenny, June 1, 1856; Steck to Meriwether, June 30, 1856; Steck Papers, Box 2 Folder 1). After the harvest was in, he reported that farming that season "was attended with entire success" but he gave no details (Steck to Manypenny, December 10, 1856; Steck Papers, Box 2 Folder 3). That year too there were Southern Apaches farming quite independent of Steck's efforts. St. Vrain said that the Mogollon Apaches had cornfields on the Rio Prieto [San Francisco River], the Valle del Nogal at the foot of the Mogollon Mt., and on the Culebra River (Schroeder 1974: 173).

When spring arrived in 1857, as many as 600 of the Mimbres Apaches were at Janos, collecting occasional rations and apparently lulling the Mexican government into thinking that this was a revival of the peace establish-ments. What the Indians were really doing was getting out of the way of Colonel Bonneville's Gila Expedition, the most ambitious U.S. military operation in southwestern New Mexico before the Civil War. The Indians may have made a poor choice, in that many of them died in Mexico from disease and as a result of what Steck, a physician by training, believed were the symptoms of arsenic poisoning (Thrapp 1974:53-58; Griffen 1985:191). The agent dropped any idea of planting on the Mimbres, but he did open a farm for the Mescalero Apaches that year for the first time. The location was at Nuestra Señora de La Luz, about five miles north of present-day Alamagordo, New Mexico (Michael Steck, Annual Report, August 7, 1857; Steck Papers, Box 2 Folder 5. Mescalero Apache farming prior to the reservation period is reviewed in Wilson 1987).

Matters had quieted by 1858 and the remainder of the Mimbres band returned to their old farm on the Mimbres River. Steck also arranged for some of them to plant on the Rio Palomas, about 35 miles from the agency (Steck to Collins, April 20, 1858; Steck Papers, Box 2 Folder 6). This was partly for convenience: The poorer portion of the Band such as have no horses have planted upon a stream about thirty five miles N.W. of this agency - being near they are enabled to attend their fields and come in regularly for their rations. ...the fields of those look very promising. Corn, Beans, pumpkins, & melons several inches above the ground and look very promising (Steck to Collins, May 27, 1858; Steck Papers, Box 2 Folder 6).
As of August the Mimbres and Mogollon bands had about 150 acres under cultivation on the Rio Mimbres and in the Rio Palomas valley, "and in a state of cultivation that will compare well with any cornfield in the country, and all by their own labor, except the breaking up of the land, digging and repairing of their acequias," (Annual Report of the Commissioner of Indian Affairs ... for the Year 1858:197).

One more year passed and the Mimbres band had lost many of its people, while the Mimbres Valley was rapidly being preempted by miners and settlers. Steck moved the Apache farm to Santa Lucia, since renamed Mangas Springs, in 1859-1860. In 1859 he reported that the Indians had a large amount of land under cultivation in that pleasant, well-watered valley, while Brevet Major W.H. Gordon visited Mangas Colorado's camp there and then passed down to the Gila River "through their crops, which extended some three miles in length, and are in fine condition," (Annual Report of the Commissioner of Indian Affairs ... for the Year 1859:345; Thrapp 1974:60-64).

As to what was harvested that year and how the farming program went in 1860, we know only that Steck let his usual contract to a civilian (Esteban Ochoa) for plows, oxen, seeds, experienced workmen etc., to plant for the Mimbres and Mogollon Apaches at Santa Lucia (Instructions, M. Steck to Ochoa, March 17, 1860; Steck Papers, Box 3 Folder 2. Annual Report of the Commissioner of Indian Affairs ... for the Year 1860:161; Thrapp 1974:65-66). A reservation was surveyed but never formally declared.

When 1861 came around, the Southern Apaches were at war with the settlers and miners who had been invading their country and soon drove many of these people back to the Rio Grande. Michael Steck was absent in Washington, D.C., although still the Indian agent. Texas had seceded in February and the Civil War was about to explode. Indian farms were no longer a consideration. Instead an unrelenting Indian war raged until 1869. Never again did the Southern Apaches live in the valleys of the Rio Mimbres and the upper Gila River.

Several conclusions can be drawn from the foregoing. One is that through most of the 18th century the Gila Apaches of southwestern New Mexico had a substantial reliance upon agriculture, including the planting of extensive fields and the use of ditch irrigation. Their farming capacity was probably about equal to that of the Coyotero or Western Apaches along the Gila River and its tributaries in Arizona during the middle 19th century. In both cases the necessary skills were indigenous; neither group was ever missionized and they had consistently hostile relations with the Spanish settlers to the south except during the period of the peace establishments. Spain's frontier armies campaigned extensively through southwestern New Mexico in the 1770s and 1780s, thoroughly disrupting the Gila Apaches there but leaving the Western Apaches untouched. A few years later it was primarily Mescalero and Southern Apaches who drew rations at the peace establishments. While these reserves were in operation, the Indians had little incentive to return to farming.

The Spanish peace establishments and Michael Steck's Apache Indian farms had a number of parallels. Success at both,
such as it was, depended upon the Indians receiving regular rations of food. Here the Spanish program was better funded and certainly longer-lived; it also appears to have attracted more Indians that did Steck's. Both programs sought to convert the Indians into peaceful farmers, and had equal lack of success in the end. So long as the Apaches were free to roam as they chose, they had the last word on any policy. When the rations stopped, the Indians resumed raiding the frontier settlements.

Steck's programs were well intended but contained elements of disruption. From its inception, his system of rationing the neophyte farmers drew the Apaches closer to their agency and also further east. Schroeder (Schroeder 1974:190) pointed out that by bringing Mangas Colorado's band to the Mimbres River, agent Wingfield had disturbed the normal territorial ranges of the Copper Mine and the Mimbres Apaches. When Steck subsequently removed the agency to Fort Thorn, he drew about half of the Mimbres band to that vicinity where they had no sources of food except rations. The rationing system was rather precariously balanced, being dependent upon an annual governmental appropriation, and if the Indians ran short of food while their crops were maturing, the obvious solution was to provide for themselves by raiding someone else. The Indian agent saw farming as the solution to the Indians' periodic food shortages, while the Indians evidently perceived the farms as something to be tolerated so that a regular supply of rations would continue. In either event, without rations the farming program failed.

Apparently no one in the U.S. Army or the New Mexico Indian Superintendency was aware that Spain and then Mexico had sought to induce the Southern Apaches (and others) to become peaceful farmers, scarcely a generation or two before the Americans came upon virtually the same idea. What frontier officials in all of these nations realized was that it was cheaper to feed the Indians than to fight them. Teaching them to grow their own food was even better.

If the idea of peace establishments or Indian farms has a father, it was probably the first captain of the Janos presidio, General Juan Fernández de la Fuente. Back in 1692, when the country still belonged to the Indians whom the Apaches subsequently displaced, Fernández convinced several of these groups to return to their own lands while the Janos Indians would settle near the presidio and support themselves on mescal and seeds until it was time to plant their crops. Meanwhile the captain requested financial support "to regale them properly" and preserve the peace (Forbes 1960:234-235). Instead of peace, Fernández soon found himself on another campaign. To some of the later commanders at Janos and to Michael Steck, this would have been a familiar story.

Las Cruces, N.M.

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INTRODUCTION

When site BJ 74 was selected for excavation by Reiter, he hoped that the small, readily identifiable pueblo would be, first, older than and ancestral to the nearby pueblo of Unshagi, and, second, an important link between the Anasazi people of the Mesa Verde and the Jemez region of New Mexico. Neither of these hypotheses was verified. Instead, the site contained a surface, that probably served as a shrine and was overlain by a small pueblo. The latter was built after the arrival of the Spanish and abandoned during the last half of the 17th century.

Location

BJ 74 is situated in Sandoval County, 80 km north of Albuquerque, New Mexico. (Figure 1). In this area, the high plateau along the west side of the Jemez Mountains has been dissected by the Jemez River and one of its major tributaries, the East (or South) Fork. The site lies on the north side of the East Fork and 122 m above it.

Several other sites are situated in the immediate vicinity of BJ 74. The nearest one, BJ 73, is 230 m to the west and at the same elevation. Half a kilometer farther west and at a slightly lower elevation, a terrace bears a series of contiguous rectangular rock outlines, which served as field grids, and a large boulder with an elaborate, but now mutilated pictograph. The large prehistoric and historic pueblo of Unshagi lies 1.7 m downstream (Reiter 1938).

Geology

BJ 74 is associated with a small rhyolite outcrop, which is a result of either Late Tertiary or Early Quaternary volcanic activity. The face of the outcrop is divided into two distinct vertical sections. In the western half, the flow and subsequent erosion created a small rock overhang under which an occupational surface and a small, five room pueblo was constructed (Figure 2). Here, the lower portion of the exposed rhyolite leans slightly outward and appears as a rough wall with a number of vertical fissures of varying size and depth. The upper portion of the rhyolite flow projects nearly horizontally over Rooms 1 and 3 and part of Rooms 2, 4, and 5 and then continues its more vertical outward lean. A steep, grass-covered talus slope flanks the west edge of the outcrop; so, currently, under wet conditions, runoff and waterborne debris from this area threaten Rooms 2 and 4.

The entire eastern half of
the rhyolite outcrop is nearly vertical (Figure 3). Along its far edge, grass-covered talus raises gradually along the base of the rhyolite and eventually reaches the top of the face.

Where the two sections of the rhyolite outcrop meet, the geological formation is very complex. At the lower level, the sections are connected by a rhyolite mass which juts out from the western face at approximately a right angle, then angles to the southeast, and finally joins the west end of the eastern face. The upper surface of this connecting mass dips away from the rim and in combination with adjacent rhyolite walls and ceiling creates a sizable pocket which had been used as a natural storage facility. At a higher level, the rhyolite wall of the western section extends into the pocket, then curves almost 180°, and eventually terminates at a large vertical fissure (40.0 cm). The latter, which extends across the roof and back into the flow to an unknown depth, creates a crude rhyolite column on the south side of the pocket. Above the pocket, the overhang ceiling dips to the east and parallels the floor.

Originally, the ground surface in front of the nearly vertical eastern section was flat, much higher than that of the other section, and was bordered by a huge rhyolite boulder and several smaller ones. These fell from the face and are now embedded in detritus. In the western section, the original ground surface must have appeared as an uneven depression, which reached its lowest elevation beneath Room 1. Along the depression's eastern flank, tops of large roof spalls probably projected above the accumulating debris.

To the west, the ground rose and blended into the adjacent talus slope.

Across the top of the entire outcrop, the slope, which is grassed, gradually rises to higher volcanic exposures.

Aside from the protective overhang, a second attractive physical feature is situated 75 m downslope and south of BJ 74. Here gradually sloping talus converges on a permanent hot spring and an adjacent seep. The former, known locally as McCauley's Spring, remains at 33.0° C. throughout the year.

Ecology

Elevation of the site is 2290 m above sea level; and, at present it lies within the Transitional floral zone. Ponderosa pine (Pinus ponderosa Laws) and grasses are dominant. Below the spring and seep, grasses, bushes, and flowers border the narrow watercourse. Elsewhere, in the vicinity of the site, moisture for other plants is supplied by melting snow and by rain falling primarily in July and August.

Charcoal, wood samples, needles, and cones from the site indicate that site occupants exploited not only the Upper Sonoran and Transitional floral zones, but the higher Canadian zone as well. Pinyon pine (Pinus edulis Engelmann), a diagnostic Upper Sonoran tree, is identified most frequently; but ponderosa pine, a Transitional type, occurs with the next greatest frequency. Other species of trees are represented by fewer specimens. Those associated with the Upper Sonoran zone include juniper (Juniperus spp), Gambel oak (Quercus gambelii Nutt.), Wavy-leaf oak (Quercus undulata Torr.) and possibly Gray oak (Quercus
Table 1. Roster of human skeletal specimens from BJ 74

<table>
<thead>
<tr>
<th>Burial</th>
<th>Age category and years</th>
<th>Sex</th>
<th>Cranial condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>39:1</td>
<td>infant, ca 1</td>
<td>undetermined</td>
<td>slight lambdoidal deformation at an intermediate angle</td>
</tr>
<tr>
<td>39:2</td>
<td>adult, 35-39</td>
<td>male (?)</td>
<td>slight lambdoidal deformation at an intermediate angle</td>
</tr>
<tr>
<td>39:3</td>
<td>infant (neonate?)</td>
<td>undetermined</td>
<td>poor</td>
</tr>
<tr>
<td>39:4</td>
<td>infant (fetus or neonate?)</td>
<td>undetermined</td>
<td>poor</td>
</tr>
<tr>
<td>39:5</td>
<td>adult, 30-39</td>
<td>male (?)</td>
<td>missing</td>
</tr>
<tr>
<td>39:6</td>
<td>adult, 30-39</td>
<td>female</td>
<td>fragmentary, probably deformed</td>
</tr>
<tr>
<td>39:7</td>
<td>infant, ca 1</td>
<td>undetermined</td>
<td>poor</td>
</tr>
<tr>
<td>39:8</td>
<td>adult</td>
<td>probably female</td>
<td>fragmentary</td>
</tr>
<tr>
<td>39:9</td>
<td>adult</td>
<td>probably female</td>
<td>missing</td>
</tr>
<tr>
<td>39:10</td>
<td>young adult</td>
<td>probably female</td>
<td>missing</td>
</tr>
<tr>
<td>49:1</td>
<td>child, ca 4</td>
<td>undetermined</td>
<td>pronounced lambdoidal deformation, asymmetric to the left</td>
</tr>
<tr>
<td>49:2</td>
<td>sub-adult, ca 17</td>
<td>female (?)</td>
<td>fragmentary</td>
</tr>
<tr>
<td>49:3</td>
<td>sub-adult, ca 19</td>
<td>undetermined</td>
<td>fragmentary, deformation (?)</td>
</tr>
</tbody>
</table>
grisea Liebm.). Douglas-fir (Pseudotsuga taxifolia Britton), Engelmann spruce (Picea engelmanni Parry), probably limber pine (Pinus flexilis James), and quaking aspen (Populus tremuloides Michx.) are typically associated with the higher Canadian zone. Diffuse porous hardwoods, like water birch (Betula occidentalis [Hook] Sarg.), willow (Salix spp), and probably cottonwood (Populus spp) grew along the streams. New Mexico locust (Robinia neomexicana A. Gray) and some unidentifiable ring porous and semi-ring porous hardwoods from shrubs are also included in the sample. Several monocotyledonous fragments, namely, reed grass (Phragmites communis) and small puffballs (Geaster spp) have been identified. The presence of narrow leaved yucca (Yucca navajoa) also suggests Upper Sonoran flora.

SITE UTILIZATION

Evidence of human activity under the rock overhang appears in two strata: an underlying Occupational Surface and a more recently constructed small pueblo.

The Occupational Surface

A utilized surface underlay all of Room 1, parts of Rooms 2, 3, and 5, and the area immediately in front of Room 1 and part of Room 2. Its eastern edge was limited by the presence of partially exposed large pieces of roof fall and the western edge by talus.

Several features were associated with this nearly flat, but unplastered surface. Remnants of two upright wooden posts were situated near the front but on opposite sides of the area. One of the charred pieces, measures 10.0 cm in diameter and 22.7 cm long; and, at the time of excavation, 10 cm of the post remnant still stood above the original ground level. The other post, 7.5 cm in diameter and 35.6 cm long, was positioned near the east edge of the surface and in close proximity to the boulders. How much of this post had been buried is uncertain.

Near the center of the occupational surface, four upright oak twig bundles, each about 20.0 cm long, had been aligned slightly east of north and spaced about 30.0 cm apart. Twig bottoms had been pressed into the unplastered surface.

An unlined, circular firepit, 38.2 cm in diameter and 22.9 cm deep, had been dug into sterile soil. Ash and charcoal filled the pit and overflowed onto the adjacent surface to a depth of 7.5 cm.

The Pueblo

The south-facing, single-storied pueblo consisted of five rooms and a walled but unroofed area. With the exception of Room 5, rooms utilized the rhyolite outcrop as a north wall; moreover the offset between the two major sections of the rhyolite face formed part of the east side of Room 3. apart from filling some small fissures in Room 4 with mortar, surface irregularities in the volcanic flow remained unmodified.

Masonry walls were poorly constructed, noticeably out of plumb, and wavy. Basal stones were typically set in shallow trenches; but, in the east wall of Room 3, some construction began directly on unmodified rock. In Rooms 2 and 4, bases and lower portions of the west
<table>
<thead>
<tr>
<th>Measurement</th>
<th>Male</th>
<th>Female</th>
<th>Probably</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>(mm)</td>
<td>39:2</td>
<td>39:5</td>
<td>39:6</td>
<td>39:8</td>
</tr>
<tr>
<td>Clavicle length</td>
<td>140.0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Femur bicondylar length</td>
<td>406.0</td>
<td>437.0</td>
<td>390.0</td>
<td>425.0</td>
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<tr>
<td>Femur head diameter</td>
<td>39.5</td>
<td>41.5</td>
<td>37.5</td>
<td>41.0?</td>
</tr>
<tr>
<td>Humerus length</td>
<td>290.0</td>
<td>327.0</td>
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<tr>
<td>Humerus head diameter</td>
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<tr>
<td>Radius length</td>
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</tr>
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<td>Tibia length</td>
<td>325.0</td>
<td>378.0</td>
<td>325.0</td>
<td></td>
</tr>
<tr>
<td>Ulna length</td>
<td>226.0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Stature (cm)</td>
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<td>168±2</td>
<td>about</td>
<td>158.0</td>
</tr>
<tr>
<td></td>
<td>160.0</td>
<td></td>
<td>152.0</td>
<td></td>
</tr>
</tbody>
</table>
walls were built on and against talus. Some basal stones in walls between Rooms 2 and 4 as well as Rooms 3 and 5 were raised to accommodate the skulls of Burials 39:7 and 39:8, which were encountered when the walls were built. In addition, an upright slab was placed along the north side of the skull of 39:7, further breaking the horizontal masonry pattern. Crude single coursed masonry was combined with uncoursed stones; and stones forming corners were seldom bonded. Furthermore, stones were set in large amounts of mortar, but only a few chinking spalls were utilized.

Readily available tuff, basalt, and rhyolite stones and boulders were used without additional shaping or were prepared by removing large spalls until they reached an advantageous shape and size. Within the walls of the pueblo, building stones varied considerably in size (e.g., the largest 1 m maximum dimension, had been incorporated in the crude east wall of Room 3). In the walled area, the east wall combined partially buried, unmodified rhyolite rock fall, large stones, and some crude, supplementary masonry. The entire south wall consisted of a huge rhyolite boulder.

At the time of excavation of Room 1, multiple layers of smooth finishing plaster still clung to the lower portion of the east and west walls, especially adjacent to the rhyolite face. In Room 5, three layers of plaster, totaling 1.3 cm, were present on several wall sections.

In Rooms 1 and 3, walls reached the low overhang, and smoke stains on the rhyolite wall and ceiling clearly outlined Room 1. While Rooms 2, 4, and 5 had been at least partially covered by the overhang, it was too high to be used as a ceiling. Currently, low wall remnants in these rooms precluded determination of ceiling elevations, but roof timbers must have been socketed in the east and west wall since no attempt had been made to anchor vigas into the rhyolite face. This viga orientation was confirmed by the presence of four charred wood specimens, 4.5 to 6.4 cm in diameter, lying horizontally in Room 2 fill. Three fragments, lying parallel to each other and having a north-south orientation, lay at right angles to a fourth piece of wood, which probably served as a viga.

The only existing doorway was in the south wall of Room 1. The top of the stone sill stood 31.8 cm above the uppermost floor; and across the bottom of the doorway, the opening was 45.8 cm wide. Unfortunately, adjacent walls were not high enough to indicate the overall shape or size of the opening.

Floors were identified in Rooms 1, 2, 3, and that part of Room 5 which was protected by the overhang. During occupancy of Room 1, residents used three different floors; surfaces of the lower and middle floors were separated by 5.1 cm and the middle and upper floors by 15.2 cm. Plaster had been applied in as many as four layers. While thick undercoats, 0.6 to 5.1 cm, contained yellow or gray materials, floors were finished with a thin, fine-grained, tan or gray plaster. Surfaces were discolored by usage, and some greasy patches were noted on the lowest floor of Room 1. Breaks in the floor plaster marked subfloor interments. While Room 4 may have been floored when the pueblo was
<table>
<thead>
<tr>
<th>Provenance</th>
<th>Culinary Plain</th>
<th>Indented Blind-Corrugated</th>
<th>Jemez Black-on-white</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pueblo</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Room 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fill and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>upper floor</td>
<td>121</td>
<td>14</td>
<td>55</td>
</tr>
<tr>
<td>Middle floor</td>
<td>36</td>
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<td>29</td>
</tr>
<tr>
<td>Lower floor</td>
<td>19</td>
<td>10</td>
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</tr>
<tr>
<td>Unspecified</td>
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<tr>
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<tr>
<td><strong>Room 2</strong></td>
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<tr>
<td>Floor</td>
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<tr>
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<td>13</td>
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</tr>
<tr>
<td>Sub-Total</td>
<td>18</td>
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<td>9</td>
</tr>
<tr>
<td><strong>Room 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fill</td>
<td>11</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>Floor</td>
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<td></td>
<td>5</td>
</tr>
<tr>
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</tr>
<tr>
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<td>27</td>
</tr>
<tr>
<td><strong>Room 4</strong></td>
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<tr>
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<td>23</td>
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<td>8</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>23</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td><strong>Room 5</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fill</td>
<td>8</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Floor</td>
<td>18</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>26</td>
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<td>6</td>
</tr>
<tr>
<td><strong>Yard</strong></td>
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<tr>
<td>Sub-yard</td>
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</tr>
<tr>
<td>Unspecified</td>
<td>7</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>27</td>
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<td>8</td>
</tr>
<tr>
<td><strong>Occupational surface</strong></td>
<td>7</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td><strong>Walled Area</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unspecified</td>
<td>11</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Trenches across trash</strong></td>
<td>391</td>
<td>84</td>
<td>215</td>
</tr>
<tr>
<td><strong>Spring</strong></td>
<td>4</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td><strong>Unknown</strong></td>
<td>14</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>733</td>
<td>154</td>
<td>421</td>
</tr>
</tbody>
</table>
occupied, no plaster was found in this heavily eroded area.

In the northwest corner of Room 1, a large pit, 122.2 x 91.4 x 20.4 cm, was associated with the upper floor. During construction, builders cut through the middle floor, and utilized the lowest floor as a base. A median wall divided the pit into two long troughs. The pit was walled with rhyolite on the north, wall masonry on the west, and earlier room fill on the other two sides. Stone slabs reinforced the south wall, and the entire pit was plastered. In the northeast corner of Room 5, a crude, rectangular bin, 35.5 x 33.0 x 22.8 cm, was defined by room walls and stones, which had been piled on the floor. The natural pocket, formed in the rhyolite, was a convenient adjunct to Room 3.

Four nearly rectangular firepits were situated in Rooms 1 and 5. All were oriented so one side was parallel to and, except for Firepit 1:3, in close proximity to a room wall. Firepit walls were partially lined with slabs, which were typically set so their tops were flush with or raised slightly above the adjacent floor. In Room 1, Firepit 1:1 (63.5 x 51.8 x 15.2 cm) and Firepit 1:2 (61.0 x 45.0 x 15.2 cm) were associated with the upper floor and used the middle floor as a plastered bottom. Firepit 1:3 (51.8 x 30.5 x 14.0 cm), situated near the center of the middle floor, had been cut through the lowest floor and into fill overlying the occupational surface. Stone slabs lined the bottom as well as the west and south sides. Only small quantities of ash were found in these pits; however, smoke from the fires left heavy stains on the rhyolite ceiling and walls of Room 1. While no firepit was identified with the lowest floor of Room 1, one may have existed near the center of the room and directly beneath Firepit 1:3. When the latter was built on the middle floor, the earlier pit could have been either destroyed or incorporated as part of the new one. A fourth rectangular pit, Firepit 5:1 (66.1 x 40.6 x 30.5 cm), was situated in Room 5 but in front of the overhang. Ash, charcoal, and some sherds filled this pit. No smoke stain was detected on either the walls or the rhyolite overhang that covered the back part of Room 5.

Following construction of Room 1, the area between its east wall and the lower portion of the rhyolite mass linking the east and west sections was filled with earth and refuse until the large roof spalls were covered, and a small flat yard was created. Three fireplaces and several fire-reddened areas were associated with this unplastered surface. Soot appearing on the rhyolite ceiling over the northeast quarter of the room as well as in the large fissure is attributed to smoke from Fireplace Y:1 (91.4 x 73.7 x 20.2 cm) and several fires built on the yard surface but under the rock overhang. Fireplaces Y:2 (82.4 cm diameter x 7.6 cm deep) and Y:3 (45.7 cm diameter x 7.6 cm deep), like Firepit 5:1, were situated in front of the overhang so smoke could escape without leaving traces on the rhyolite ceiling. All three fireplaces were floored and rimmed with small stones, slabs, and plaster. Ash concentrations varied from 1.0 to 7.5 cm in depth. The previously cited pocket was also associated with the yard.

Trash accumulated in two
Table 4. Intrusive pottery types by strata.

<table>
<thead>
<tr>
<th>Provenance</th>
<th>Red Paste Red</th>
<th>Mission Period Red</th>
<th>Painted Early Galisteo Black-on-white</th>
<th>Espinosa (C)</th>
<th>San Lazaro (D)</th>
<th>Puaray (E)</th>
<th>Kotyiti (F)</th>
<th>Unclassified</th>
</tr>
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<tbody>
<tr>
<td>Pueblo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fill and upper floor</td>
<td>6</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle floor</td>
<td>2</td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower floor</td>
<td>1</td>
<td></td>
<td></td>
<td>3</td>
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<td></td>
<td></td>
</tr>
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<td></td>
</tr>
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</tr>
<tr>
<td>Occupational surface</td>
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<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trenches across trash</td>
<td>45</td>
<td>5</td>
<td></td>
<td>3</td>
<td>1</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Grand Total</td>
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<td>9</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>16</td>
<td>2</td>
</tr>
</tbody>
</table>
major strata. An upper layer covered the sloping surface in front of the pueblo and consisted of dark, moisture retaining earth, decayed vegetal material, lenses of charcoal, a few stones, many sherds, and other artifacts. The other, lower stratum covered the occupational surface and also extended beyond the overhang. It contained dark sand, decomposing rhyolite and fragments of charcoal and may represent deliberate fill introduced prior to pueblo construction. Parenthetically, limited refuse was encountered in the pueblo rooms. In Room 1, the lowest and middle floors were covered with charcoal, ash, and dark coarse material, similar to that covering the occupation surface. Elsewhere, fine yellow, windblown sand covered the floors; and higher strata contained weathered rhyolite as well as stones and mortar from collapsed walls. In the fill of Room 2 and on the current surface localized concentrations of stone, charcoal, and ash represent remnants of fireplaces and fires left by more recent transients, who had taken advantage of the protection offered by the overhang and still standing walls of the pueblo.

Burials

Bodies of 13 individuals were recovered from BJ 74 (Table 1): four from Room 1, three each from Rooms 2 and 3, two from Room 4, and one from Room 5. Typically, the deceased had been interred in shallow pits, but the body of an infant (Burial 39:4) had been placed in a culinary vessel which was found lying on its side in the fill of Room 2. Initially, the vessel could have been placed either on the floor of Room 2 or 4 or buried in the fill of one of the rooms after it had been abandoned; but, subsequently, the burial was displaced. Seven bodies (Burials 39:2, 39:3, 39:5, 39:6, 39:9, 39:10, and 49:1) were interred in a room corner, and Burial 39:9 was superimposed atop Burial 39:10. Two burials (Burials 39:1 and 49:2) were situated away from any wall. In the three other interments, room walls were built over previously buried bodies. To accommodate Burials 39:7 and 39:8, which were very shallow, the masonry was modified so the stones bridging the skulls were higher than the adjacent stones forming the wall bases. On the other hand, Burial 49:3 was so deeply situated that no subsequent wall modification was necessary; moreover it was also the exception to the rule that graves were oriented so the long axes of the burials parallel room walls and/or the rhyolite face.

If a burial was situated adjacent to either the rhyolite face or a room wall, natural rock or masonry formed the side of the grave. Normally, other sides and bottoms were the materials into which the grave had been cut; however, in Burial 49:1, additional dry masonry was laid on two sides. Burials 39:3 and 49:1 utilized the earlier yard surface as a grave floor. When preparing these subfloor interments, floor plaster and then earth were removed; following positioning of the body, earth was packed around the body, and the floor was resurfaced. In Burial 39:1, an infant had been placed in an elaborate crypt (76.5 x 50.8 x 27.9 cm). While the west wall was earth, the others as well as the bottom had been lined with stone slabs.
<table>
<thead>
<tr>
<th>Site, Estimated Dates, and Collector</th>
<th>Cupule Width in mms.</th>
<th>No. of Cobs</th>
<th>Percent of Cobs of Each Row Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>BJ74 (Luebben)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.D. 1550-1700</td>
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</tr>
<tr>
<td>Room 1</td>
<td>6.6</td>
<td>50</td>
<td>26</td>
</tr>
<tr>
<td>Room 3</td>
<td>7.1</td>
<td>84</td>
<td>24</td>
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<tr>
<td>Walled Area</td>
<td>---</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Picuris Pueblo (Dick)</td>
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</tr>
<tr>
<td>Taos phase, A.D. 1150-1225</td>
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<tr>
<td>Santa Fe phase, A.D. 1225-1300</td>
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<tr>
<td>Vadito phase, A.D. 1375-1490</td>
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<td>Trampas phase, A.D. 1600-1696</td>
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<td>Penasco phase, A.D. 1930-present</td>
<td>---</td>
<td>40</td>
<td>-</td>
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<tr>
<td>42 Ka 274, Talus Ruin, Glen Canyon</td>
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<tr>
<td>(University of Utah)</td>
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<tr>
<td>A.D. 1160-1250</td>
<td>7.6</td>
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<td>23</td>
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<td>Mug House, Mesa Verde (Rohn)</td>
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<td>A.D. 1032-1262</td>
<td>7.6</td>
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<tr>
<td>Gran Quivira (Hayes)</td>
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<td></td>
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<tr>
<td>A.D. 1600-1672</td>
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<td>12</td>
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<td>Pueblo Largo: LA 183 (Dutton)</td>
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</tr>
<tr>
<td>A.D. 1250-1350</td>
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<td>175</td>
<td>8</td>
</tr>
</tbody>
</table>
The interment was covered with stone slabs, then long pieces of wood (91.5 cm), and finally plaster associated with the lowest floor in Room 1.

Bodies were most frequently oriented with their heads to the west (5) and less often to the north (3), east (2), and northwest (1). The deceased had been laid on their backs (5), left sides (4), or less often, right side (2). Although legs are invariably flexed, the degree of flexing varies from partial to tight. When the body lay on its dorsal side, both legs were flexed either right or left; however, in Burial 39:9 the right leg was flexed to the right, the other to the left. Arm position also varied greatly: both arms extended and parallel to the body, arms tightly flexed and parallel to the thorax, right arm flexed but left arm extended between the legs, right arm extended parallel to body but left arm flexed with hand by right side of chin or across abdomen.

Five graves contained only skeletons. In all the other interments (i.e., seven), the deceased had been wrapped in yucca mats. In addition to the mats, Burial 39:10 contained fragments of cotton cloth; and Burial 49:1 also included some juniper bark. Burial 39:5, an adult male, had been wrapped in a turkey feather blanket, then a deerskin robe, and finally a yucca mat; these were then bound with yucca string. In Burial 39:1, an infant had been wrapped first in a turkey feather blanket, covered with an outer yucca mat, and tied with cotton and yucca strings and soft leather strips. This bundle (54.5 x 29.2 x 21.5 cm) had been bound across both ends, near the middle and around the entire length. In addition, corn cobs had been placed in the elaborate crypt. Cotton cloth, yucca string, and human hair interleaved with yucca were associated with Burial 39:9. These last three burials (39:1, 39:6, and 39:9), situated along and near the center of the western rhyolite section, were so well preserved that skin, tendons, fingernails and hair were still present.

The 13 individuals from BJ 74 cluster in four age groups: four infants, one child, two sub-adults, and six adults. Of the two latter groups, two individuals were classified as probable males and five as females. While the adults from BJ 74 demonstrate considerable individual variation (Table 2), their morphology fits with the Southwest Plateau or Ashiwid type (Neumann 1952: 20–21). The only feature of special interest in this skeletal collection is the prevalence of the lambdoid variety of cranial deformation.

**Artifacts and Other Cultural Data**

Considering the small size of BJ 74, a large number of artifacts were recovered.

**Pottery**

Locally made Culinary Plain, Indented Blind-Corrugated, and Jemez Black-on-White dominate the pottery collection (51.9%, 11.2%, and 29.8% of the total number of sherds respectively) (Table 3); however, a small number of intrusive sherds greatly aid in placing BJ 74 temporally (Table 4). A majority of the sherds were recovered from Room 1 and the trash area.
commonest pottery type, is crudely and inconsistently made. Such sherds, associated with the earlier occupational surface, were all tempered with andesite. During the later pueblo occupation, andesite was still preferred as temper; however, tuff was also used. Paste is usually gray. Typically, exterior surfaces are gray or black, scratched, and left with unobliterated coils.

Indented Blind-Corrugated is very similar to Culinary Plainware but still soft coils were obliterated with finger indentations, and temper is more evenly divided between tuff and andesite. Jars tend to be squat and bulbous; and overall, utilitarian wares vary from cupsize to large vessels.

Jemez Black-on-white varies greatly in design and workmanship. Paste is typically gray; temper is exclusively tuff; and coils are obliterated. Bottoms of bowls tend to be flattened, rather than hemispherical; and one vessel base bears coiled basketry imprints. Rims may be rounded, squared, or pinched; some are also thickened. Bowl and olla exteriors and bowl interiors are slipped with clay producing either a light brown or, more often, white finish. A few sherds bear crackled surfaces. Gray, smoky black, or brown paints tend to be opaque, and designs vary from those with well executed straight lines and even applications of paint to others with wavy lines of unequal thickness and density. About one-half of the sherd exteriors and one-third of the interiors bear painted designs, which include triangles, hachures, complex line and dot combinations, checkerboard-like black squares and white rectangles, ladders, and figures.
(Figures 4a and 4c). One sherd combines a painted design with a three-dimensional spotted form (4.2 cm long). The latter is attached to the exterior wall of a bowl sherd (Figure 4b) so head and fore-feet rest on the flat rim. A painted line intersects the torso at right angles. Another sherd had been shaped by grinding and drilled for suspension as a pendant, while several others were also drilled so fragments of a broken vessel could be laced together.

Additional sherds, classified by A.E. Dittert, Jr., (1965), form a small (7.1% of total sherds) but important part of the collection. In order of frequency of presence, these intrusive types are Zia Paste Red; Kotyiti Glaze Polychrome (Glaze F); Early Galisteo Black-on-White; Mission Period Red; and Espinosa (Glaze C), San Lazaro (Glaze D), and Puaray (Glaze E) Glaze Polychromes. More than half of these sherds were recovered from the trash area; but those with good provenance are limited to various strata of Room 1.

Lithic: Chipped

Twenty eight chipped lithic artifacts were recovered from Room 1 and the refuse area; while Rooms 5 and 4 yielded three and one artifacts respectively. Obsidian, which is readily obtainable in the nearby Valle Grande, was most frequently worked, but two artifacts had been fabricated out of chert (Figures 5e and 5f) and two others out of difficult to work orthoquartzite (Figures 5i and 5hh). Chipped artifacts are typically bifaced and retouched, but most of the effort was concentrated on one face. Only fourteen artifacts are complete (Figures 5 a, d, e, f, g, h, i, k, m, n, w, ee, ff, gg).

Most of the 22 points (less than 4.0 cm long), have a triangular shape, a convex base, and side- or corner-notches. Three side-notched points (Figures 5a, 5b, and 5c) are very small; and one corner-notched point demonstrates marked asymmetry (Figure 5k).

Eight knives (more than 5.0 cm long) or knife fragments are better worked than the points. The most elaborate knife design incorporates parallel sides, corner notches, a basal notch, and small projections at the shoulders (Figure 5z).

Two thick and bulbous obsidian artifacts are classified as scrapers (Figures 5ee and 5ff). The cordate-shaped one is crudely but extensively flaked on both faces and came from the surface of the trash deposit. The other was made on a flake struck from a core. While its faces are unmodified, edges are extensively retouched. This artifact was found just below the occupation surface.

A drill (Figure 5gg), associated with the lowest floor of Room 1, has concave sides, a sharp point, and broad base. While an unclassified orthoquartzite fragment (Figure 5hh) resembles a drill because its sides are concave, the 25 mm radius of the tip is unusually large. The tool was found on the trash.

In addition to the chipped artifacts cited above, 931 lithic fragments were recovered largely from Room 1 and the refuse area. Of these, 47 had been retouched, and with one exception, the material is obsidian. Among those chips without retouch, chert, obsidian, and chalcedony are common materials.
Figure 2. Plan and section of BJ 74.
Sixteen parallel-faced, thin sandstone fragments came from fill and floors of Room 1 (9 fragments), fill of Room 3 and the Walled Area (1 each), burial in Room 3 (1 fragment), and the trash area (4 fragments). All are irregular in outline and have been shaped by crude percussion blows, but five stones were further shaped by pecking, limited grinding, and chiseling. Because of its size and shape, the largest slab (17.2 x 8.1 x 3.2 cm) may have been used as a lapstone for weaving sandals (Figure 6f). Even though many of these stones are fire-reddened, their small size, casual distribution, and absence of grease stains seem to preclude their being parts of griddles.

Lithic: Ground

Only one complete sandstone mano was recovered; it came from yard fill (Figure 6a). It is nearly circular, unifaced, and one-handed. Fragments of three additional manos were recovered. A bifaced one, from the trash deposit, had been the center of a two-handed, basalt mano that had a rectangular cross-section. The left end of a large, rectangular, unifaced, basalt mano (Figure 6b) was found in the large pit associated with the upper floor in Room 1. Another small unifaced mano fragment had been irregularly shaped out of extremely soft tuff/pumice and was found in the trash deposit.

Edges and faces of a large block of tuff/pumice (Figure 6d), recovered from fill of Room 1, were unevenly shaped by pecking and grinding. Furthermore, one face and one edge bear multiple, often crooked striations which appear to be the by-product of shaping the soft material rather

Figure 3. View looking west along the eastern half of the rhyolite flow. (Photograph by Robert Bradley.)
than the sharpening of bone awls or other tools. The stone was probably destined to be a mano.

A tuff fragment, resembling one end of a two-handed, sub-rectangular mano, came from fill of Room 4 (Figure 6e). On each ground face, a tapered hole with irregular sides and rounded bottom had been drilled into the soft material; the uneven depressions, positioned nearly opposite each other, measure approximately 1.2 cm in diameter and 1.0 cm in depth. The irregular, fractured end of the tuff remains unmodified. How the artifact was to be used remains an enigma.

All four edges of a small, thin, symmetrical trapezoid-shaped piece of sandstone are ground. While long diverging sides are flat, shorter ends are curved. The artifact, found on the middle floor of Room 1, may have been destined to serve as a pendant or a pottery scanner.

Stones Modified By Use

A small block of sandstone, which has a pentagonal cross-section, bears a transverse groove across one edge (Figure 6c). At the bottom of the groove, width is 0.6 cm; but width increases to more than 1.6 cm at the top; and greatest groove depth is over 0.5 cm. Heavy burnishing and dark gray stain extend for about 2.5 cm across the deepest part of the groove, and less grooving, burnishing, and discoloration reaches to the edges of the two surfaces. Probably flexible materials, like strips of rawhide or yucca fiber had been processed on this stone.

Six stones, varying in shape and material, had been used as hammerstones. Three naturally ovoid-shaped pebbles of quartz, jasper, and sandstone with some fire reddening and a fourth larger, teardrop-shaped basalt pebble had been battered on both ends. The latter was recovered from fill of Room 6, the quartz ovoid came from the refuse area, and the other two appeared in fill of Room 1.

One-half of a small, bifaced, sandstone mano is heavily pitted on the well-rounded end. Patina on the fractured end indicates that the mano had been broken prior to the time it was utilized as a hammerstone. This hammerstone lay on the occupational surface. The curved end of a sub-rectangular, sandstone mano fragment also bears batter marks. It was found in the fill of Room 1.

Unusual Stones

Three unmodified, irregularly-shaped, but distinctive stones, include a fire-reddened fragment of conglomerate bearing fossil casts of lacy bryozoans and brachiopods (no provenance); a piece of water-worn fused tuff, which lay on the floor in Room 3; and a larger water-worn jasper pebble that had been incorporated into the wall between Rooms 3 and 5. Each of the above had probably been brought to the site because of its interesting aesthetic qualities.

Bone

Although many bones were recovered from BJ 74, only five are artifacts. One small mammal bone had been made into an awl (Figure 7b) by slightly modifying the bone head and tapering the opposite end; so the tip is one-third of the total awl length. This awl had been imbedded in the west wall of Room
1. A small, side-notched needle (Figure 7c) was recovered from the trash deposit. Its tip is rounded, and point taper extends about half the length of the artifact. At the opposite end, the head of the bone has been much reduced; and just below the head remnant, one deep and one shallow notch are present on opposite edges.

The occupational surface yielded a spatulate-shaped bone artifact (Figure 7d). A slightly bowed mammal long-bone fragment is splintered at the narrow end but carefully shaped along the two edges and across the broad end. The wide end has been thinned by grinding both the exterior and interior bone surfaces. Generally, the interior bone surface retains its irregular qualities, and limited smoothing along the edges removed some of the cancellous spicules. Transverse wear marks, concentrated near the center of the exterior face, suggest the artifact was used as a scraper, rather than a spatula, as suggested by Reiter for a similar artifact from Jemez cave (1938:160 and Plate XXIIib).

A scapula of a large mammal had been shaped into an asymmetrical artifact (Figure 7e). Major bone modification involved nearly complete removal of the elevated process of the scapula. Along the straight base, a few light, longitudinal striations appear on the thoracic side of the bone, implying that the artifact had probably been used as a scoop. It was found on the lowest floor of Room 1.

The notched rib (Figure 7a) of a large mammal, probably bison, was found in the fill of Room 6. While one end of the rib is splintered, the other end retains part of the articulating surface. Three large notches are unevenly spaced along one edge and one large notch appears on the opposite edge. In two notches, depth is great enough to expose cancellous tissue. Probably such notched ribs were used to prepare yucca fibers for cordage (Morris and Burgh 1954:61-63).

Among the large number of mammal and bird bones recovered from BJ 74, King (1965) identified only one turkey (Meleagris gallopavo) bone, namely the distal end of a right radius.

Wood

Two wooden artifacts were recovered from the site. A long, slightly bowed and tapered shaft (Figure 8a) lay atop the eroded floor in Room 4. The shaft was fashioned from a piece of a very porous hardwood; its entire surface had been scraped. While one end was cut to a blunt, conical point, the opposite end had been lightly charred prior to the time of breakage. Discoloration of the wood near the unbroken end may indicate contact with palms of the hand if the artifact had been used as a spindle. It is too long and bowed to be used as a foreshaft in conjunction with a reed-grass arrowshaft.

A crescentic-shaped wooden artifact (Figure 8b), was recovered from a section of the occupational surface underlying Room 1. A slab of Gambel oak (34.3 x 4.8 x 1.6 cm) was shaped so one edge is slightly concave, the other is convex, and ends are asymmetrically curved and had been firehardened. In cross-section, the top edge is flat, sides slightly convex, and bottom edge rounded. All surfaces demonstrate slight irregularities; (e.g., sides
show some gouging and wood splintering). Except for its crescentic shape, the artifact is very similar to the batten recovered from Mug House by Rohn (cf. 1971: 228). Less likely the artifact serves as a rabbitstick (cf. Alexander and Reiter 1935:46, Underhill 1953:112-113) or grooved fending club (cf. Guernsey and Kidder 1921: 88-89).

A small, blunt pointed, oak fragment (Figure 8c), was recovered from Room 3. One edge is straight, and the other is convex. In cross-section, it is oval. Smooth finish and absence of wear precludes use as the end of a dibble. While the artifact fragment appears similar to the tip of a bow, a string nock is absent.

A pine specimen (Figure 8d) bore evidence of cutting. Near one end, a cut of slightly varying depth rings the wood, and supplementary trimming reduced the diameter of that end of the stick. Both ends are broken.

**Other Perishables**

Conditions under the rhyolite overhang were conducive to the preservation of perishable materials, and a large number of different kinds of specimens were removed from the site. Pieces of undyed cotton cloth, associated with Burials 39:9 and 39:10, are of plain weave. The threads are single-ply, Z-spun. Warp threads are 0.8 mm in diameter; weft threads are 1.2 mm in diameter; and there are 8 or 9 threads per cm. An oblique overcast stitch, probably over string, is noted on selvage. Cotton was also used to make a short two-ply, Z-spun, S-twisted string (2.4 mm in diameter), which was found in Burial 39:1.
Other short strings, made of yucca fiber or a mixture of yucca and cotton, were associated with Burials 39:1, 39:5, and 39:9. All examples are two-ply (1.2 to 3.2 mm diameter), and threads are more often S-spun, Z-twisted than Z-spun, and S-twisted. Strings are both tightly and loosely spun and twisted. In one specimen, loose strings were found running parallel to each other.

A twined turkey feather blanket (100.0 x 58.5 cm) was wrapped around Burial 39:1 and another blanket of indeterminate size covered Burial 39:5. Warp strings, approxi-mately 1.7 cm apart, are held together at intervals of 5.0 to 6.5 cm by plain-twined weft strings. Both warp and weft are two-ply, S-spun, Z-twisted yucca string (2.4 mm diameter). Brown turkey feathers are closely bound with the split side of the quill toward the string. Feather edges extend 1.8 cm beyond the string.

Yucca knots, made from short lengths of whole narrow leaf yucca and strips produced by splitting leaves, were placed with Burial 39:5. Two or three strips and/or leaves were tied together to form a square knot or looped into an overhand knot. Unknotted pieces of whole and split yucca leaves were also present. A mixture of short, shredded yucca fibers (2.5 to 6.5 cm long) and grass lay on the middle floor in Room 1. In Burial 39:9 yucca strips were interleaved with dark brown human hair.

Yucca matting was associated with seven burials (39:1, 39:4, 39:5, 39:10, 49:1, 49:2, 49:3) and also lay on the floor of Room 3. In one large specimen (109.2 x 76.2 cm), yucca strips (6.4 mm wide) are close plaited in four different ways: a simple over one, under one, checkerwork; an over two, under two, alternating one, twill; an over three, under three, weave (not known if checkerwork or twill); and an over three, under two, alternating one, twill. In the blanket wrapped around Burial 39:1, a strip (5.0 cm wide) of over two, under two, oblique twill forms the margin of the rectangular over three, under two, alternating one, twilled section.

On one yucca mat, several rawhide thongs (15.0 cm long) were tied to the corners. Several additional strips of soft leather (3.2 mm wide and up to 14.0 cm long) were associated with Burial 39:1, and a deerskin covered Burial 39:5.

Some fragments of juniper bark (6.5 to 16.5 cm long) had been shredded and lay on floors of Rooms 1 and 3; others remained unmodified (e.g., Burial 49:1). Noticeably lacking at BJ 74 is any evidence of sandals.

In addition to the four oak bundles found on the occupational surface, two oak twigs, bearing spring leaves and bound together by smaller twigs, were situated in fill above the middle floor in Room 1. Several interwoven oak sticks were also associated with the upper floor of that room. Even though no basketry specimens were recovered from the site, coil imprints on one bottom sherd of a Jemez Black-on-white bowl indicate that the vessel was started either on a coiled mat or in a shallow basket. With the exception of cotton, vegetal materials used in fabricating these artifacts were native to the mountainous area and readily available.

In the domesticated plant sample, corn cobs and husks,
squash seeds and rinds, as well as bottle gourd fragments and a seed are identified. A total of 148 corn cobs came primarily from Rooms 1 and 3 as well as the Walled Area (51, 86, and 9 cobs respectively). Two are without provenance. From this collection, 30 were randomly selected and intensively studied (see Figure 9). Most of the corn grown at BJ 74 probably was hard flint; although thick grains of some specimens suggest that flour corn was also cultivated. Cupule width implies that most cobs are medium-sized, however, two of the cobs in the random sample have small cupule widths as well as a high row numbers and may have been popcorn. Some poorly developed and runty specimens probably were secondary ears on the main stalk or ears borne on tillers. Lastly, some lots of corn appear to be of a single kind, perhaps from a harvest of one field. For example, 13 cobs from one sample of Room 1 fill are 10- and 12-rowed hard flints belonging to the Onaveño race, while 15 others are 8- and 10-rowed, large-grained flint and perhaps flour corn approaching the 8-rowed corn race.

In addition to corn, many seeds of variants of a single kind of squash belonging to the species Cucurbita pepo were found. Surprisingly, no specimens of Cucurbita mixta, the cushaw squash, were present. A dozen fragments of the bottle gourd, Lagenaria siceraria, from small and rather thin-shelled (2.0 to 2.6 mm thick) fruits were identified. A single gourd seed is relatively large and has a corkey enlargement of the margins.

CONCLUSIONS

The natural protection furnished by the rhyolite overhang, an excellent spring, and diverse resources in the vicinity of BJ 74 undoubtedly attracted transients to the site long before and after it was used permanently.

The Occupational Surface

In the development of the occupational surface, the first step involved the creation of a reasonably flat, usable area under the overhang. Following the initial leveling, a firepit and a pair of upright posts were added. A mano-hammerstone, bone scraper, wooden batten, and oak twig bundles were associated with this surface. In combination, the posts and bundles form a nearly symmetrical design.

The twig bundles resemble featherless, pahos; prayer sticks. The two upright posts may have served as standards for pendants or as loom uprights; moreover, the possibility of weaving at the site is enhanced by the presence of the wooden batten.

This complex probably served as a shrine for residents of Unshagi and other nearby pueblos. Shrines have persisted in this area. The now mutilated pictograph, found just west of BJ 74, is claimed by contemporary informants from Jemez Pueblo (Walatowa), situated 246 km south southwest of BJ 74, to have been part of a recently abandoned shrine. In 1949, they still maintained another shrine on the south side of the East Fork, just opposite BJ 74. Parenthetically, weaving in a ceremonial context is well identified in prehistoric and historic pueblos (Woodbury
Based on the radiocarbon age of the batten, 635 + 95 years: A.D. 1310 (I-4108; Buckley and Wills 1970:117), the occupational surface could have been used as early as the 14th century. However, a late pre-Conquest or early post-Spanish utilization, based on ceramic evidence, is more likely. While a single San Lazaro Glaze Polychrome (D) sherd, produced between A.D. 1490-1515 (Warren 1970:39), was present in the occupational surface collection, all the others were "late variants" of Culinary Plain, Indented Blind-Corrugated, and Jemez Black-on-white wares, which were fabricated between A.D. 1550 and 1700 (Reiter 1938:123-154).

Pueblo Occupation

At its fullest development, pueblo features included a compact roomblock, situated under the western half of the rhyolite outcrop, trash lying to the south of the rooms, and an adjacent walled but unroofed area associated with the eastern part of the rhyolite face. Dovetailing of a few stones at wall corners in Room 1 indicate that this room was erected first, but the specific order of construction for the additional rooms is not certain. Because of its central location, large size, superimposed floors, multiple firepits, large mealing pit, high remodeling frequency, extensive soot smudging on walls and ceiling, as well as numerous artifacts, Room 1 certainly was both living room and the social focal point of the pueblo. Room 5 was also presumed to be a living room because it contained a firepit, well-plastered floor and walls, a large corner bin, and a significant number of artifacts. Architectural features and artifacts normally associated with household activity were missing in Rooms 2 and 3, which probably served as storage and/or sleeping areas. While data from Room 4 are minimal because of extensive erosion, its peripheral position implies use as another storage area. Currently, considerable seepage exists along the rhyolite face, which forms the north walls of Rooms 2 and 4; if similar conditions had prevailed when the pueblo was occupied, these rooms would not have been desirable living areas. Prior to construction of Rooms 2 and 4, the area to the west of Room 1 as well as the yard on the east were suitable for many outdoor activities because of protection afforded by the overhang. Though less protected, the sloping trash area in front of the rooms was also a usable surface.

How the walled area, associated with the eastern half of the rhyolite flow, was used could not be determined. It was outlined with crude walls, lacked plaster, and contained only a few artifacts and corn cobs. While the area would have made an excellent turkey pen, no bird droppings were identified. Despite the presence of turkey feather blankets and a turkey radius, the domestic status of the bird at BJ 74 is uncertain.

At BJ 74, a kiva is notably absent. Consequently, residents of this small pueblo must have had access to religious facilities in other nearby communities, like BJ 73 and Unshagi.

Ceramic wares are very useful in dating the roomblock. The presence of "late variants"
Figure 5. Chipped lithic artifacts.

Points
Triangular shape
Side-notch
Convex base: a, b, c, d
Concave base: e, f
Corner-notch
Convex base: g, h, i, j, k
Without notch: l, m
Leaf shape: n
Unclassified: o, p, q, r, s, t, u, v

Knives
Leaf shape
Concave base: w
Side-notched, base missing: x
Lower blade and base missing:
Basal fragment
Corner-notch: z
Side-notch: aa, bb
Body fragment
Tip: cc
Side-notch: dd
Unclassified: hh

Scrapers: ee, ff
Drill: gg

Scale in cm.
of Culinary Plain, Indented Blind-Corrugated, and Jemez Black-on-white wares on the occupational surface indicates that the superimposed pueblo must be a post-Spanish manifestation because these ceramic types were fabricated between A.D. 1550-1700. Sherds from the lowest floor of Room 1, the first room to be constructed, include intrusive Zia Paste Red and Early Galisteo Black-on-white as well as "late variants" of locally made pottery. The red ware and local types, first produced ca. A.D. 1540 and 1550 respectively, suggest a beginning date for pueblo occupation sometime after the middle of the 16th century and the arrival of the Spanish Conquistadores. Since Early Galisteo pottery was fabricated between A.D. 1200-1300, these sherds are incongruous with the other more recent ones from that stratum. In the ceramic collection from the middle floor of Room 1, a Kotyiti Glaze Polychrome (Glaze F) sherd, produced between A.D. 1650-1700, was found alongside more Early Galisteo Black-on-white, Zia Paste Red, and local wares, thus occupants continued to use the middle floor after A.D. 1650. Lastly, sherds of local wares, Zia Paste Red, Kotyiti Glaze Polychrome (Glaze F), as well as a Puaray Glaze Polychrome (Glaze E), fabricated between A.D. 1515-1650, lay on the upper floor of Room 1. Post-A.D. 1650 is suggested for usage of the upper floor. Conceivably, the middle and upper floors may have been utilized sequentially within a brief time.

Pottery samples from the trash deposit, like Espinosa Glaze Polychrome (Glaze C) (pre-A.D. 1490) and San Lazaro Glaze Polychrome (Glaze D) (A.D. 1490-1515) may imply that site occupation began sometime about the turn of the 16th century; however, Zia Paste Red, Mission Period Red, and Kotyiti Glaze Polychrome (Glaze F) found in the refuse all favor post-Spanish occupancy. Furthermore, the latter type indicates occupation beyond A.D. 1650.

Despite the physical attractiveness of the rock shelter and water supply, the feasibility of permanent occupation of BJ 74 and other adjacent sites, like BJ 73, is related to the ecology of the area. These smaller pueblos tend to be much less desirably situated than the nearby, larger pueblo of Unshagi, which lies at a slightly lower elevation and along the Jemez River. Therefore, selection of a more marginal site, like BJ 74, would be a matter of second choice.

Ignacio Toledo, a Jemez official of 1900, suggests that small pueblos were founded so the environment could be more fully and efficiently exploited.

In the days of long ago, when we owned the whole valley of our river and were free from enemies, our people separated into little groups in the spring and made summer homes where it was best for hunting and farming. But in winter and in time of danger they returned to the main pueblos here and about the Jemez and San Antonio Hot Springs. Some of the Indians also remained in their small lodges throughout the year, while others were used only as hunting lodges (Reagan 1917:27).

Numerous points, animal bones, and domesticated plant remnants verify the hunting and horticultural pattern of the BJ 74 residents. While BJ 74 may
have served as a seasonally occupied pueblo, the sequence of floors, multiple firepits, considerable storage space, numerous artifacts, a large number of burials, and the presence of women and children seem to favor greater permanency. 

Another phenomenon may have played a role in the founding and occupation of BJ 74. Nearby Unshagi, founded in A.D. 1375, reached its population peak after A.D. 1575 (Reiter 1938:180). Since additional space was not available in the Jemez Valley for settlement expansion, BJ 74 may have served as population outlet for Unshagi during the last half of the 16th or the beginning of the 17th centuries. Such a time proposal parallels the post-A.D. 1540 founding date of the BJ 74 Pueblo based on ceramic evidence.

Even at its zenith, the resident population of BJ 74 must have been small. Using Clarke's (1974) formula (population equals one-third the floor area in meters) the two living rooms and storage facilities with a floor area of 45.7 m² could have accommodated as many as 15 people. If the thirteen burials are a representative sample of the population, the age clusters of the occupants (namely three mature adults, 30 years and older; three other adults of questionable age; two maturing and procreative sub-adults, 17-19 years; a child of about four years; and four very young infants) suggest a three-generational extended family. Furthermore, Reiter (1938:174) implies that these small pueblos may have been "clan houses." Among the sub-adults and adults, two males and five females have been identified. If this is a reasonable sample of the sex ratio for the pueblo, it may imply either greater attrition among women (e.g., in connection with childbirth) or the practice of polygyny. High infant mortality is very evident.

In addition to the previously suggested economic motives for the founding and occupation of the BJ 74 pueblo, extratribal political relationships may have also been important factors. For example, Arvide, a Franciscan, created and implemented a plan in A.D. 1628 to gather the Indians, who had been scattered over the Jemez district and almost "depopulated by famine and wars," into two mission pueblos (Ayer 1916:24-25). The ulterior motive behind the project was to dismantle existing towns as well as villages and to concentrate the natives in a few locations where they could be continuously scrutinized and better controlled.

The two missions, San Joseph de los Jemez at Giusewa and San Diego de la Congregacion at Walatowa, had been built in either A.D. 1621 or 1622, fell into disuse after a few years, and were reactivated by Arvide in A.D. 1628 (Reiter 1938:41). While San Joseph survived for only a decade, San Diego persisted until the Pueblo Revolt of A.D. 1680. In short, the revitalization of these two mission centers coincides with the systematic abandonment of Unshagi in A.D. 1628. Was the entire population of Unshagi and other pueblos moved, perhaps forcibly, to Walatowa and/or Giusewa as part of this project? Or were the Indians free to accept or reject rehabilitation? Certainly, some of Unshagi's residents would have refused the Spanish offer and chose, instead, to settle in small, more marginally situated pueblos, like
BJ 74, in order to escape from the foreign, hostile world of the Spaniards. Under such circumstances, small pueblos which already existed or were newly constructed became refuge sites.

Parenthetically, this rehabilitation-containment concept persisted in Spanish policy. Following the successful Pueblo Revolt, the Spaniards abandoned New Mexico and retreated south to El Paso; meanwhile political control reverted to the local tribal groups. While still in exile, Governor Crusate tried unsuccessfully to force a land grant on the Jemez Indians in A.D. 1689 (Bloom 1922:20). This would have severely limited the area that the Jemez people could exploit, but two more decades would pass before the land grant was finalized in A.D. 1713 (Reiter 1938:38).

While initial contacts between the Jemez Indians and the Spaniards may have been peaceful, the relationships soon deteriorated (Winship 1896:510). On a number of occasions, the entire population of a town or village in the Jemez district responded to Spanish provocation by abandoning their pueblo, retreating to remote villages on high mesas or in rugged mountains, and finally returning to the home pueblo when the threat had passed. For example, following the Pueblo Revolt, the Spaniards under Otermin attempted to recapture the Jemez district in A.D. 1681. Native residents temporarily abandoned Walatowa and fled to less accessible sites (Reiter 1938:36); the cycle was repeated in A.D. 1688 when Governor Crusate and a military contingent threatened the same community (Reiter 1938:36). Bandelier (1892:214-215) indicates that three new pueblos were constructed by the Indians between A.D. 1688 and 1694, probably to disperse some of the population from Walatowa. These new sites were subsequently abandoned when Vargas successfully reconquered the Jemez district in A.D. 1694 and occupied Walatowa. In A.D. 1695, a new mission, San Juan de los Jemez, was erected to replace San Diego de la Congregacion, which was destroyed during the revolt; but the church was used only until A.D. 1696, when another uprising was staged by the Indians. This one, however, was unsuccessful; so, to avoid retribution by the Spaniards, the residents again fled Walatowa. While some moved to local refuge sites, others sought safety for a considerable time with a mixed band of Navaho, Zuni, and Acoma Indians (Reiter 1938:176-177). Eventually Walatowa was reoccupied, and mission San Juan de los Jemez was reactivated in A.D. 1703 and remains in use to the present day. In each of the abandonments residents could have fled to sites, like BJ 74, which were remote and less accessible to the Spanish.

Relationships between the Jemez and Navaho Indians were not always as cordial as the one cited above. Navahos raided the Jemez district and may even have attacked Unshagi (Reiter 1938:176, 178). Similarly, Utes carried out depredations against the Jemez people (Reiter 1938:36, 176). So long as the Spanish maintained a military presence in the area, the Utes were reluctant to attack; however, following the Pueblo Revolt and the departure of the Spanish, the Utes waged intensive warfare against the Jemez and other Pueblo Indians. Though not documented, because of
absence of the Spaniards, local residents may have again fled the larger pueblos in favor of smaller ones, which would have been less attractive targets for raiders. Such refugee sites, however, once singled out, would have been more vulnerable and easily fallen prey to attackers.

Pueblo Abandonment

The presence of "late variants" of the locally made Culinary Plain, Indented Blind-Corrugated, and Jemez Black-on-white, as well as some of the intrusive wares indicate that the pueblo was occupied beyond A.D. 1650, but the absence of more recent pottery types indicates that the site was abandoned by A.D. 1700. Residents of BJ 74 seem to have departed in an orderly manner and took many of their possessions with them. Of course, they could not have returned to Unshagi because the latter had been vacated by A.D. 1628 (Reiter 1938:179-181).

Several factors may explain the abandonment of BJ 74. First, because occupants of BJ 74 were marginal horticulturalists and hunters-gatherers who exploited resources in multiple-biota zones, micro-climatic changes may have reduced their horticultural productivity and forced residents either to go farther afield in search of wild resources or to abandon the area. According to records, the Jemez district was ravaged by drought during the decade following the Pueblo Revolt of A.D. 1680; hunger was rampant; and few Indians survived (Twitchell 1911:370). Since BJ 74 was abandoned, some floral changes have taken place. While pinyon pine is most frequently represented in the wood samples from BJ 74, today only a few of these trees are found in the vicinity of the site; instead, Ponderosa pines predominate. Such a floral trend suggests a slight temperature reduction and lowering of the elevations of the various vegetation zones in the vicinity of BJ 74.

Departure from BJ 74, prior to A.D. 1700, could be coupled with the Spaniards' presence. On one hand, the success of the Pueblo Revolt and the subsequent removal of the Spanish dominance from the local scene may have encouraged residents of BJ 74 and other sites to voluntarily leave them for more favorable physical and cultural surroundings. On the other hand, Vargas eventually reconquered the Jemez Indians, who incidently were one of the last two tribes to resubmit to the Spanish (Reiter 1938:35), and may have forced the local inhabitants to abandon their small pueblos and take up residence in larger, more controlled communities, like Walatowa. Or departure from BJ 74, ca A.D. 1700, may have been voluntary because further resistance was deemed futile and isolation difficult to maintain. After A.D. 1703, those Indians who remained in the district were concentrated around San Juan de los Jemez at Walatowa (Reiter 1938:41).

The large number of burials in the small pueblo of BJ 74 raises another specter. Were diseases introduced by the Spanish responsible for the decimation of the small resident population or so reduced its numbers that the survivors could no longer maintain the village? During the decade following the Pueblo Revolt, records indicate that the population suffered from not only hunger but also from diseases, and ultimately
few Indians survived (Twitchell 1911:370). How many of the burials can be associated with the closing phase of BJ 74 is impossible to determine. However, of the 13 burials, only one, the infant buried beneath the lowest floor in Room 1, was positively associated with early occupation of the pueblo; and, three other individuals had been interred prior to construction of walls associated with Rooms 2 and 3.

Culture Contacts

Despite their geographical marginality, residents of BJ 74 did not exist in a cultural vacuum. The presence of cotton and foreign sherds indicates outside connections. Ties between the people of Bj 74 and those of nearby Unshagi must have been very close. These two pueblos share many architectural, artifactual, and burial traits. While the plan of BJ 74 is much simpler, construction techniques, forms of features, as well as their sizes are similar to those reported from Unshagi (cf. Reiter 1938:42-76). At both sites, locally made ceramic wares are nearly identical in style, materials, and craftsmanship (cf. Reiter 1938:103-107, 107-108, and 123-154). Artifacts (e.g., points, knives, manos, awls, spindle, and spatulate-shaped tool) (cf. Reiter 1938:159-164), burial customs (e.g., body orientation, flexing of limbs) (cf. Reiter 1938:176-180), as well as fragments of cotton cloth and twilled yucca mats (Kent 1957:66 and Reiter 1938:166-168) from BJ 74 are also similar to those from Unshagi. When differences do exist, they seem to represent personal, not basic stylistic variations. For example, the
Figure 7. Bone artifacts: a, notched rib; b, awl; c, needle; d, scraper; and e, scoop.

Scale in cm.

ceramic frog decorating a sherd from BJ 74 is only slightly different from those pictured by Reiter (1938: Plate XXb:G and H).

Some traits encountered at Unshagi, like kivas, porches, large storage bins, deflectors in rooms, solid earth benches, doorways flush with the floor, doorways connecting rooms, low wall ventilators, and rooms used for refuse disposal, have not been identified at BJ 74. Similarly, at the latter site, some artifacts (e.g., antler tinetips, bone flutes and beads, axes, metates, griddles, arrowshaft straighteners, shell and turquoise ornaments, ceramic effigies and pipes, and sandals) are absent. At BJ 74, no burial was recovered from the trash deposit or placed in a ventral position. Absence of the above traits at BJ 74 may be a by-product of the smallness of the pueblo or, in the case of artifacts, of their removal at the time of pueblo abandonment.

On the other hand, some traits present in BJ 74 were not identified at Unshagi. These include a circular firepit, notched rib, scapula scoop, batten, vessel burial, turkey bone, acorns, squash seeds, and gourd rinds and seeds. Precedents for some of these BJ 74 artifacts, like a shaped scapula, serrated bone tool, cotton cloths, two-ply yucca string, deerskin robes, yucca knots, and split yucca, were recovered in nearby Jemez Cave (Figure 1) (Alexander and Reiter, 1935:36 & 50-56).

Surprisingly, even though the pueblo was occupied while the Spanish were in the area, not one European-type artifact was recovered from BJ 74. We know that the Spaniards were anxious to transmit some aspects
Figure 8. Wood artifacts: a, spindle (?); b, batten with one end sacrificed for radiocarbon dating; c, pointed oak fragment; and d, cut rings right end of wood fragment.

Scale in cm.

Figure 9. Rows of grain and grain size for a random selection of 30 cobs from BJ 74.
of their culture (e.g., Christianity) to the Indians, but selectivity must have been exercised by the Spanish when the trait was related to their political and economic survival and dominance. Meanwhile, the Indians probably rejected new traits because of cultural incompatibility or resistance to anything Spanish. For example, following the Pueblo Revolt, the Indians destroyed the trappings of Europeans (e.g., missions, missionaries, and artifacts) that had infiltrated their culture and returned to a native lifestyle.

Similarly, no evidence of Spanish contact exists in cultivated plant materials from BJ 74. Specimens from this site are like those recovered from most northern Pueblos of a late pre-Conquest and early post-Conquest Periods. As a whole, the BJ 74 corn is similar to that from Mesa Verde, the Kayenta Anasazi region, and Picuris Pueblo (i.e., the Santa Fe through Trampas phases, A.D. 1225-1696) (Table 5). The corn, however, differs considerably from that of Pueblo Largo, ca A.D. 1250-1350, and of Gran Qivira, ca A.D. 1600-1672. The corn from these two more southerly and lower sites is mainly 12-rowed and has smaller grains as well as slightly smaller cobs. The greater number of eight-rowed cobs from this Jemez site, BJ 74, and from other northern sites probably reflects environmental selection of fewer rowed strains with shorter growing periods and human selection for larger and softer grains. Moreover, the large-cobbled and many-rowed corn typical of Rio Grande Pueblos today has never been found in pre-A.D. 1690 sites. When the Spanish settlers returned from their exile in A.D. 1690, following the Pueblo Revolt, they brought seeds of both Mexican and European plants, which markedly influenced the crops of the later pueblos.

Squash (Cucurbita pepo), found at BJ 74, is similar to the dominant kind found in Pueblo III sites in the Mesa Verde. Surprisingly, no specimen of cushaw squash (Cucurbita mixta) is present at BJ 74; yet this kind is found in many sites in northern Arizona and occasionally in Pueblo III sites in the Mesa Verde.

The single large seed from a gourd recovered from BJ 74 differs from those small seeds typically found in northern New Mexico and Arizona sites. Large seed gourds appear in pre-Columbian sites situated much farther south. This type of seed is found in thick-walled containers, which are over 30 cms in diameter or of the constricted center, water bottle type.

Rejection of Reiter's Hypotheses

Data do not support either of Reiter's hypotheses: one, that BJ 74 pueblo was ancestral to Unshagi and, two, that it was an important link between the pueblo people of the Mesa Verde and the Rio Grande valley. Both propositions are rejected on the basis of timing and cultural data.

BJ 74 roomblock construction and occupation fits neatly into the sequential developments of Unshagi. While the latter was founded ca. A.D. 1375, more than a century and a half earlier than the establishment of BJ 74, the two communities were occupied simultaneously for a period of time; but, ultimately, the offshoot outlived the mother pueblo. Timewise, BJ 74
could not have served as an interim village in an hypothesized Mesa Verde Anasazi migration toward the Rio Grande valley. The post-Spanish founding of the BJ 74 Pueblo followed the departure of people from the Four Corners area by at least 250 years.

Material culture and architecture of BJ 74 and the nearby, older Unshagi demonstrate great similarity and indicate a close relationship between these two communities. Initially, BJ 74 must have been a satellite of the larger pueblo. While basic pueblo traits (e.g., masonry architecture, ceramics, and horticulture) were shared by residents of both this small Jemez village and the Mesa Verde, details tend to be different. For example, diagnostic ceramics, like Jemez Black-on-white as well as other wares present at BJ 74, differ markedly, technically and timewise, from those produced by the Mesa Verde Anasazi. In short, direct linkage between these two puebloan groups is precluded.

When formulating his hypotheses, Reiter had no premonition of the presence of an underlying occupational surface. Had the latter been used in the early 14th century, as suggested by the radiocarbon date from the batten, the surface would have been nearly contemporaneous with the demise of Mesa Verde Anasazi communities (i.e., ca. A.D. 1300).

While the hypotheses have not been verified, excavation of BJ 74 did reveal a unique occupational surface, a roomblock with a plan well adapted to the conformation of the rhyolite overhang, many puebloan construction techniques and artifacts, as well as some unusual artifacts and elaborate burials. Furthermore, excavation of BJ 74 points out the importance of small as well as large sites for gaining glimpses into the culture of the people, the history of the area, and the ecological, political, and other relationships that existed. While ecology and demography influenced life at BJ 74 to a considerable degree, the specific impact of relationships with other human groups, in this case other Indians and the Spanish, probably are crucial in the final understanding of BJ 74.

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BURDEN BASKETS OF THE SOUTHWEST
ANDREW HUNTER WHITEFORD

Except for the few tribes that used dogs to carry small loads or pull toboggans or travois the pre-contact Native Americans transported all their goods balanced on their heads or, more commonly, slung on their backs. Some things could be tied into bundles for carrying, but most of them were impossible to manage unless they were wrapped in skin or fabric. Even then they could be handled much more conveniently if their weight was concentrated on the back and shoulders of the carrier in a net, a bag, or a basket. Very heavy and/or bulky materials could be transported effectively by the human beast of burden by supporting the load with a carrying band across the forehead or the chest, while both hands were left free for climbing up rough slopes, to guide children, or to gather seeds and fruits. The wealth of nomadic or even semi-nomadic tribes was limited to what they could transport on their backs, and even sedentary agricultural peoples had no better means of transporting their crops from the fields to their homes or granaries.

Among the Indians of the Southwest burden baskets were the most common devices for hauling goods. The laws of form and function set certain limits on their variety and they conformed to a few well-defined patterns. They were among the earliest forms produced in the ancient craft of basketry and their earliest antecedents can be traced back to the very old crafts of the Great Basin, where baskets were being made as early as 9,000 to 5,000 B.C. (Adavasio 1986:196, 202). These earliest carriers were conical and cylindrical in shape, with rigid or semi-flexible, S-twisted twined walls, general characteristics that continued for thousands of years. They were reinforced with bands of two and three strands twining on their bases and below the rims, but completely twined baskets were gradually replaced after this time by baskets made by coiling. At Lovelock and Humboldt caves, distinctive conical carrying baskets were made between 2000 B.C. and A.D. 1. They were plaited in a unique technique (Lovelock Wickerwork) which, for unknown reasons, was not perpetuated by later Indians.

Some of the discontinuities in the basketry of the Basin were the result of "a major population change or shift about A.D. 1000" (Adavasio 1986:205) as Numic-speaking peoples moved into the Great Basin from the region of southern California (Miller 1986:102). These people continued to make twined conical burden baskets as well as coiled baskets, and there was continued contact between the southern Numic groups and adjacent cultures in the Southwest, but generally the basketry of the Basin and the Southwest developed in different directions from this time on.

During the long development of the widespread Archaic Culture in the Southwest many kinds of baskets were produced. The people of the early Oshara Complex, which was an extension from the eastern Great Basin into northern Arizona, left fragments of baskets made with one-rod coils
sewn with interlocking stitches, and also the first two-rod and bundle coiled baskets (Lindsay, Ambler et al.: 1968). These materials date back to 5500-6000 B.C. and are of special significance because at several sites they were followed and gradually mixed with later Basketmaker occupations. This represented the beginnings of the great Anasazi tradition. As Advasio pointed out, the Oshara-Desha Complex seems "to provide a base of both twining and coiling upon which portions of subsequent Southwestern basketry manufacturing were built" (Adavasio 1974:120). The transition from Archaic to Basketmaker occupied some 5000 years, and long before the Basketmaker II was fully developed in the northern Southwest (100 B.C.), the Archaic Culture had spread over the entire Southwest to provide a base for other regional developments.

With the appearance of the Basketmakers, the picture of burden baskets in the Southwest comes clearly into focus. Although these people were adept with both twining and coiling, they made most of their great flaring conical carriers with two-rod and bundle coils. These baskets probably derived their basic shapes from Archaic ancestral forms, but they were distinct in their construction of fine coiling and in their elaborate decoration: black-dyed geometric designs during the BM II period and red and black designs in BM III. During the BM II period the conical carriers were straight-sided and smaller than later ones. Their bases were generally rather oval, and the stitching was slightly spaced. The baskets were finished with self-rims on which the tapered ending was
covered with herringbone stitching or false braid. Some rims were probably covered entirely with herringbone stitching.

In the classic study by Morris and Burgh (1941) the sequence of basket forms is clearly described. In addition to the conical coiled carriers of the BM II period, a single example of a great coiled and pitched, pear-shaped water jar was discovered in northern Arizona (Kidder and Guernsey 1919:168-170). It is about 17 inches high and slightly less at its greatest diameter. It is a unique specimen and an outstanding example of the Basketmakers' skill.

In the BM III period, which lasted from A.D. 400 to 700, the range of basket making expanded greatly in variety of techniques and forms. It was at this time that the large flaring conical burden baskets reached their highest development. Some of them were 30 to 35 inches in diameter at the rims and 16 to 18 inches in depth, slightly flexible, decorated with complex geometric designs in red and black, and finished at the rim with a two-rod and bundle coil in which the bundle was often replaced by a twisted cord (Figure 1, U. of Colo. basket from Canyon Del Muerto). The rim coil on some was finished with herringbone stitching; on others the entire rim was covered in herringbone. Morris and Burgh point out that the rim stitching on Basketmaker containers incorporated most of the foundation of the underlying coil, while the later Pueblo rims were stitched through the upper bundle in the coil below, producing a flat rim (Morris and Burgh 1941:23). These Basketmaker carriers were probably the most elegantly shaped and decorated burden baskets ever made in the Southwest.

At this same time, some very different burden baskets appeared. They were coiled and wedge-shaped; some are flat and straight on one side and excurved on the other, others are symmetrical with flaring sides. They are generally decorated with geometric designs in panels or in a broad band. The most significant thing about them is that they are so small that they could have been of no practical use. The largest example reported by Morris and Burgh was no more than 12 1/2 inches in height and 10 1/2 inches by 4 3/4 inches wide at the rim. Most of them were considerably smaller and seemed to be unfinished. The conclusion that they were made for ceremonial use rather than utility is reinforced by their association with numerous clay effigies of decorated wedge-shaped baskets and also clay figurines of women.

The ceremonial role of these baskets was demonstrated clearly in the case of a specimen excavated in a cave in the Hidalgo Mountains of southern New Mexico (Lambert and Ambler 1961) (Figure 2. Basket from U-Bar Cave). When this wedge-shaped basket was found in U-Bar Cave it contained the pelts of two ring-tailed cats, and spilling from its mouth, and carefully folded and tied was an enormous net woven of human hair. They were placed together in a grass-lined pit. Numerous painted "prayer sticks," 30 snares, ceremonial pokers, and a flat painted, wooden kachina-like figure were also found in the cave. Although the finds were dated as A.D. 1300-1425 and associated with the Animas Phase of the Mogollon Culture on the basis of a few pottery sherds that coincided with vil-
lage sites in the valley below the cave, the excavators recognized that there might have been an earlier occupation and noted that an atlatl was found in the cave before exploration began.

Subsequent excavations produced a small basket coiled with fiber bundle foundations and sewn with deliberately split yucca or beargrass stitches. This may be an early basket, more closely associated with the Trans-Pecos-Mexican influence in the Southwest than with the later Anasazi. The wedge-shaped basket itself was coiled on a two-rod and bundle foundation, which is typically Anasazi, but it is sewn with yucca or beargrass stitches, which is unusual. The stitching is slightly spaced, frequently split on the basket exterior, and worked on the interior surface. This is also unusual for such a deep basket, but Morris and Burgh note that some of the large BM III carriers were sewn on the "concave...surface" (Morris and Burgh 1941: frontispiece). The U-Bar Cave basket was decorated with a broad zigzag band of deep red outlined with black and showed a certain amount of wear on one surface. It was apparently old and much used when it was deposited in the cyst because the bottom had been broken several times and very crudely repaired.

This basket is either a southern example of the BM III wedge-shaped ceremonial baskets, made and deposited in the cave some time about A.D. 500 to 900, or it represents a family heirloom that was carefully conserved until it was buried ceremonially in U-Bar Cave nearly nine centuries later. It might also be a freak that only resembles the BM III baskets but has no relationship to them. Future
dating of the cave materials may provide at least a partial solution to these problems.

In the excavation of the sites of the Pueblo peoples who succeeded the Basketmakers, evidence for burden baskets has been so sparse that it is generally believed that they made and used very few of them. The Pueblo I and Pueblo II periods are largely blank, but two distinctive forms have come to light in Pueblo III contexts that raise as many questions as they answer. Both suggest that some continuity was maintained between the earlier Basketmaker carriers and later Pueblo periods. One was excavated in a Pueblo III site in Hospitibito Canyon in northeastern Arizona, and a similar type was reported to have come from Vandal Cave in the same area (Haury 1945; Fig. 3. Photo from Amerind Foundation). They are both functional in size: one is 20 3/4 inches and the other 18 inches high. The opening of the first basket is 15 3/4 by 10 1/2 inches, the other is slightly smaller. They were constructed with two-rod and bundle coils and sewn with noninterlocking stitches that were frequently split. The first basket had a self-rim but the final two inches were finished with herringbone stitching. The base was oval and slightly indented. A broad zigzag band had been woven in two colors, but later painted over in three colors. A broad carrying band woven of human hair was attached.

The most distinctive aspect of both baskets is their form. They are basically wedge-shaped, but larger in size than the BM III baskets, and both were expanded abruptly about two-thirds of the distance from the base. This gave them a distinct

Figure 3. Pueblo III "funnel shaped" burden basket, Painted Cave, NE Arizona. The Painted decoration was applied over the original design. (Courtesy the Amerind Foundation, Inc.)
funnel shape. Cummings illustrated a basket of this shape, but provided no information except that it was from a cave near Moab, Utah (Cummings 1951:101). Morris and Burgh commented that the earlier Basketmaker wedge-shaped baskets might have been similarly expanded at the rim, but most of them were too fragmentary to judge (Morris and Burgh 1941:54). An alternative interpretation might be that they represent a shape that was common in the later Pueblo burden baskets, about which so little is known.

The forms of the other burden baskets that were made in Pueblo III times were much more bizarre and may have been directly descended from the earlier Basketmaker wedge-shaped baskets. It is assumed baskets in the intervening years were made with the indentations in their bases progressively deeper, but there is no evidence for this sequence, and the Pueblo III baskets appeared without obvious predecessors. They were coiled with two rods and a bundle, tightly stitched, and their bases were deeply bifurcated to form two prolongations or "legs" (Figure 4 from MNA). They are too small to serve as utilitarian carrying baskets: one type example is 22 1/2 inches in total height, but the space above the bifurcation is only 7 1/2 inches deep. However, Cummings illustrated two examples and commented that they could not have been used for baby carriers (as Fewkes had suggested) because "the body of the basket is so long that the head of any ordinary baby would not project above the rim," (Cummings 1951:103). This suggests a greater depth, but unfortunately he gives no dimensions and little further information. These baskets generally show signs of wear on the back surface and at the ends of the extensions; they have holes for the attachment of carrying straps, and some of them were decorated with wide bands of geometric designs (Cummings 1953:101; Morris and Burgh 1941: Fig. 18f).

There is little more that can be said about prehistoric Pueblo burden baskets except to agree with Morris and Burgh that the bifurcated baskets may represent the continuation of some sort of cult that persisted from Basketmaker III times into the Pueblo III period and then disappeared, leaving no apparent vestiges in the subsequent cultures. It is difficult to explain their unique shapes and diminutive size. We might expect to find burden baskets incorporated in the rituals of early peoples because they were so closely related to some of the fundamental tasks of the women. But such roles would generally be difficult to identify from archaeological evidence, and very few occurrences are described in the ethnological literature. The modern Pueblo peoples frequently carry and utilize baskets in rituals but there is little to suggest that burden baskets particularly were ever ritually significant, except for the few examples that are carried by the Ogre Sister (Soyok Mana) and some other kachinas.

The early histories and ethnologies dealing with the Pueblo peoples indicated that burden baskets were relatively rare. At Hopi very few burden baskets have been made in recent years and less attention is given to them than to any other kinds of baskets. They are serviceable, but crude and rigid and plaited with unsplit stems of squawberry sumac (Rhus trilobata).

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or willow.

One old form is oval or rectangular and reinforced with two thick U-shaped juniper rods woven into the texture of the basket, one near each end. The parallel warps consist of multiple (three or four) sumac shoots held in place by single or multiple wefts that encircle the basket. The rims are basically unfinished and the ends of the warps protrude several inches. The ends of the reinforcing rods extend 5 or 6 inches above the rim and serve as handles in lifting the loaded basket. In the old days these baskets were especially suitable as panniers hung on the sides of burros or horses.

Bucket-shaped carrying baskets, usually called "peach baskets," are plaited with the same materials, and Stevenson and other early ethnologists describe their use in carrying fruit. The largest are nearly 20 inches in height and of considerable capacity, (Figure 5, MNM). Smaller ones, which are sometimes carried by young girls or used ceremonially, are no more than 8 or 9 inches high. The rims of the larger baskets were left unfinished, and as a consequence are almost always broken, but on the smaller baskets the rims are sometimes roughly bound. In either case reinforcing rods of juniper are often bent across the bottom of the baskets and their upright sections are bound into the corners. Woven carrying bands are usually tied to the corner rods. Simple banded decorations were occasionally created by scraping the bark from the wefts to expose the white wood.

Similar plaited wicker burden baskets still appear at Zuni occasionally, and James Stevenson collected a number in the early 1880s (Figure 5, MNM).
willow baskets, and it was the characteristic rim treatment on Lovelock Wicker baskets thousands of years ago.

Twined burden baskets of this type have been collected at Hopi; several examples in the Arizona State Museum were collected by E. C. Kelsey, a trader at Zuni from 1900 to about 1923, and a number have come from Acoma, including two that were found in 1963 in a cache under an old house (Museum of New Mexico 45767/12, 45768/12). Although twining is rare in Pueblo basketry, and the shape and construction of these baskets has caused them to be identified as Apache, they constitute a distinct type that was Pueblo in origin but was no longer produced to any extent after the turn of the century.

Although the Pueblo peoples of the Rio Grande undoubtedly made and used burden baskets, none have been preserved that I am aware of, and the literature reveals nothing. Very little is known about their early basketry in general, but it seems clear that the Navajos learned to make their two-rod and bundle coiled baskets from them. Whether the Navajo also learned from the same source how to make burden baskets is an open question. They used such baskets extensively, and burden baskets are mentioned frequently in Navajo myths, but whether they made them or acquired them in trade is uncertain. The best example of an early Navajo burden basket was discovered in a cave near Chaco Canyon in northwestern New Mexico (Vivian 1957). The fragmentary burden basket and two coiled water jars were in a cache with four old Navajo pots that have been dated before 1775. Judging from the pictures
and the detailed analysis provided by Vivian, the burden basket seems to be identical in every detail to the plaited wicker burden baskets described in this article for the Hopi—and also for the Zuni. It was plaited with multiple warps and reinforced with two U-shaped rods that crossed on the bottom. They were exposed on the base of the basket but incorporated into the plaiting at the corners. The bark was scraped from the wefts to produce several simple decorative bands.

The Navajos were using burden baskets to gather food in 1868 (Tschopik 1940:458) and the Franciscan Fathers (1910:298) made this note:

The carrying basket is even less frequently seen than the water jar. (It) is used at present for gathering the yucca fruit for syrup. The baskets are plaited of willow twigs much after the style of our own baskets, but have neither handle nor finished rim. Instead, a cord is fastened to two of the staves or bows and the basket is carried exactly like the water bottle, but the cord is preferably slipped over the forehead or scalp. At times they are strapped as a pack to either horse or burro, one dangling from either side (Franciscan Fathers 1910:298).

At a much later time, Laura Gilpin (1961:153) said that burden baskets were no longer being made. "The carrying basket was a wicker, loosely woven basket with an unfinished edge, used for gathering yucca or cactus fruit or other edible plants."

An excellent picture of a Navajo woman carrying such a basket (Watkins 1943:6) shows a speci-
men that seems to be very similar to the ancient specimen discovered by Vivian.

It is certain that the Navajo used burden baskets, and it is apparent that these baskets were very similar to Pueblo burden baskets. The literature suggests that the Navajo produced them, but they undoubtedly learned about them from the Pueblos, and may have acquired most of them from the same source.

Concerning the burden baskets of the Apaches, the picture is much clearer. Roberts particularly (1929), and also Robinson (1954) and Tanner (1982) have described them in detail, and hundreds are preserved in collections. Unlike the fine coiled baskets the Western Apaches once made, the twined burden baskets have persisted into the present, probably because they have long played a role in the Sunrise Ceremony, in which girls are initiated into the adult world. They did not seem to be sacred, but they were used to hold the many gifts that were distributed and to mark a course around which the girls ran. In recent years the goods for distribution have usually been gathered in cardboard boxes instead of baskets.

Western Apache carriers are similar in shape and general construction to the old Pueblo twined burden baskets previously described, with twined walls constructed on two crossed U-shaped rods. They differ from them most clearly in the construction of the rims. Roberts noted:

All uprights (warps) are left full length during the process of twining. They are never bent back into the fabric when the basket is completed....but are either cut off short or topped with a rim coil laid along their ends (Roberts 1929:148).

They are actually topped with two rim coils. The lower coil may be a wood rod or a compact bundle of wood fibers into which the ends of the warps are sometimes bound; the upper rim coil consists of a stout willow rod or, more commonly since before the end of the 19th century, a hoop of heavy galvanized iron wire. Each rim is lashed with willow splints or skin thongs and the two rims are sewn together like coiled basketry (Figure 7, MNM, smaller basket).

In style and techniques of decoration the twined burden baskets of the Pueblos and Apaches are also distinct. Most Apache carriers are embellished with encircling bands of slanted lines, checks, zigzags, or interlocking sawteeth. Some designs are worked in black devils claw (Martynia proboscidea); in others the weft splints are dyed red, bright blue or green, or the patterns are painted on, one stitch at a time, so the colors do not splash onto adjacent stitches. Some commercial dyes and paints have been used, and the baskets are very colorful.

In addition to the painted or woven designs, Western Apache burden baskets are decorated with a greater variety of applied materials than any other baskets in the Southwest. Four or five strips of buckskin, about one and a half inches wide and often dyed yellow, are attached vertically between the rim and the base. From each strip several bunches of long buckskin fringes hang free and other groups of fringe are hung from a skin or rawhide patch on the base of the basket. The edges of the patch on the base are often cut in scallops and the edges of an
underlying piece of red cloth are exposed for an additional touch of color.

These baskets are among the strongest and most decorative carriers in the Southwest. For extra strength many of them have two short, flat pieces of wood lashed to the inside of the basket, each behind one of the upright sections of the U-shaped framing rods. The ends of the carrying straps are attached to them and they serve to distribute the weight of the burden and minimize breakage. At San Carlos the baskets are woven with willow (Silix sp.) or cottonwood (Populus fremontii); at White Mountain the material is generally mulberry (Morus sp.). Although a few courses of three-strand twining were occasionally used and bands of twill twining were included for textural decoration, these baskets were generally constructed in plain twining, with each weft twist enclosing two warps. This gives them a distinctive surface of vertical corrugations.

The burden baskets with the rod frames and buckskin decorations were used to carry personal belongings when the Apaches were moving from one camp to another. They also used other twined burden baskets that were made without the reinforcing rods and buckskin fringes. These softer baskets were for gathering and carrying food such as corn, mescal, and seeds. They were simply decorated with bands of checks or diagonal lines and often sealed on the interior with a coating of mescal juice (Goodwin in Ferg and Kessell pp. 73-75, 1987).

The origins of these distinctive baskets are difficult to explain, partially because so little is known yet about Apache prehistory. It is apparent that the bucket shape is similar to the plaited wicker peach baskets of the western Pueblos, some of which utilized the frame of U-shaped rods. The baskets that most closely resemble the Apache baskets are the twined burden baskets that have come from some of the Western Pueblos. They may be quite old, but their history is no better known than that of the Apaches. I suggest as a hypothesis that they constitute an early Pueblo type that served as the progenitor of the classic burden basket of the Western Apaches, who simply changed the type of rim and the techniques of twining and decoration.

The Western Apache may still make some traditional burden baskets, but they have been overshadowed by a flood of new-style baskets that are being produced for the market. At a time when their famous coiled baskets are practically extinct, an increasing number of pseudo-burden baskets are being made. They are nearly conical and are closely woven in vertical rows of plain twining. The materials are still willow at San Carlos and mulberry at White Mountain, with the bark left on one side of the twining splints so it can be twisted to the outer surface for the creation of designs of deer, eagles, or other figures. They are made with single rim rods and lack the U-shaped reinforcements, but the vertical fringed bands are retained, although now made with commercial suede, which is used also for the rim lashing and the fringed base patch. The fringes are very long, and are usually tipped with tin cones. These baskets are very popular in the craft shops and are made in sizes that range from 25 inches
in height to many miniatures 4 to 6 inches high, and very small baskets, of no more than 1/2 inch, that are sold as earrings.

The burden baskets of the other Apaches are less well known. I have no information about Jicarilla carriers, but baskets similar to those of the Western Apaches were made occasionally by the Chiricahua and Mescalero Apaches, differing from them only in greater use of twill twining and more frequent occurrence of tin cones and beads on the fringes. The only baskets being made today at Mescalero are twill twined burden baskets decorated with fringed strips and red and blue bands applied with magic markers. They have no reinforcing rods and are made only by a few related Chiricahua women (Mauldin 1943: 43).

The traditional Mescalero burden basket was cylindrical or slightly flaring, tightly woven with willow or sumac in twill twining, and decorated principally with a row of tin cones on short buckskin thongs below the rim and another around the lower edge. Some baskets were plain, others had brown bands created by twisting the wefts, or sections woven in plain twining. They were light and flexible because they were not made with heavy reinforcing rods and they were finished with a single splint-bound rim rod. At an earlier time some of these deep baskets were twined with twisted splints of yucca leaf.

The remaining burden baskets used in the Southwest were very different from those of the Pueblos or Apaches and were derived from a different cultural tradition. For purposes of this paper they may be combined as "western conical carriers" and
described in relationship to each other. The San Juan Paiute, the Havasupai, and the Hualapai are the Southwestern tribes most noted for the production of large conical twined burden baskets. The immediate source area for baskets of this type seems to have been central or southern California which was the original homeland of the early Numic-speaking people to whom the Paiutes belong (Bettenger and Baumhoff 1982:497), and also of the prehistoric Hakataya culture from which the Yuman-speaking Havasupai and Hualapai are descended (Schroeder 1979). The origins of the baskets probably began with the conical baskets at Lovelock and Humboldt caves and subsequently with the conical carriers of the early Basketmakers.

The three tribes that made these burden baskets were similar to each other in their intensive use of native vegetal resources and the equipment they used for gathering them. Their conical burden baskets were large (30" x 30"), tightly woven in twill twining, finished with double rims, and capped on the base with a buckskin or rawhide cap. Some of the baskets of the San Juan Paiutes were quite rounded on the base, the others were conical. They made more open-work burden baskets (Figure 8, MNM) in most of which the warps were distinctly slanted. Both closed and open baskets were often terminated with several courses of three-strand and/or plain twining below the rim. The ends of the warps were generally bent and bound to form a selvage and then bound to a stout rim loop of willow. Carrying bands were tied around several warps and often attached to short, wooden reinforcing pegs, like those used by the Apaches.
The material used was willow, but the modern Paiutes have made conical baskets of yucca splints. These are produced for sale and, like similar forms made by coiling, have no basis in Paiute tradition (McGreevy and Whiteford 1986).

The conical burden baskets of the Havasupai and the Haulapai are very similar in appearance, and in general construction to San Juan Paiute carriers, but made of different materials. The Havasupai baskets were usually decorated with dark bands created by turning the bark side of splints to the outer surface with a half twist, or twining with dark splints of devils' claw. The bands bore light designs of slanting lines, zigzags, or solid triangles. Textured bands were produced by changing the weft sequence in the twilled twined surfaces, and three-strand twining was used frequently for strength and also for relief. With these canyon people the preferred material for twining carriers was splints of catclaw (Acacia gregii), but squawberry sumac and Fremont cottonwood was also used and Apache plume (Fallugia phradoxaa), arroweed (Pluchea servicia) and service berry (Amlanchier utahensis) were bent into rim hoops. Although they were closely twined, the interiors of the baskets were occasionally rubbed with stewed peaches to keep small seeds from falling through.

These carriers apparently were used by the Havasupais until the middle of the 20th century, and they once made them in three distinct sizes for different purposes. Today some small replicas of the old baskets are made by coiling to sell to tourists, but they bear little relationship to the fine old utility forms.
Hualapai carriers are almost identical to Havasupai burden baskets and the two are frequently combined in collections. Although the two people are closely related, they lived in different environments and utilized different materials. The Hualapai preferred squawberry sumac, but catclaw was sometimes used to bind the rims. The old baskets were often decorated with devils claw and bands of stitches dyed red and blue. Half-twist twining was relatively rare. The nipple shape produced by constricting the base was more common among the Hualapai than the Havasupai (Figure 9, MNM). On some of the newer baskets the rims are finished in a uniquely Hualapai manner: the ends of the warps are enclosed between two split rods that are bound together. This is the same technique used on their twined bowls.

Although there are only three or four elderly basketmakers who know the old ways, there is a great deal of interest in the craft at Peach Springs, and these experienced basketmakers have been recruited to teach younger women. The usual bowls are being made, some bottles, and a few decent conical burden baskets. Everything today is produced, of course, to be sold.

Among the remaining tribes of the Southwest, burden baskets were either unimportant or nothing is known about them. It has been said (Bateman 1972) that Yavapai baskets were exactly the same as those used by the other Upland Pai tribes, and a large conical basket appears in an early photograph (Khera and Mariella 1983:50). Nevertheless, it seems likely, considering their enmity with the Hualapai and Havasupai and their long association with the Apache,
that most of their burden baskets would have been like the Apache style rather than the Pai type. This matter remains to be explored.

OTHER SOUTHWESTERN TRIBES

Although the Pima and Papago made baskets for almost every purpose, they carried most of their burdens in special nets with frames, the famous kiahas or gihos, and in pots or basket bowls balanced on their heads. The River and Delta Yuman people also depended upon nets to transport their goods. Basketry was not highly developed among any of them, but the Mohave made unique netted carriers with a frame of U-shaped rods (Mason 1904:Pl. 17), and simple conical open-work baskets to carry fish (Stewart 1983:61). They were made of willow rods wrapped together at the base and fastened to two hoops set inside the cone. The rims were unfinished. They were crude, but probably effective, and they were the only burden baskets made in the region.

CONCLUSION

The conical baskets of the western tribes in the Southwest are clearly related to the adjacent Californian and Basin areas, but the source for the first bucket-shaped baskets is not clear. Early Anasazi burden baskets were conical or wedge shaped, furthermore, they were coiled rather than twined or plaited. The first bucket-shaped baskets may have been made by the Hopi and/or Zuni, who made many other kinds of baskets in plaited wicker technique. They may also have made the first twined baskets in this same shape. The Navajo adopted the plaited wicker styles and the Apaches developed their own distinctive burden baskets, perhaps from the basic pattern of the early Pueblo twined carriers. Twining was not a common technique with either of these people and they may have acquired it from their Pai or Paiute neighbors.

In any case the burden baskets of the past were central elements in the lives of most of the Native Americans of the Southwest. For some early people they played important roles in ritual, and generally these and the purely utilitarian baskets were carefully made and elaborately decorated. A few clues from the archaeological remains of the prehistoric horizons will answer many of the questions that still remain about them.

Wheelwright Museum of the American Indian, Santa Fe

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Twenty-five years ago, I indicated that each type of ball court and those of the great kivas of the Anasazi had many similarities in their parallel developments through time. Each of the changes in the ball court series appears to be earlier than each of the near contemporaneous great kiva types, which process I labeled regulated diffusion (transmitting a complex of related traits).

The proposed route of diffusing this concept of intercommunity structures was from the Ranch Creek Hohokam site near Globe, Arizona, northeast via the Mogollon Bear Ruin big kiva at Forestdale (Haury 1950) and the Shabikeschee big kiva to the Arboles area of the Navajo Reservoir District Project in southern Colorado. From there the big kiva concept spread southeast, with the ca. A.D. 1050 Arboles phase abandonment to the Pojoaque area of New Mexico (Schroeder 1963: Figures 1 & 2; 1966: Figure 2). Relationships to the Mogollon rectangular community lodges were not considered.

The following review of kiva types and interrelationships, slightly revised, wherein the earliest "great" kiva now is referred to as a big kiva, is presented in order to examine possible patterns that might relate to social organizations. The early community houses of ca. pre-A.D. 600, such as the larger-than-dwelling size noted among the Hohokam Pioneer Period sites of southern Arizona, the early Mogollon sites, and the so-called proto-kivas of the Anasazi, are not considered in this survey. In most areas, the community houses seemed to phase out as ball courts, big kivas, Mogollon lodges, and little kivas appeared.

The problem of dating the appearance or duration of each court and kiva type discussed herein is understandably shaky for one reason or another. In order to avoid any attempt at being overly specific, rough dates by centuries (early, middle, and late) are used, primarily to indicate relative chronological relationships. These rough dates are based either on those given in an earlier article on the subject (Schroeder 1963: Figure 2) or obtained from more recent pertinent literature. Usually, the beginning date for each type will be used. No claim is being made that all locales or sites with "ceremonial" structures have been incorporated in the following discussions. Occasional gaps exist due to lack of excavation data from certain areas or periods.

No attempt has been made to reference the locale or chronological placement of each of the "ceremonial" structures considered. Inclusion of so many would have extended this paper beyond reasonable limits. Moreover, much of the information is readily available in current literature.

I am grateful to Mike Elliot for information pertaining to the pre-A.D. 1500 kivas in the Jemez district, and to the Desert Research Institute, Reno, Nevada, and the Bureau of Land Management Rio Puerco Research Area Study (Wase 1982) for information on
great kivas in the middle and upper Puerco drainage of New Mexico.

THE FIRST PHASE

The early (ca. A.D. 600) Ranch Creek type ball court and Shabikeschee (late 600s) type big kiva are located in a small site with single unit dwellings. Other sites lacking such a structure are in the near vicinity. This type of settlement pattern is a linked population unit or community (Schroeder 1966:693) with an intercommunity structure. This big kiva does not appear in association with circular little kivas prior to A.D. 1050.

The earliest little kiva sites (ca. late 700s to 800s) exhibit a more or less standard pattern - little kiva in front of a few, usually contiguous, rooms, perhaps representing a nuclear family. Larger sites with a long contiguous line of rooms have a little kiva in front of each unit of rooms, or household, as at Alkali Ridge or Ackmen-Lowry sites, perhaps representing an aggregation of nuclear families, related or otherwise.

Thus, two distinct settlement patterns appear early among the Anasazi - an intercommunity structured population unit as opposed to a single or multiple nuclear family aggregated site. Each pattern occurs in separate geographic regions and appears to represent the beginning of the separation of the Western little kiva pattern and what was to become the Eastern big kiva pattern.

THE SECOND PHASE

With the later appearance (ca. late A.D. 700s) of the large Snaketown type ball court and the Lowry type great kiva (ca. A.D. 800s), these intercommunity structures within their own region were widely separated from others of the same type. Each served a regional population unit of several communities of larger size. They also seem to be mutually exclusive in their contemporaneous distribution from surviving phase one ball courts and big kivas (Schroeder 1963: Figure 1). Moreover, the Lowry great kivas occur in sites almost exclusively west of a line drawn along the Arizona-New Mexico border. The life span of both types appears to be short, probably ending in the A.D. 900s.

THE THIRD PHASE

Intercommunity structures next to appear are the large Tres Alamos ball court (ca. A.D. late 900s-1000s), which occurs to the east of the earlier Snaketown courts, the Kin Nahasbas great kiva (ca. A.D. 1000) east of the earlier Lowry great kiva (Ibid.: Figures 1 & 2), and the rectangular Mogollon lodge to the east of the earlier western Mogollon circular big kiva. This eastern distribution of each type may reflect a new source and associated ritual from Mexico. Kin Nahasbas great kivas, more or less isolated from surrounding small sites, intrude into the central region of the little kiva domain from southwest Colorado and the Zuni district east into the upper and middle Puerco River drainage and into the Cebolleta Mesa area south of Acoma. Those along the eastern Puerco, however, are more similar in size to the later Chetro Ketl type great kiva and may represent a transitional change between the third and fourth phase in great kiva types but not in
placement in or near a large pueblo. Contemporaneous early big kivas have not been reported in the Central Anasazi country.

**THE FOURTH PHASE**

The final Casa Grande type ball court of the 900s-1000s and the Chetro Ketl great kiva of the 1000s began to appear in the Hohokam and Central Anasazi regions as intracommunity structures. By the 1000s and middle 1000s(?) respectively, these structures were found in most sites of any size in their own regions, the great kiva being near a large pueblo or more commonly in the plaza of the site. It seems that the population of many of the former smaller sites had increased to the point in both regions that the number of people was sufficient to support ritual needs required for a court or great kiva.

It also was during the late 1000s and early 1100s that most associated little kivas, previously located in the plazas of Central Anasazi pueblos, usually were incorporated in the pueblo houseblock, apparently being displaced from the plaza by the Chetro Ketl great kiva. By the late 1100s or early 1200s, rectangular little kivas (or perhaps society houses) of the Eastern Anasazi moved into the houseblock, in this case being displaced by the big kiva.

**THE FIFTH PHASE**

In the mid-1100s, the intracommunity ball court was replaced by a platform mound (Schroeder 1953: Table 1). It was about this time that many of the Chacoan sites of the Central Anasazi area were abandoned, the surviving sites taking on characteristics of the Mesa Verde development that became dominant over much of the Central Anasazi region in late Pueblo III times. It was also a period of change in Mesa Verde country where a number of sites were abandoned, and in Mesa Verde were moved from the mesa tops into caves in the canyons.

**PHASES FOUR AND FIVE IN THE ANASAZI SOUTH**

In the Acoma-Cebolleta region, circular little kivas and some D-shaped kivas of the 1000s (Mogollon derived) occurred in front of sites, but in the 1100s the D-shaped kivas became the preferred type and were incorporated in the houseblock. Some of the unexcavated circular great kivas of the 1000s (?) appear to be similar to the Kin Nahasbas type, since several other sites without a great kiva are in the near vicinity. One of these great kivas is partly within the houseblock, possibly representing the Chetro Ketl type of the late 1000s-1100s.

The development of ceremonial structures in the Zuni district began with the circular little kivas, which by the late 1000s also included D-shaped kivas. Little kivas were incorporated within the houseblock in the following century. Great kivas were not common. One site has a large unexcavated (Kin Nahasbas) great kiva and a smaller Chetro Ketl type partly incorporated within the houseblock. The larger kiva may have been associated with the nearby small sites of earlier occupation.

In the Mogollon country to the south of Zuni, a large rectangular lodge served several small sites in the late 900s much
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**Key**
- big kivas
- little kivas
- kiva in houseblock
- platform on one end
- number of big kivas
- number of little kivas

- A FIGURIS
- B TACS
- C POT CREEK
- D LLANO
- E POJOAQUE
- F FINDI
- G ARROYO HONDO
- H PEREJE
- I TE'EWI
- J FOSHOINGUE
- K TYUONYI
- L SEFAWE
- M SAN JUAN
- N SAN ILDEFONSO
- O TESUQUE
- P NAMBE
- Q SANTA CLARA
- R SHE
- S LAS MADRES
- T SAN CRISTOBAL
- U FUEBLO LARGO
- V FUEBLO COLORADO
- W SAN LAZARO
- X SANTA FE
- Y PAAKO
- Z KUAUA
- a TONQUE
- b TIJERAS
- c FUARAY
- d ALAMEDA
- e ISLETA
- f SANDIA
- g FECOS
- h FORKED LIGHTNING
- i DICK'S RUIN
- j ARROWHEAD RUIN
- k LOWER JEMEZ R.
- l UNSHAGI
- m GUISEWA
- n JEMEZ
- o COCHITI AREA
- p SAN FELIPE
- q SANTO DOMINGO
- r ZIA
- s SANTA ANA
- t CEBOLLETA MESA
- u ACOMA
- v FIRO SITES
- w JACK'S POT
- x SOCORRO
- y SEVILLETA
- z FUEBLO FARDO
- aa QUARAI
- bb GRAN QUIVIRA
- cc TENABO
- dd ABC
- ee COLORADO
like the Kin Nahasbas kiva of the third phase. Later, in the 1000s and 1100s, the lodge was present in a number of larger pueblos, but not in all. In addition, rectangular (kihus, as used herein) and D-shaped kivas of the 1000s with a platform at one end were incorporated in the houseblock in the 1100s, usually singly, but occasionally two at a site. In the 1200s, either a large kiva plaza (Haury 1950) or a central-plaza-oriented pueblo seems to have replaced the large rectangular lodge.

THE SIXTH PHASE

In the Zuni district, kihi-like rooms were present in houseblocks in the 1100s. Rectangular kihu began to appear in the Kayenta country in the late 1200s but were not in the houseblock. Chetro Ketl type great kivas continued in use in the Mesa Verde-Chaco-Aztec region along with little kivas in the houseblock. By A.D. 1300, with the abandonment of the Chaco-Mesa Verde country, great kivas no longer were in use except possibly in the Acoma area.

THE SEVENTH PHASE

Because of the general abandonment of the Chaco-Mesa Verde region and much of the Kayenta area, this phase to A.D. 1700 is being covered very briefly. After A.D. 1300, the surviving western Anasazi practice of the Hopi country exhibits a complete shift from circular kivas to rectangular subterranean kihu in open plazas, which is the situation today. In the Zuni country, the kihu of the protohistoric period are in the plaza, judging from the one uncovered at Hawikuh and from statements made by the Spaniards. They noted these "hot rooms" for winter use were in the plazas and "they have their summer ones outside the villages." Another stated that "the estufas belong to the whole village" implying perhaps that they were not group owned (Hodge 1937, Plates ix, 49, 52, 55, 77). In 1582, Hawikuh had an estufa for every 15 or 20 residents (Hammond and Rey 1929:90). However, by 1629, the Zunis entered "their temples by some trap doors which they have on top of their terraces" (Hodge 1937:81). This suggests that the kihu now were in the houseblock, as is the situation today.

At Acoma in 1598, estufas were described as being in the houseblock. Indian chiefs and others who were placed in them broke away through many tunnels which opened out into adjoining houses (Hammond and Rey 1953:437, 462). According to various reports, the Acoma kivas in use are D-shaped.

THE RIO GRANDE KIVAS

As Peckham (1979) has noted, early circular pithouses in the Rio Grande during the Developmental Period took on certain features, as did those of the early western Anasazi, that suggest use for rituals. Later small sites with circular subterranean structures in front of associated surface houses and storage units included these features. These kivas and sites of this nature represent the norm in the early development of the Rio Grande Eastern Anasazi. From here on, there is little resemblance with Western and Central Anasazi ceremonial structure developments.

Because of the variety of districts in New Mexico, the chronology of kivas in New Mexico
from prehistoric times to the present is summarized in the accompanying table. There are a number of sites at which kivas are present in varying numbers, based on survey reports. These have not been included due either to a lack of data on shape or size or definite ceramic associations on which to estimate dates. A few, however, have been included where evidence is fairly certain.

Chronological placement of the kivas on this table is strictly on the basis of centuries only and not early or late within the century, primarily because dates of these structures are based for the most part on ceramic associations. Some estimates might be off half a century. The object of the table is to indicate trends. Most of the data relating to the historic period are derived from excavation reports or documentary statements of the Spanish and American periods. Those derived from documentary sources are cited separately in the bibliography with pertinent page numbers listed.

Certain trends on the table are obvious. Circular little kivas occurred throughout the region. After A.D. 1200s, they occurred with a big kiva, except in the Eastern Towa and Eastern Keres areas, up to A.D. 1500. Rectangular little kivas in houseblocks appear to have been fairly common from the 1200s into the 1500s in the Southern Tiwa district and in the 1200-1300s in the adjacent Eastern Towa, Tano, and Tewa areas. Circular little kivas were not incorporated in the houseblock, which is similar to the treatment of kivas and kihus in the Western Anasazi pueblos, and in contrast to that of the Central Anasazi.

A circular big kiva associated with small kivas occurred earliest in the Tewa area at about the time (late 1000s or early 1100s) of a proposed Tewa influx from the upper San Juan (Ford, Schroeder, and Peckham 1972:31). This combination of kivas in the Tewa area continued into the 1500s, after which only the big kiva survived. Of interest is the adoption of this same combination in the Northern Tiwa district by A.D. 1300. Unlike the Tewas however, the big kiva was dropped in favor of the little kivas by the 1700s. During the 1600s, many Taos and Picuris took refuge at different times among Apaches on the plains of Kansas, perhaps leading to the collapse of the big kiva complex among the Northern Tiwas. Possibly during their sojourn on the Plains, the refugees depended more upon the nuclear family than moiety functions.

In the Southern Tiwa area, the big kiva was adopted by the 1300s or 1400s. The Tompiros on the east side of the mountains also seem to have adopted the big kiva at about the same time. By A.D. 1700, however, the Tompiro and Tano to all intents and purposes (except for the reoccupation of Galisteo Pueblo) were abandoned. At the same time, while the southern Tiwas gave up the little kiva, along with the Tewas and Eastern Keres (slightly earlier?), the Northern Tiwas used only the little kiva.

Although the big rectangular kivas on the table are shown only from the 1800s on, they may have been present earlier in some districts. Spanish explorers of the 1500s reported both round and rectangular kivas, but not by locale. The latter type could have been a big kiva or a little kiva. Aside from
the shifts in the shape of the big kiva at Zia, the Western Keres maintained a pair of circular big kivas and the Western Towa a pair of rectangular kivas. Some of the Tewas adopted the big rectangular kiva in the past century or so, as has Sandia (Hopi derived?).

TRADITIONS AND MOIETIES

With this background on various kiva patterns, other relevant subject areas can be examined. The postulated route of diffusion of the first inter-community structure, ball court to big kiva, is from the Hohokam country of southern Arizona to that of the Tewas in the Tanoan region of the Rio Grande. An examination of the creation myths of the possible descendants of the Hohokam, the Pimas, and specifically of the Tanoan Tewas provides some items of interest.

The Pima tradition refers to two groups, the Red Ants and White Ants, emerging from the underworld. The former, also known as Buzzard or Vulture or Red People, comprising three clans, was in possession of the country. The latter, Coyote or White People, was brought out of the nether world by Elder Brother. However, because Coyote laughed as they were emerging, the earth closed preventing the other White People from joining the two clans that had come out (Russell 1908:226, 521). This situation implies that there were more White People who might have come to Pima land. Russell (Russell:197) suggested that the dual division might represent two people coming together. These could well represent the Hakataya (Red People who were in possession of the land in the Pioneer period of pre-A.D. 600) and Hohokam (lesser number of White People of ca. A.D. 600) who came to southern Arizona (Schroeder 1985:159-165), leaving others of their kin behind in their home country.

The Tewas are said to have come out of their place of origin and, after several experiences, were divided by the Hunt Chief between the Sumner and Winter Chiefs. The former led his group south along the mountains on the west side of the Rio Grande and the latter similarly on the east side. They rejoined at Ojo Caliente and later formed the pueblos in present Tewa country (Ortiz 1969:15-16). The abandonment of the upper San Juan, into which region the big kiva appeared ca. A.D. 700s, took place in the middle 1000s (Eddy 1966). The big kiva appeared in the Tewa area by about A.D. 1100 (Stubbs 1954). In addition, the distribution of Kwahe'e Black-on-white pottery at about A.D. 1150 or earlier seems to reflect the two routes of migration from the San Juan (Ford, Schroeder, and Peckham 1972: Map 3).

The tradition of these two historic period entities, each suggesting an amalgamation of two groups, is expressed today in their moiety systems. This seems to translate into the Pima Coyote People who represent cold and the Buzzard people who represent hot into the Tewa Winter and Summer People (Herzog 1936; Ortiz 1969). As indicated 25 years ago (Schroeder 1963:19-20), the ball courts and great kivas might represent the beginnings of a moiety system, and the Pima and Tanoan moiety groups might have had a common origin. It also was noted that the width of the early court and the diameter of the early big kiva were approximately the same, suggesting that somewhat
similar public functions, involving a number of people, were held in these intercommunity structures. It appears that a moiety system was developed or introduced into the Southwest when the Hohokam joined the Hakataya about A.D. 600, the ball court serving as a mechanism for activities of the dual organization.

SUMMARY AND RELATED THOUGHTS

The earlier pre-A.D. 700 community houses, enlarged versions of the local pit house dwellings, probably served certain needs of the early sites. As offshoots of the parent village settled at new farmlands, the expanded community continued to operate as one population unit. As the concept of a moiety diffused through Mogollon and Anasazi regions, some groups seem to have adopted the idea of an intercommunity structure and adapted it to the then current architectural form of the local community house which it replaced.

The little kiva development of the Anasazi associated with a small household group of rooms also formed building blocks of larger sites. This allowed for additions, such as occur in Hopi traditions and prehistoric sites. Aside from a Hopi and Zuni shift from circular kivas to rectangular kihus, this pattern continued into historic times, except that Zuni kihus were incorporated into the houseblock in the 1600s.

Although all Mogollon and Hohokam intercommunity structures do occur within a site, like the earliest big kivas of the Anasazi, the second and third phase great kivas usually are completely separate, either isolated or located away from a group of scattered individual sites. Among these Anasazi, little kivas were in open plazas in front of small pueblos in the vicinity of the great kiva. By the late 1000s, when each population unit around a great kiva began to aggregate into larger sites, the formerly isolated great kiva was incorporated in the plaza of the pueblo and the little kivas were removed from the plaza and placed in the houseblock.

The Eastern Anasazi adopted the intercommunity big kiva and placed it in a plaza along with the little kivas already in use. The big kiva did not occur in many sites prior to the 1200s. The little kivas of the Eastern Anasazi rarely were incorporated in the houseblock, in contrast to those of the Central Anasazi. However, rectangular rooms, sometimes D-shaped, and containing specialized features, sometimes referred to as kivas, appeared in Tanoan houseblocks in the 1200s, perhaps representing society rooms. The rectangular kivas in houseblocks of the Western Keres area seem to be related to the Mogollon developments, and not to those in pueblo houseblocks along the Rio Grande.

The pre-Hopi-Zuni pattern exhibits many parallels that survive into historic times. The basic little kiva household complex has been maintained, the great kiva being rare in the Zuni district, suggesting that the household was important for lineage or ritual needs. The Eastern Anasazi little kiva-big kiva combination was maintained into historic times, the big kiva eventually replacing the little kiva, rather than dominating it as in the pre-A.D. 1300 Central Anasazi. The little kiva, however, did survive among the Northern Tiwas as it
did among the Hopis and Zunis. Spanish efforts to abolish kivas and rituals in the 1600s, Pueblo displacements of the late 1600s, and Apache pressures on eastern pueblos and those of the Tompiro and Piro areas all had various effects on the widely scattered Eastern Pueblos. Some discontinued their use of big kivas, some of little kivas, and others abandoned their homes. The net result between 1680 and today is a general lack of evidence of clanship in the eastern Tanoans. Perhaps, it may not have been there in the first place if one considers a similar lack among the Pimas.

The Central Anasazi great kiva-little kiva combination, particularly more so in the Chaco area than Mesa Verde, must have had a built-in factor of doom. From the time of the development of the few large Chacoan sites incorporating great kivas in the plazas in the middle to late 1000s to the time of abandonment of most all but the largest sites in the middle to late 1100s, 100 years are represented. Perhaps the role of the great kivas created a split between the small Chacoan sites and the larger ones. Such could have led to the abandonments of the mid-1100s which in turn drained the needed manpower required for related operations and rituals in surviving sites of the Chacoan region. In the Mesa Verde area, however, great kivas do not appear to have had as much impact, but were present, and little kivas survived to the end, including the appearance of a few rectangular little kivas.

The Chacoans of the San Juan Basin, who abandoned their pueblos in the late 1100s, appear, on the basis of ceramic associations, to have moved into the upper Puerco drainage to the east. By A.D. 1300, the ancestral Eastern and Western Keres seem to have moved into the locales they occupied in early historic times (Ford, Schroeder, and Peckham 1972: Maps 406). Great kivas of post-A.D. late 1100s, according to present evidence, are lacking in the late areas of the east of the Chacoan country. The period between the 1100s and 1600 in the Keres area is critical to the solution of the two-kiva problem.

Of interest in this respect is the occurrence in the late 1000s or early 1100s among the Hohokam of a few sites with two north-south oriented ball courts (Wilcox and Sternberg 1983) and a few sites among some of the Central Anasazi with two Chetro Ketl type great kivas (Pueblo Bonito, Chetro Ketl, and Una Vida). In a number of small Chacoan sites of the 1100s, little kivas often are paired in the plaza or in the house-block. However, in these cases contemporaneity has not been demonstrated. The relation of this possible dual kiva system to the two big kivas of the historic period Eastern Keres is not clear.

It appears that the late A.D. 1200 arrival of the ancestral Eastern Keres into their present locale introduced the Chacoan concept of an intracommunity structure to the neighboring Eastern Anasazi. The latter's intercommunity big kivas seem to have been sporadic prior to A.D. 1300 in the Rio Grande country but were more common later, occurring in most sites of any size. This conversion from an intercommunity to an intracommunity structure may represent what has been
referred to as a Tanoan borrowing of the Keresan system, referred to below.

It is obvious that the development of the big, little, and great kivas led to three distinct mini-patterns among the Anasazi in prehistoric times—that of the Western little kiva, the Central great kiva, and the Eastern big kiva complexes of pre-A.D. 1300. Parsons (1939: 950) characterized the historic period groups as socialized west, shamanistic middle, and individualized east. She suggests (Parsons: 940) that the Tanoans, such as the Tewas, borrowed the Keresan society, and Hawley (1950: 300) believes that the big kiva was obtained by the Tewas from the Keres. The table herein strongly suggests that the Tewas had the big kiva before the Keres. Moreover, the latter were late comers, most archaeologists favoring their arrival in their present locale by about A.D. 1300, though the time and direction of movement are in some disagreement (Ford, Schroeder, and Peckham 1972: Maps 4 & 5).

It is beyond the scope of this paper to attempt a reconstruction of the possible social and religious practices of the pre-A.D. 1300 Anasazi groups. That they had curing and hunting societies seems reasonable. But in light of the possible additions brought in with the kachina cult, one would have to eliminate all current aspects of the cult as they pertain to moiety, kiva, and social operations. One also would have to consider certain additions brought about by the postulated introduction of items early in the prehistory of intercommunity operations by the Hakataya and Hohokam, probably Yuman- and Uto-Aztecan-speakers, as they in turn relate to Yuman and Piman traits that survived among the Pueblo groups of historic times to which Parsons (1939) and others refer. In any case, it appears on the basis of kiva patterns that the so-called Keresan Bridge (Fox 1967; Eggan 1950) is not a bridge between Eastern and Western Anasazi, but a product of the Central Anasazi.

In a general survey of this nature, exceptions no doubt will turn up data that might either alter the proposed routes of transmission or development in local areas. To have listed more kiva types in each century on the accompanying table would have been repetitious. Chronological gaps in the table as well as elsewhere among the Central and Western Anasazi await excavation results in the future, as does the need for more accurate dating. Present data suggest that the mini-patterns are valid, and if so, they offer a new avenue for interpretation.

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INTRODUCTION AND BACKGROUND

In prehistoric times, soapstone (or steatite) was worked into a variety of forms and objects. An interest in the types and distribution of steatite objects is but a small part of the study of the types and distribution of a larger group of items that could be termed "exotics": items of personal adornment and special use objects. These exotics tend to be made of materials that are limited in quantity, that occur outside the immediate domain of the consumer, and that require some modification in an artistic manner to bring them to their recognized form. These materials include marine shell and animal bones, teeth, and claws. There also are a number of rocks and minerals in the Southwest which can be worked into exotics. Among these are argillite, hard clays (silt and mudstones), jet, mica, phyllite, schist, serpentine, shale, steatite, and turquoise. Steatite was an important raw material for a uniquely well-developed pan-Southwestern bead industry (Haury 1931). Other stone materials utilized in this industry included many of those just mentioned. The differing hardnesses of these rocks, as well as physical properties of their structure, permitted varying degrees of control over the uniformity and size of the end product. The finest beads known are very minute and are executed in the hard but thinly dividing shales and clays. Across the Southwest the technology and methods of bead production appear to be quite similar (McGregor 1941:200; Cosgrove and Cosgrove 1932:63 and Plate 69). The sequence involves the preparation of planar blanks and their further modification by scoring, removing of corners, drilling, and rounding to produce beads.

Beads, however, are but a small part of a vast network of potentially marketable items. It is well known that a large variety of materials was exchanged into, out of, and within the Southwest (Terrell 1967:122-125). The major routes of exchange were established in early times (Tower 1945:23) and tended to follow natural physiographic corridors such as the Rio Grande and the Colorado, Salt, and Gila rivers (Brand 1938; Jernigan 1978:211-212). Major archaeological sites are known along these routes and are often regarded as trade centers. If this interpretation is correct, it follows that there are obvious, significant shifts in routes of supply and types of materials being exchanged as the major centers grew and declined.

The fact that centers such as Chaco Canyon, Casas Grandes, and Snaketown rose and fell has been established, as has the fact that various materials were exchanged, sometimes over great distances. However, the trade mechanisms are poorly understood. The cause-and-effect relationships of any particular growth and decline and even the relative temporal placement of the centers are presently unknown or contested. Fluctuating markets are undoubtedly related to events in the Southwest as well as stimulation from outside.
However, direct manipulation of the markets by Mesoamerican states is unlikely (McGuire 1980).

This study investigates the distribution of one material type in Arizona—steatite. It serves as a titillating glimpse at a research area with great potential for contributing to the understanding of inter-or intraregional interaction in the Southwest.

GEOLOGY AND SOURCE AREAS

Steatite, or soapstone, is classified as talc by mineralogists (Galbraith and Brennan 1970:106). Chemically, it is closely related to serpentine [serpentine: Mg$_3$ Si$_2$ O$_5$ (OH)$_4$; talc: Mg$_3$ Si$_4$ O$_{10}$ (OH)$_2$] and is often physically associated with it in geological contexts. While serpentine is green or greenish white, steatite is usually gray or black, although varieties with mottled red, white and gray also occur. Many of the differences in the color of steatite relate to impurities contained in the stone and to the temperatures and chemical reactions at the time of formation. The impurities are probably trace elements of iron, nickel, and manganese (Colorado School of Mines 1955:29–30). These trace elements may make it possible to identify specific source areas of the stone.

Chrysotile, a fibrous variety of serpentine, is the chief source of various grades of asbestos. It was mined commercially in Arizona in modern times, primarily for industrial fire-retardant uses. Thus, its sources and properties are much better known than those of talc or steatite. Sources of steatite can be successfully located by the association of talc with chrysotile, but it is possible to find talc or other "soft" stones in other geological contexts as well.

"The most extensive deposits of chrysotile in the state (Arizona) are in Gila County, north and north-east of Globe along the Salt River and along Cherry Creek" (Galbraith and Brennan 1970:106)(see Fig. 1). The deposits originated through metamorphic action of Precambrian diabase intrusions upon Precambrian Mescal limestone (Galbraith and Brennan 1970:106; USGS 1969:307).

"The Cherry Creek-Rock House area, however, is more amenable to exploitation, owing to the pattern of canyon dissection and the generally shallow depths to favorable strata" (USGS 1969:311). Steatite is probably available in numerous outcrops in the heavily faulted areas south of the Colorado Plateau, but would seem to be most readily exploitable in the Salt River and Cherry Creek-Rock House areas.

Fortuitously, an archaeological mitigation project investigated portions of this area (Reid 1982). This area is referred to as the Q Ranch Region in the Cholla Project reports. The Cholla Project corridor lies close to three known major source areas in the Q Ranch Region near the Cherry Creek-Rock House areas discussed above. These are at Wilson and Walnut creeks in the Vosberg area, Sloan Creek, and Rock House Creek (see Fig. 1). The asbestos mines and prospects are clearly evident, and the presence of serpentine and steatite has been confirmed by the author at each location. At any one location the serpentine and steatite are of variable working quality, grading from good (very
Figure 1. Map of the study area.
STEATITE AND THE ARCHAEOLOGICAL DATA

Analysis

In the Q Ranch Region, the stone used to create exotics was steatite, and the probability is high that it was economically important. It is available at several easily accessible sources in the area. Many, but not all sites, in the project survey area have steatite present.

The steatite recovered from Cholla Project sites was analyzed using a set of categories devised to reflect varying degrees of shaping and processing in the workable chunks and blanks. In bead production, large nodules were reduced to smaller workable forms (chunks), presumably by chipping and grinding, and further worked to produce planar blanks. Large blanks could then be scored and snapped into bead blanks. The bead blanks were then trimmed, drilled, and rounded to produce beads (see also Jernigan 1978:202-205). The production of other objects and ornaments obviously follows a different sequence.

There is a bias introduced by elaborating the categories related to bead manufacturing, but one that is justifiable due to the apparent emphasis on bead production when steatite is involved. The amounts of small, unworked or partially worked debris suggest that there was much unusable waste in the production sequence. A tremendous amount of material must have also been lost in the process of reducing large pieces to planar blanks for beads, because most of the initial reduction must have been done by chipping.

The analytical categories developed were: unworked and worked nodules and chunks, worked blanks, bead preforms and beads, figurines, large objects (including ornaments), and eccentrics. The difference between nodules and chunks is based on weight, while the various steps of bead preparation are based on morphological characteristics of the blanks and preforms (see Lange 1982:171 for further details of these categories). In the Cholla Project collections, figurines tend to be zoomorphic, large ornaments are usually pendants and rings, large objects are such things as pyramids and cylinders, and eccentrics are planar and nonplanar pieces of indeterminate form or function.

Data Presentation and Interpretation

Collections had been made from sites in the Q Ranch Region and from the Chevelon Region to the northeast. The steatite collected was sorted into categories described above, counted, and weighed. These data were presented in Tables 12.2 and 12.3 (Lange 1982). After the basic sorting had been completed, several approaches to interpreting the data were explored. Simple presence-absence of tallies of categories were correlated with variables such as time periods and ceramic types present, and a chi-square test was applied to determine the significance of the associations. Overlay plots of the sites and these correlations were also prepared to examine aspects of the spatial distribution of particular attributes of the steatite collections. Statistical techniques were applied to the data set, including
extracting principal components and cluster analysis. Each of these analyses, coupled with chronological information derived from the ceramic analysis, contributed in some fashion to the interpretation of the others.

The cluster analysis helped to further define the variables used in the comparison. A clearer differentiation of the production sequence yielded five variables: 1) unworked materials, 2) worked nodules and chunks, 3) worked blanks and bead preforms, 4) beads, and 5) figurines, large objects, and eccentrics.

For consistency with other analyses conducted by the Cholla Project, the sites were grouped temporarily, based on the ceramic analyses (Tuggle 1982:23–27; see also Lange 1982, Table 12.1). The ceramic analysis produced a grouping of sites into three periods. The early, middle, and late periods correspond to Pueblo II (A.D. 900 to A.D. 1100), Pueblo III (A.D. 1100 to A.D. 1300), and Pueblo IV (post-A.D. 1300). Collections were obtained from 17 early sites, 12 middle sites, 13 late sites, and 7 sites classified as multi-component.

Table 1 presents the average number of items in each category by period for the Q Ranch and Chevelon area collections.

Several types of site collections were excluded in the preparation of Table 1.

1. Those with no steatite, since no percentage distribution is calculable. Many of the sites with no steatite tend to be the large, late sites.

2. Multi-component sites. The steatite assemblage cannot be assigned to a particular period, and certain biases are introduced with a combined collection. (An exception was made to this in reference to the Chevelon sites, see below.)

3. Those sites of early and middle periods with low counts (total count less than 10). Late sites with a total count less than 10 cannot be excluded because the average total count per late site is less than 10.

4. The excavated collections were removed from the total data set to permit maximal comparability of the surface collections.
From Table 1, it can be seen that there is a sharp decrease over time in total counts and weights represented per site and there are differences in the distribution of the collections between the type categories. An interpretation that late sites have little or no steatite should not be made at this point, however. Reasons for this are presented in a later section. It is also important to note the quantities present in considering the average distribution by period. In the late period sites, the total counts are so low that the "average" distribution could change radically with the addition of a few pieces among the categories.

Among the Q Ranch early, middle, and late collections, there is a similarity of proportions among the categories in the early and middle period collections. The greatest difference between these collections lies in the average counts per site and in a higher proportion of planar worked forms in early sites. The late sites show markedly different proportions of items in each category (see Table 1 and Fig. 2).

Middle period sites from Q Ranch and Chevelon compare closely. There are slightly more planar forms and slightly less raw material in the Chevelon collections, which also have relatively lower counts. These lower counts may partially explain the apparent differences in the distributions (see Fig. 3).

To increase the sample sizes involved, Q Ranch early and middle sites together were compared to Chevelon early, middle, and multicomponent sites (all early and middle)(see Fig. 4). A lower proportion of unworked material and higher proportion of planar pieces are still seen in the Chevelon collection. This may indicate that partially finished materials were brought or traded into the Chevelon Region. The character of the distribution curves for the Q Ranch data matches well with previous comments regarding wastage due to chipping during initial reduction of the raw material.

Counts and weights by color per type category were noted during the analysis. A tabulation of this information for the Q Ranch collections was made comparing color preferences between worked blanks, preforms, and beads as a group versus large ornaments and objects. Non-gray materials were more preferred for the production of large ornaments than for beads. However, gray material dominates in all categories for all sites, so there are seemingly no temporal or spatial implications attributable to color of steatite used (see Table 2).

Several presence-absence tallies were made correlating the temporal periods with the presence of certain type categories of steatite and certain types of ceramics. A simple chi-square test was done and statistically confirmed several impressions (see Table 3). Middle period and early period sites tend to be similar except in regard to Salado polychromes. The closer similarity of early and middle period sites is true for steatite classes as well. The presence of large ornaments does not seem to have chronological implications, however.

Plots were made of the sites by temporal period with correlations of certain classes of steatite and the presence of various ceramic types. From the plots, two points became clear. First, within the Q
Figure 2.

Proportions of Classes Present -- Q Ranch Collections

Figure 2.
Proportions of Classes in Middle Period Sites

Figure 3.

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Ranch Region, sites tend to cluster in the Campbell Creek Basin in all time periods. This basin is not known to be a source area, but occurs between the Rock House and Sloan Creek sources and is not unreasonably distant from the Wilson and Walnut Creek sources in the Vosberg area. Thus, the inhabitants of any site in the Campbell Creek Basin can be considered to have had equal access to the raw materials (a distance of 4.8 km to 7.9 km to any one source). These correlations also show that not all sites, regardless of period, have evidence of steatite processing and use. Thus, the location of sites in the Q Ranch Region does not alone explain the presence, absence, or proportions of steatite debris and artifacts.

Four clusters were formed by the statistical analyses. Based on the frequencies per cluster, attempts were made to explain these groups as representative of manufacturing or consuming sites. These explanations were tenuous, however, due to reasons that were made clear by the spatial plots. Again, proximity to sources did not explain the amounts and proportions of steatite present.

Table 2

COLOR OF STEATITE BY SELECTED CATEGORIES*

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* for Q Ranch collections only
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<tr>
<td><strong>Total</strong></td>
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* degrees of freedom: df=2, 2-tail test
** expected frequencies in parentheses
The clusters of sites do bear a strong resemblance to temporal groups (based on the ceramic analysis). These similarities are attributed to sites of the same temporal period having similar and distinctive proportions of steatite categories in their assemblages.

Some warnings are necessary concerning the nature of the present data set, both these collections from the Cholla Project and those from outside the Q Ranch Region. The Cholla data are derived almost exclusively from surface collections and essentially surface contexts. The nature of the surface clearly differs between early and late sites. The living-working surfaces of the early sites are much more open and easy to expose by natural processes because they lack the cover of massive amounts of rubble. As the size and number of habitation structures increased in the late period sites, it is likely that the locations of activities changed within the sites as well. It is therefore expected that the loci of steatite processing will not be as visible in late sites.

Further, it is expected that finished products (especially beads and ornaments) will occur in other than surface contexts in late, middle, or early sites; that is, finished products will not be left about the surface but will be stored in special places (in vessels or pouches) or deposited in special contexts (such as offerings and burials). For these reasons, it may be impossible to differentiate manufacturing and consuming sites from surface evidence.

Support for this is seen in the consistently low bead counts in the Cholla data. From other sources, it is known that beads can occur in profusion in burial contexts in early and middle sites (E. Cummings 1971; Vivian 1969) and can occur as well in late period sites (such as Kinishba, B. Cummings 1940). The author has also been told of a profusion of probably steatite beads from the Granite Basin Ruin (GP C:2:28), a Pueblo IV period site in the Cherry Creek drainage. The very few burial contexts investigated on the Cholla Project lacked steatite artifacts.

Thus, the different natures of the surface between early and late sites may severely distort the perceptions of the collections thus far obtained. Specifically, the apparent low total counts, especially for beads, at late period sites may not be accurate at all. There is also a problem in comparability between collections from different projects. Collection strategies were not noted and whether raw materials were collected at all is problematic. These problems can be corrected in future work. The present data do, however, appear to lead toward certain interpretations of interactions of the Q Ranch Region and other regions of Arizona.

COMPARATIVE DATA

Steatite exotics are known, of course, from other areas in Arizona and the Southwest. If the objects are not of steatite, their form and production closely parallel that of steatite and they tend to follow the general temporal ordering of objects found in steatite. Specifically, there appears to be a heavier emphasis on bead production in the period prior to A.D. 1200, while later, large ornaments and objects, particularly shaft straighteners, become the common
Figure 4.

Proportions of Classes in Early and Middle Period Sites
forms of steatite exotics.

A thorough but not exhaustive examination of Southwestern archaeological literature has provided some interesting information on the distribution of steatite or other stone assemblages of exotics. In many cases, there is a high probability that the objects described or illustrated are steatite, but this will require verification by actual inspection. Again, if the exotics are not steatite, then the consistency of period, type of object, and manner of production are noteworthy.

Thirty-one references to steatite objects, possible objects of steatite, and objects of similar stone were found, but these will not be discussed in detail. Most of these concern sites or artifacts that occur in the area of the confluence of the Salt and Gila rivers, in the vicinity of Flagstaff, and in the White Mountain area around Show Low. The purpose in presenting the data is to show the form, quantity, and temporal-spatial-cultural distribution of this material in Arizona.

Particular note should be made of the assemblages of exotics in the Salt-Gila area. With respect to shell exotics, the prehistoric inhabitants of this area, the Hohokam, used the largest number of species, produced the greatest quantity of worked shell, more extensively elaborated the forms made, and utilized a greater variety of decorative techniques than elsewhere (Tower 1945:44). There is little doubt that this area was a focal point for prehistoric trade in shell.

The greater elaboration of shell forms by the Hohokam is paralleled in steatite (Gladwin and others 1937). In addition to the beads and shaft straighteners typical of other steatite assemblages, the Hohokam made censers, palettes, effigy vessels, bowls, anthropomorphic figurines, and large ornaments and objects of steatite. The role of the Gila Basin Hohokam in exploitation, manufacture, and distribution of steatite objects is unclear, however.

TRADE AND INTERACTION

It is safe to propose that the Q Ranch survey area and the neighboring Vosberg district to the north (studied by Arizona State University from 1967 through 1970) form the nucleus of an area of steatite exploitation. Harris (1974:24,86) concludes that the major reason for occupation at Vosberg concerned the exploitation of lithic resources, particularly steatite and serpentine. The case is perhaps a bit overstated in implying that Vosberg alone supplied the Hohokam world with material, but the general observations of the apparent fluorescence of steatite processing at the time of Hohokam contact in the Q Ranch Region underscore the similarities of the Cholla Project and Vosberg data.

The "Hohokam connection" in steatite continually surfaces in one aspect or another of the sites and their assemblages. Early sites show heavy processing of steatite, presence of shell, and Hohokam ceramics as a common association (see also Harris 1974:85). With the absence of Hohokam ceramics and shell items, the working of steatite seems to disappear or decrease. It would be intriguing to posit that the Hohokam were instrumentally involved in the acquisition and redistribution of steatite throughout their
own heartland and north to the Flagstaff area (see also Fish and others 1980).

The relationship of the Hohokam and Mogollon in the Q Ranch Region has been problematic (Whittlesey and Reid 1982). It is unclear whether Hohokam people or just elements of their material culture were in the region. For present purposes, a vague concept of a Hohokam "cultural presence" is used to describe either of the above situations. What is curious is that at the time the Hohokam cultural presence declined in the Q Ranch Region, the forms of steatite exotics changed and the direction of distribution seemed to shift from the south to the north and east. There was also an alteration in the settlement system from small, dispersed pueblos to larger, aggregated pueblos. This alteration of basic cultural styles (seen ceramic and architecturally) also seemed to alter the basic exchanges, both the routes and materials exchanged. In particular, with respect to beads, various clays and turquoise become the predominant materials used. These beads were usually much smaller, possibly because of the nature of the materials used, and could have assumed additional aesthetically pleasing properties, that is, non-gray color. The source areas for these materials were not in the Q Ranch Region.

Although the Q Ranch Region may have supplied most of the state's steatite, it is clear that in no way can it be construed as a major trade center. Whatever happened in the area was more ancillary to the major flow of items and ideas around the Southwest. It is possible that the peoples of the Q Ranch Region had a small cottage industry in the production of some steatite items (particularly beads). Confirmation must await collection of additional data, probably from excavated contexts where bead-working kits may be found, and where the proportions of finished products to raw materials and partially finished items may be quite different from those seen in the surface collections. Are there, in fact, quantities of beads present in the Q Ranch area? In what quantities as compared to other areas, and in what contexts?

Trade to the north would be relatively easy. Primarily finished forms are known from sites in this area. The Chevelon data hint at partially finished products being obtained by direct exploitation or by exchange with the Q Ranch Region. This is a distance of approximately 56 km. If, however, steatite is available in the appropriate geological exposures at the head of Canyon Creek, the source areas could be as close as 16 km to the Chevelon sites.

Similarly, to the east, sites known to have steatite are within this range of distances (16 km to 56 km). It could also be that steatite is available closer to places like Grasshopper in exposures in the cliff faces of Canyon Creek. For the most part, none of the distances to the sites to the north and east is so great as to preclude direct exploitation.

Comparing bead size to proximity of sources may provide some insights into the actual form of the exchanged items. It would be expected that if partially finished materials were being traded, the end products might be small and there would be little debris (wastage) -- a maximal utilization of the material. On the other hand,
if finished beads were traded, the sizes found should be uniform with those in the source area.

The pan-Southwestern fascination with beads is worthy of reemphasis. In the Q Ranch Region, the work that elsewhere was done in argillite, clays, turquoise, and shell, was done in steatite. Steatite was as accessible as these other materials and was among the most easily worked. Perhaps because of this accessibility and workability, steatite appeared to have some marketable value without undue cost to the procurers and initial processors. This is evident in its distribution away from the known source areas.

How the steatite, in raw material or finished exotic forms, achieved its distribution remains unclear at this point. As mentioned before, it is possible that the local residents of the Q Ranch Region had an industry, beneficial and profitable for a time, in the production and exchange of steatite beads or bead blanks. It is also possible that the residents of the more distant areas were coming to the Q Ranch area to procure and produce their own exotics or partially finished items (such as blanks). A mixture of these alternative processes of steatite acquisition and distribution may have resulted from varying demands, desires, and directions of the exchange networks serving the larger interaction spheres during different time periods. Many of the locations and contexts containing the data able to clarify these interactions are unexplored at this time.

There is, then, the potential for monitoring temporal and spatial aspects of prehistoric peoples in the Southwest through the forms and distribution of steatite. The material is widespread, spans several distinctive time periods, and is readily identifiable. It also may be possible to recognize specific sources of the material. More careful work is necessary in sampling and obtaining collections from surface and subsurface contexts; more information is needed on areas where it is possible to acquire steatite; and more information is needed on the distribution of steatite including accurate identifications of materials already in various collections.

Arizona State Museum, Tucson

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Many archaeological papers in the Southwest have mentioned the word reservoir as used in water supplies. One of the first uses of the science of civil engineering and archaeology was the Di Peso-Turney work on Casas Grandes Mexico (Di Peso 1974:671). Prehistoric Water Reservoirs—The Southwest (Turney 1985:73) approached the subject in a scientific method and established criteria for prehistoric reservoirs. This paper was designated "Preliminary" because it was realized that further investigations needed to be done. Numerous additional prehistoric reservoirs have now been investigated, and additional information obtained.

This paper concerns well-identified and visible prehistoric reservoirs at the little-disturbed site of Pueblo Blanco in the Galisteo Basin. That the Pueblo had a water supply problem is well established (Nelson 1914:86).

LOCATION AND LAND OWNERSHIP

The prehistoric site of Pueblo Blanco is located 10 miles southwest, as the crow flies, from the present-day community of Galisteo. The site is located on Section 5, Township 12 North, Range 9 East, New Mexico Principal Meridian. The location is in the foothills of the southern rim of the Galisteo Basin. The section is made up largely of State Trust Lands.

GENERAL DESCRIPTION

"Pueblo Blanco, LA 40, is a huge masonry ruin which contains an estimated 1,450 rooms. There are 16 roomblocks arranged around seven or eight plazas. Ceramic remains indicate a date from A.D. 1400 to 1600+. It was founded in the mid P-IV period. Site size apparently peaked about A.D. 1400-1425," (Stuart et al. 1981:102). Recent information indicates approximately A.D. 1375.

Nelson in his report on Pueblo Blanco (Nelson 1914:88-89) mentions three reservoirs. For convenience sake, they will be referred to as the North Reservoir, Plaza Reservoir, and West Reservoir. In recent ground surveys, a fourth reservoir was found which will be referred to as the South Reservoir.

With the exception of a recently constructed stock watering tank, today there is no water at the site. In addition to the reservoirs, Nelson notes a small "dripping" spring. Water is particularly scarce (Nelson 1914:86). Nelson's observations are well borne out. Even with the constructed reservoirs, it is difficult to understand how such a large pueblo could exist with the very limited amount of water available for domestic and building purposes.

PHYSICAL CONDITION OF THE RESERVOIRS TODAY

The North Reservoir is the only one with enough visible remains for a study. A baseline was accurately established, and the dam and storage area were carefully mapped with a plane table, K & E telescopic alidade and stadia rod. The
drainage area was determined by two civil engineers walking out the ridge line, determining bearings with a Brunton Compass and Lietz range finder. United States engineering units of measure (feet and tenths of feet) were used (Turney 1985:43).

The reservoir is located at a narrowing spot in the intermittent stream bed. Rock is exposed at each end and in the center of the dam. Were it not for the steep slope, which reduces storage capacity, an excellent site location was made. During instrument surveys, a quite small breached dam was found to underlie the east half of the dam. Apparently the ancient builders had placed a test dam to determine if it was worth the effort to construct a larger dam.

The length of the earthen dam is approximately 416 feet, maximum height is 11.4 feet, and the crest width is 5 to 10 feet. The spillway is located in the dam with no erosion protection. This design could not prevent erosion from water flowing over the dam, down the embankment, and resultant rapid breaching once the dam overflowed.

The builders apparently were never able to determine the problem of breaching. Excellent rock exists on each end of the dam where the spillway should have been constructed along with gentle rock slopes to the stream bed.

The top of the embankment has rows of rock extending from the base to 2 feet above the dam, which has been quite puzzling to viewers. These rocks, which weigh as much as 200 or 300 pounds, were placed vertically edge to edge and not in any way fitted together. They were simply held in place by the loose earth of the dam. The
builders apparently felt that these rocks would strengthen the dam. In actuality the rocks increased failure, as water passing through an earthen dam will start to follow any hard surface and commence piping and erosion. Once piping and erosion start the dam will breach, and water behind the dam commence to flow, creating a force of velocity. This force will greatly increase as the breach widens and the velocity accelerates. In this instance, that velocity washed 300 pound rocks 20 feet downstream.

Another interesting feature is the lack of evidence of flood flows in the sediment above the dam. A cut face in the sediment 2.5 feet in depth was of uniform texture, with only a few lenses at a depth of 1.8 feet. There are no present-day highwater marks in the breach, and recent flow markings were only 0.2 feet in depth and 3.0 feet wide. This all indicates a gentle flow of water from the watershed area. The few apparent sediment markings were curved downward in two places, indicating that shallow depressions were on the floor of the reservoir at the time of the floods. It is speculated these were possible depressions scooped out for easier filling of bowls and jugs, and possibly for settling of muddy water. Those who have attempted to get a drink from a dirt stock tank are well aware of the problem.

Soil in the drainage area is described by the Soil Conservation Service (SCS 1975:32) as well-drained weathered from Mancos Shale and mixed wind-laid materials. The surface layer is brown heavy loam, brown when moist, very dusty when disturbed, weak, slightly sticky and slightly plastic when wet. The subsoil is pale brown and light yellowish brown clay loam to about 24-inches. (Test pit No. 3 Munsell 2.5Y 5/2 dry, grayish brown.) The substratum is light yellowish-brown clay loam. Shale is at about 50 inches. A test pit 12 inches square and 1 inch deep was filled with water and timed for percolation. The pit was empty in 5 minutes and the soil was damp to a depth of 1 1/2 inches. Digging of test pits was almost impossible below 1 foot.

This soil creates a most interesting run-off feature. There will be no run-off until the soil has been saturated by several days of rain, and then the run-off will be slow, explaining the lack of gullies and soil layers in sediment. It is quite doubtful if 50% of precipitation will reach the reservoir.

Sherds found in the bottom of test pit No. 3 have been tentatively identified by Schaafsma (1987) as late glaze E or F, which would postdate the reservoir and date to A.D. 1515 and possibly extend to 1600. Additional testing is greatly needed. The test pits did not disclose any historic items.

RESERVOIR CAPACITY, USE, AND FAILURE

The capacity of the reservoir was determined by probable finished contours when the dam was constructed. Rock outcrops on the site and shape of the valley below and above the dam give some information on the original contours. Soil borings would give more detailed information, but probably wouldn't be worth the effort in the very hard compacted sediment. The builders excavated material for the embankment from above the
dam. There are no indications of excavations below it.

The finding of sherds in sediments varying 1 to 4 feet above the original bottom indicates long-term use of the reservoir. It is within 800 feet of room blocks and probably was used mainly for domestic purposes. Assuming a family of five persons (Turney 1985:47) and 1.75 gallons per capita per day, then a family would need about 9 gallons per day. There are also suitable areas for cultivation in the valley leading to the reservoir. It is quite possible that pot watering was done. It is doubtful if the water was used for construction, discussed under Plaza Reservoir.

The operation of the reservoir presents further interesting information. The reservoir is actually quite small due to the slope of the channel, which reduces capacity to 365,000 gallons at spillway level. Engineering studies have shown that a reservoir is generally operated at two-thirds of total depth, and evaporation loss is taken at that level.

The drainage area would have yielded 2.0 million gallons, with total yearly precipitation of 15 inches, 1.9 million gallons with 14 inches, and 1.59 million gallons with 11.7 inches. Reservoir losses from evaporation are estimated to have been 312,000 gallons. There was no seepage under the dam due to the rock outcrop and impermeability of clay. A great deal more water was coming into the reservoir than storage could be provided for. Accordingly approximately 1.5 million gallons would have to have been withdrawn yearly to prevent failure of the dam. This would have been in addition to the 53,000 gallons in storage. Domestic water could have been
Figure 3. Pueblo Blanco: reconstructed north reservoir.

provided for approximately 975 persons for 120 days.

With a spillway depth of water of 0.1 feet, the spillway overflow capacity would have been 7.5 cubic feet of water per second (King 1939:151). A 2-inch rain over the drainage basin would have produced 10.2 cubic feet per second (Turney 1985:45). A 2-inch rain would probably have occurred once every 5 years (SCS 1973:Exhibit 2-2). With a depth of water over the spillway of 0.1 feet, the velocity would have been 0.79 feet per second, and with a depth of 0.2 feet, the velocity would have been 1.11 feet per second (King 1939:253). Fine sand will commence scouring at a velocity of 1.5 (King 1939:286). An occasional overflow might have misled the builders of the dam into falsely believing that an earthen spillway in the center of the dam would function properly.

Further excavations and dating will be required to determine if the reservoir breached after pueblo abandonment or during occupation. From a study of deposition of sediment, it appears that the reservoir was abandoned and sediment rose to within 2 feet of spillway level. A storm then occurred that overflowed the dam by more than 0.2 feet and for a length of time sufficient to commence scouring. Once scouring of a half-foot of soil on top of the dam occurred, the dam would then have breached. The projecting rocks would also have increased velocity between the rocks and accelerated scouring.

The Plaza Reservoir is too far destroyed to map, and only rough measurements have been made. The dam was north-south, 44 feet long and about 4 feet
high. As Nelson noted, a reservoir in this location couldn't have amounted to much, as it would have damaged buildings on the plaza (Nelson 1914:88). He was incorrect in stating that a good share of flow was cut off by the North Dam. There are numerous drainage areas below the North Dam, and flow marks below the plaza dam indicate considerable flows today. It is felt that the Plaza Reservoir was constructed more as a retaining wall to hold earth in the plaza. Also, a depression above the dam would catch wet sediment and offer ready-mixed mortar for building construction. The plaza dam did not appear to have had vertical rows of rock similar to the north dam. Excavation of other mounds at the entrance to plazas on the site may reveal similar walls that could have been for catching runoff. Runoff from the hard-packed plazas and roofs would have been 90 percent of precipitation or greater.

The Western Reservoir no longer exists, as the result of a recently constructed stock-watering reservoir. Figure 11 (Nelson 1914:89) is the Western Reservoir. Rows of vertical rock similar to those in the North Reservoir were used. The crest of the dam appears to be higher to the north, indicating a center spillway. The dam breached in the center. The reservoir probably had a greater capacity due to the gentler slope of the valley. Drainage area was not determined. Flood marks indicate a greater flow than the North Dam. Immediately below the dam is a live, beautiful cottonwood tree (Populus wislizeni), one trunk being 4 feet in diameter. Cottonwoods in mountain valleys are always an indication of water close to the surface. Below the cottonwood, lush grass exists. This may be the dripping spring mentioned by Nelson (Nelson 1914:86).

The large arroyo passing through the Pueblo has two branches, one to the west with the Western Reservoir, and on the south branch there appears to be a possible abutment for the Southern Reservoir. A few scattered rocks across the floor of the arroyo would also indicate the usual vertical walls. Further south, some 300 feet, a sandstone ledge is nicely water carved, indicating a flowing stream at some past time. A 20-foot diameter rock stilling pond has also been water carved below the waterfall.

HISTORIC OR PREHISTORIC

The nomination form for the National Register of Historic Places states "Nelson also noted the presence of three reservoirs which he seems to feel were made by occupants of the village, but this had not been demonstrated," (LeBlanc 1980:2). In this author's original paper (Turney 1985:45), I gave considerable discussion to the criteria by which to recognize prehistoric, as distinguished from historic, reservoirs. These criteria as applied to Pueblo Blanco include that the soil of the North Reservoir could have been worked with primitive tools for up to 2 feet when dry and several feet when wet. There are no marks of metal construction equipment at the site. There are no wood or metal devices of any kind for letting water out of the reservoir.

Additional criteria are that the peculiar construction of using vertical rock walls would have precluded the use of
Figure 4. Looking east, downstream slope to right, curve of dam, rows of vertical rocks, breach at left with trees.

Figure 5. Breach with trees growing in breach, looking upstream. Heavy rock in foreground moved downstream.
fresnos or slip scrapers. Spillways in the center of earthen dams have never been found in historic reservoirs. The crest of the dam follows an irregular curve. On the Northern Reservoir, capacity is not economically feasible for stock watering. Three Rocky Mountain Junipers (Juniperus scopulorum), one with a trunk 1.2 feet in diameter, are growing near the bottom of the breach. No tree dating has been done. Dating would indicate the minimum time since the breach occurred. There are no features on any of the reservoirs that indicate they are historic.

COMPARISON OF PREHISTORIC RESERVOIRS

Studies have been made of prehistoric reservoirs in the Gallina, Pajarito, and Jemez areas. They follow a similar pattern and are referred to as the northwest reservoirs.

Diversion dikes -- Most of the northwest reservoirs employed diversion dikes to direct flows. No diversion dikes have been found at Pueblo Blanco.

Spillways -- All of the northwest reservoirs have their spillways at the end of the embankment, thus preventing scouring of earthen fill. All of the Pueblo Blanco spillways were in the center of an earthen dam.

Vertical rock walls in the embankment -- The northwest reservoirs used, when available, large rock in the embankment to reduce the amount of earthen fill. The Pueblo Blanco reservoirs used several vertical rock walls in each dam, as previously discussed.

Drainage areas -- The northwest reservoirs all had much smaller drainage areas.

Failures -- The northwest reservoirs had only a few failures, and they were not the result of design. Pueblo Blanco reservoirs were inferior in design to the northwest reservoirs.

SUGGESTIONS FOR FUTURE STUDIES

Obtain pollen samples in the sediment above the dam and in the dam. Cattail pollen would indicate water in the reservoir year-round. Cattail pollen within the dam might be indicative of sediment being used to raise the dam.

Test borings or cuts should be made into the dam to determine possible sherds at various levels. Test cuts should be made along the shore line for ceramic for dating and methods of recovering water.

Date tree in breach.

Compare the dam with other prehistoric dams in the Galisteo basin.

Study volume of embankment, possible methods of moving and placement, manhours of work, and workforce organization.

ACKNOWLEDGEMENTS

A project of this scope requires a great deal of assistance in the field and the professional help of archaeologists.

It was very gratifying to have the enthusiastic assistance of so many persons who were involved in the study. The project is located on state and private lands, and I wish very much to thank Lew W. Cook, owner and lessee of the land, and his foreman Rankin Wolf, for their permission to enter the land and their most courteous and friendly cooperation. Duane Gladwell of the New Mexico State Land Office was most courteous and helpful.
Bill Sundt was desirous of using a telescopic alidade and performed an excellent job in running the "gun." Landon Smith was an excellent rodman and lent his archaeological experience to interpretation of land features. Ken Ewing did a good job of carrying the "idiot stick." Curtis Schaafsma was of great assistance in outlining the project and obtaining a permit from the State Cultural Properties Committee and State Land Office. Regge Wiseman is much appreciated for his field work and assistance in preparation of the test.

Tom Morrison, Civil Engineer, assisted in determining the drainage area and survey computation and is to be thanked. Billy Turney is given credit for the photography. We are most appreciative of the comments by Dr. Richard Lange concerning ceramics. Frank Eddy is appreciated for spending time in the field with his appropriate remarks. My wife Mary is also to be thanked for her usual and dependable assistance.

Santa Fe
CHARACTERISTICS OF NORTH RESERVOIR*

Type — across drainage
Soil* — SCS Las Lucas series Clay loam
Drainage area in acres — 10.2
Vegetation of drainage area — grass, scattered juniper, pinyon
Terrain — gentle slope, $2^0 30'$
Amount of run-off (in percent) — 50
Embankment — earth with rock
Rip-rap — none, fallen rock from vertical walls
Spillway design — earth
Spillway capacity in cubic feet/second — 7.5 (depth 0.1 feet)
Spillway, width and depth, feet — 95 X 1.2
Reservoir losses gallons/year 312,000
Sediment depth, in feet — 7
Surface area in acres — 0.39
Maximum depth in feet — 8.2
Capacity in acre feet — 1.12
Capacity in gallons — 365,000
Capacity in liters — 1,381,525
Capacity after losses in gallons — 53,000
Elevation in feet — 6420 NGVD \ 20 feet
Average annual precipitation,* inches — 14

Data marked with * Soil (SCS 75:32 Plate 98), Precipitation (SCS 1972), Evaporation (Gabin 1977:341,344)

Capacity is maximum capacity at spillway level.

PRECIPITATION

Only a rough estimate of precipitation at Pueblo Blanco, elevation 6420 feet, can be made. Nearby weather stations give some guidance. Precise data on weather would not affect end results for this study.

<table>
<thead>
<tr>
<th>Location</th>
<th>Elevation in Feet</th>
<th>Year</th>
<th>Reference</th>
<th>Precipitation Inches</th>
<th>Evaporation Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map of Area</td>
<td>6420</td>
<td>1972</td>
<td>(SCS 1972)</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Santa Fe College</td>
<td>6800</td>
<td>1977</td>
<td>(Gavin et al. 1972:344)</td>
<td>13.1</td>
<td>64.2</td>
</tr>
<tr>
<td>Galisteo</td>
<td>6074</td>
<td>1977</td>
<td>(Gavin et al. 1972:337)</td>
<td>13.7</td>
<td></td>
</tr>
<tr>
<td>Arroyo Hondo</td>
<td>7100</td>
<td>1970</td>
<td>(Rose et al. 1980:103)</td>
<td>14.2</td>
<td></td>
</tr>
<tr>
<td>Arroyo Hondo</td>
<td>7100</td>
<td>1970</td>
<td>(Rose et al. 1981:102)</td>
<td>13.2</td>
<td></td>
</tr>
</tbody>
</table>

Average 1400 to 1600 AD

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On June 25, 1987, the writer conducted a partial inventory of pottery associated with the north reservoir of Pueblo Blanco, in the Canada del Medio drainage of the Galisteo Basin. Additional examination of the floodplain below the reservoir was made on July 31. This work was done in conjunction with William F. Turney's studies of the Blanco reservoirs and was primarily directed toward dating the construction and use of the north reservoir.

SHERD DISTRIBUTION

In the north reservoir area most of the sherds visible on the surface occur on the rocky, downstream, south slope of the embankment. Sherds are also present on the crest, on the constricting ridge points that were joined by dam construction, and along the arroyo that proceeds from the breach (see Turney, above). Very few specimens were noted on the silt-covered floodplain below the dam or on the north side of the embankment, although specimens were not uncommon in eroded areas of the floodplain where surface soil had been removed, and at the base of the dam's north slope in locations exposed by arroyo cutting. A few sherds were observed to be eroding out of the deep silts of the inner reservoir, but none were recorded on the surface of these silts within the storage area. A number of sherds were uncovered during Regge Wiseman's (Museum of New Mexico) facing of reservoir floor silt deposits in a gully directly above the breached spillway.

As will be seen below, this description of the observed distribution and density of pottery sherds has importance in the dating of the reservoir.

THE CERAMIC INVENTORY

In order to effectively sample the surface pottery of the north reservoir, an area of relatively high sherd density was selected. The area included the south half of the crest and the south face of the embankment, beginning 3 paces (about 7.5 feet) west of the breach and extending 20 paces (some 50 feet) up the ridge point west of the abutment. Within this area, each sherd was assigned some classificatory label and the kind of vessel from which it came was noted. When rim sherds were encountered, their profile was either sketched or indicated by type designation. No sherds were collected.

The area of intensive inventory encompassed over 7,260 square feet, within which 190 sherds (very probably representing almost as many vessels) were recorded. Rio Grande Glaze Ware sherds dominated the sample (Table 1), less than 3 percent of the pottery being from gray ware vessels (also commonly referred to as "culinary" or "utility" ware). The greater quantity of sherds represented jars. Given their context, most of the much smaller number of bowl sherds may come from vessels used as dippers.¹

All of the bowl rim sherds are assignable to Glaze Group A in the Mera (1933:3-4) typology; Glaze I in the typology employed by Kidder at Pecos (Kidder and Shepard 1936: xxx, 1-78). Based on rim form and other salient attributes, at least three Group A types -- Agua Fria Glaze-on-red, San Clemente Glaze-polychrome, and Cieneguilla Glaze-on-yellow or Glaze-polychrome,
could be identified among the bowl sherds. In addition to San Clemente, at least one other polychrome is represented by bowl and jar sherds, having yellowish slips and small red-filled elements outlined in glaze paint. Unless identified to type on the basis of rim form, such specimens are listed in the tables under "Glaze Yellow Polychrome." These specimens exhibit features typical of Cieneguilla Glaze-polychrome, a rare type of the Group A complex. However, as such features can also occur in Group B and C types, these later expressions cannot be entirely ruled out.

The most common sherds were those showing "yellow" slips with or without glaze decoration. These are followed numerically by specimens of reddish surface color, floated or slipped. Among the glaze-on-yellow rim fragments are four from jars. Within these, two show profiles primarily -- although not exclusively, associated with Group A and the Cieneguilla types.2 Another exhibits a vertical rim with a very slightly everted terminus, most similar to the low everted rim described by Honea (1966) for the Group A Sanchez types (Figure 1). The fourth item shows the lipward thickening reported by Kidder (87, 106, 113) for Glaze II-III (i.e., B-C) jars, but with the rounded, over-hung lip sometimes seen in Glaze A red jars. This combination (as well as early appearing surface features) favors the possibility of an association with the Largo, Glaze B type group, in which jar form is poorly known.

The plain and smeared corrugated Gray Ware specimens probably represent differently textured areas of the same or similar vessels. The specimens agree with the description of Paint Blind-corrugated (Kidder and Shepard:311-312, 314), a variety prominent during the Glaze horizon at Pecos Pueblo. At face value, the composition of the sample described above suggests that the larger north reservoir dam saw primary use during the later part of the period in which the Group A glaze predominated among the painted pottery in use in the Galisteo Basin and vicinity. The time represented seems to have been ceramically characterized at Pueblo Blanco by the ascension of Cieneguilla Glaze-on-yellow and decline of its fore­runner, Agua Fria Glaze-on-red. Other aspects of this basic profile are a) the occurrence of small quantities of San Clemente Glaze-polychrome and glaze yellow polychrome (all factors considered, the majority of which presumably represent Cieneguilla Glaze-polychrome); b) the presence of a jar sherd displaying a tapered, very slightly everted rim -- which at the least would seem to foreshadow the development of the late Glaze A type Sanchez Glaze-on-yellow (Honea 1968:136, 156-157); c) the occurrence of a glaze yellow jar with the thickened rim that is the hallmark of the Group B glazes; and d) the presence of the highly utilitarian smeared corrugated pottery that marks the last gasp of the local corrugating tradition.

An interval in local ceramic history defined by these basic characteristics was certainly observed by Kidder (2) in the Pecos deposits; by Nelson (1916:166, 170) in the trash sequence of Pueblo San Cristobal northeast of Blanco and by the writer (Lang 1977:412) at some special activity sites associated with San Cristobal and more recently at several farming locales of Pueblo San Marcos, located north of Blanco between Galisteo Creek and the Santa Fe Plain.
Examination of the rest of the dam embankment, crest, eastern ridge abutment and the floodplain and arroyo below the dam, disclosed the general presence of essentially the same ceramic complex as that defined for the intensive inventory area on the west side of the dam. Yellow and glaze-on-yellow sherds were very abundant, and red or glaze-on-red considerably less so. The vast majority of the specimens exhibit slips, glazes, and line-work characteristic of the earlier glaze types, and of Group A in particular. Fourteen rim sherds were recorded. Type assignments were as follows: 3 Agua Fria Glaze-on-red; 1 Sanchez Glaze-on-red; 8 Cieneguilla Glaze-on-yellow; 1 Cieneguilla Glaze-polychrome; and 1 Espinosa Glaze-polychrome. As two of the glaze red and four of the glaze yellow rims are from jars, typing is provisional in these cases. The Espinosa specimen is also from a jar and was so typed on the basis of its strong interior bevelling and thickening (Kidder and Shepard 113) (Figure 1-k). As Espinosa had definitely developed as a type during the time of Group A dominance (Lang 1975), its presence here (south face of the eastern end of the embankment) does not significantly alter the previously described configuration.

Table 3 presents relative type frequency based on rims from the whole of the dam area. Percentages remain similar to those of the inventory area (Table 1), accepting the lower glaze-on-red representation, the presence of Espinosa, and the absence of San Clemente, a type for which no rims were present. We may conclude then, that the primary ceramic assemblage of the north reservoir is a late Group A complex, with Cieneguilla (relatively good yellow slips) dominant, Sanchez present, and Largo and Espinosa probably emergent.

In Mera's (1940) initial attempt to associate change in the Rio Grande Glaze sequence with hard dates of tree-ring origin, he suggested that Cieneguilla Glaze-on-yellow had developed by the late 1300s (Mera:3). More recently, such dating has been well confirmed by a variety of stratigraphic, statistical, and date information from Arroyo Hondo Pueblo, located on the piedmont northeast of the Santa Fe Plain. We also know that Arroyo Hondo saw an abrupt decline and gradual abandonment in conjunction with the terrible drought of ca. A.D. 1415 to 1425 (Lang and Harris 1984:143, 182; Rose, Dean, and Robinson 1981:100). In regard to the dating of the Blanco north reservoir pottery and of the period of Glaze A yellow dominance, it is very important to note that by the 1420s yellow-slipped glaze ware was still very much subordinate to glaze-on-red at Arroyo Hondo, even though both Largo and Espinosa had made their initial appearance. This pattern is corroborated by the ceramic profiles of the abandonment horizons of the Alfred Herrera and Wheeler sites on the Rio Grande near Cochiti and on Galisteo Creek (Honea 1968:159-166; Alexander 1971), independently assignable to the early 1420s (Honea). These data imply a post-1425 dating of the kind of complex seen at the north reservoir, and essentially negate current notions of the end date of Cieneguilla Glaze-on-yellow and Glaze-polychrome as being around 1425 (Warren 1979:193; 1980:159). By that time, Cieneguilla was becoming common in its primary area of
manufacture in the vicinity of San Marcos Pueblo, but was not being exported in quantity to either Alfred Herrera or Arroyo Hondo (Honea:161; Lang 1975; Warren 1968:188-189; 1979:190, 203, 211; Warren in Alexander).

Certainly the horizon of Cieneguilla's popularity, evident at Pueblo Blanco and elsewhere, dates after 1425. At least, neither Glaze B or C were apparently yet common. Glaze B remains poorly dated, Mera's (1940:3, 5) associated tree-ring dates simply indicating that it was well established by some point in the 1400s. Largo (B) and Cieneguilla are both well represented, and Espinosa present, at Los Aguajes Pueblo on La Bajada Mesa, where a strong cluster of building dates falls in the last half of the 1470s (Dickson 1979:111; Lang 1971; Smiley, Stubbs, and Bannister 1953: 15-16). The trash-bearing levels of Alfred Herrera's Component II appear to date after A.D. 1497, and contain a strong Espinosa representation (Honea 1968:166, 169; Robinson, Hannah, and Harrill, 1972: 41-42). Given the great, general weakness of Rio Grande Glaze type dating, I believe that the very best we can presently do in dating the Cieneguilla-dominant pottery complex of the north reservoir is to place it after A.D. 1425 and prior to the end of the 15th century. Excavations at Pueblo Blanco itself might very well contribute much toward defining and dating this interval in Glaze A development.4

POTTERY WITHIN THE RESERVOIR

Two sherds were noted eroding from the silty reservoir fill above the spillway breach. Both were glaze-on-red specimens, one from a bowl, the other from the neck of a jar. These differed from any of the glaze red specimens noted about the dam itself in the yellow-green, glassy, and very slightly runny character of the glaze and the brownish-red color of vessel surfaces. Glaze of this general sort seems most characteristic of Glaze III at Pecos, where Shepard (Kidder and Shepard:507-508) notes some reddish slips more typical of the later Glaze IV (D) (Ibid.:510). The angle of the jar neck suggests the weakly defined olla neck of Glaze IV, and shows a key decoration like those reported for Glaze III and IV (Ibid.:157, 163, 206). As both C and D are represented in Glaze III at Pecos (Ibid.:xxx), the primary correspondence may be with early D and San Lazaro Glaze-polychrome.

Among the ten sherds collected from strata cuts in this same reservoir sediment, two bowl sherds exhibit a greenish-brown glaze, in one case occurring over a medium-gray slip (or float) on the angular carina of a shouldered bowl. The combination of the steeply angled shoulder and the dingy background color are most typical of Glaze IV at Pecos, although strongly angular shoulders occur in late Glaze III (Ibid.:115, 161-163). Once again the piece is most comparable to the descriptions of San Lazaro. These gray specimens, as well as two red-fired sherds, exhibit a siltstone temper. In comparison with the local siltstone temper of Pecos, which is typical Glaze IV (D) temper there (Ibid.:509), no Pecos specimens exhibited siltstone fractures identical with those seen in the Blanco sherds. Comparisons should be made with the local Blanco clays for similar particulate inclusions, as well as with additional Pecos specimens and their attributes under X-ray defraction.

Among the remaining six
### TABLE 1. Pottery from Intensive Inventory Area.

<table>
<thead>
<tr>
<th>Type or Descriptive Category</th>
<th>Number of Sherds</th>
<th>Percent of Sherds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agua Fria Glaze-on-red</td>
<td>2</td>
<td>1.05</td>
</tr>
<tr>
<td>Red/Glaze-on-red</td>
<td>64</td>
<td>33.68</td>
</tr>
<tr>
<td>Cieneguilla Glaze-on-yellow*</td>
<td>6**</td>
<td>3.16</td>
</tr>
<tr>
<td>cf. Sanchez Glaze-on-yellow*</td>
<td>1</td>
<td>.53</td>
</tr>
<tr>
<td>cf. Largo Glaze-on-yellow*</td>
<td>1</td>
<td>.53</td>
</tr>
<tr>
<td>Yellow/Glaze-on-yellow*</td>
<td>100</td>
<td>52.63</td>
</tr>
<tr>
<td>Glaze Yellow Polychrome</td>
<td>8</td>
<td>4.21</td>
</tr>
<tr>
<td>San Clemente Glaze-polychrome</td>
<td>3</td>
<td>1.58</td>
</tr>
<tr>
<td>Smeared Corrugated Gray Ware</td>
<td>2</td>
<td>1.05</td>
</tr>
<tr>
<td>Plain Gray Ware</td>
<td>3</td>
<td>1.58</td>
</tr>
</tbody>
</table>

Total: 190 100.00

*May include sherds from polychrome vessels.*

**Includes 2 cf. Cieneguilla jar sherds (See text).*

---

### TABLE 2. Vessel Forms from Intensive Inventory Area.

<table>
<thead>
<tr>
<th>Type or Descriptive Category</th>
<th>Number and Percent of Bowl Sherds</th>
<th>Jar Sherds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agua Fria Glaze-on-red/Red/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glaze-on-red</td>
<td>8 4.21</td>
<td>58 30.53</td>
</tr>
<tr>
<td>Cieneguilla Glaze-on-yellow</td>
<td>4 2.11</td>
<td>2 1.05</td>
</tr>
<tr>
<td>cf. Sanchez Glaze-on-yellow</td>
<td>1  .53</td>
<td>1 .53</td>
</tr>
<tr>
<td>cf. Largo Glaze-on-yellow</td>
<td>1  .53</td>
<td></td>
</tr>
<tr>
<td>Yellow/Glaze-on-yellow</td>
<td>11 5.79</td>
<td>89 46.84</td>
</tr>
<tr>
<td>Glaze Yellow Polychrome</td>
<td>1  .53</td>
<td>7 3.68</td>
</tr>
<tr>
<td>San Clemente Glaze-polychrome</td>
<td>3 1.58</td>
<td>5 2.63</td>
</tr>
<tr>
<td>Gray Ware</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total: 27 12.80 163 85.79

---

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FIGURE 1. Jar rim profiles of the types Agua Fria Glaze-on-red (a-b); cf. Cieneguilla Glaze-on-yellow (c-g); cf. Largo Glaze-on-yellow (h); cf. Sanchez Glaze-on-yellow (i); Sanchez Glaze-on-red (j); and Espinosa Glaze-polychrome (k).

TABLE 3. Relative Type Frequency Based on Rims Only: North Reservoir.

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Rims</th>
<th>Percent of Rims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agua Fria Glaze-on-red</td>
<td>5*</td>
<td>20.83</td>
</tr>
<tr>
<td>Cieneguilla Glaze-on-yellow</td>
<td>14*</td>
<td>58.33</td>
</tr>
<tr>
<td>Cieneguilla Glaze-polychrome</td>
<td>1</td>
<td>4.17</td>
</tr>
<tr>
<td>Sanchez Glaze-on-red</td>
<td>1</td>
<td>4.17</td>
</tr>
<tr>
<td>cf. Sanchez Glaze-on-yellow</td>
<td>1</td>
<td>4.17</td>
</tr>
<tr>
<td>cf. Largo Glaze-on-yellow</td>
<td>1</td>
<td>4.17</td>
</tr>
<tr>
<td>Espinosa Glaze-polychrome</td>
<td>1</td>
<td>4.17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

*Includes 6 cf. Cieneguilla Glaze-on-yellow and 2 cf. Agua Fria Glaze-on-red jar rims. See also endnote 2.
sherds, all seem to have undergone some degree of alteration due to their context. Where slips have been retained, they are generally poor, sloughed, and dirty cream in color. All show red-fired clay. Two specimens bear augite latite temper of the sort Warren (1979:190, 194) associates with San Marcos Pueblo. One of these shows a dark-brown under-fired glaze. Four sherds exhibit Tongue Pueblo hornblende latite (Kidder and Shepard:194; Warren 1968:195). Two of these show an unusual gathering of glaze along the interior margins of the painted line. Warren (1979:190) has presented evidence for the exportation of large quantities of Tongue pottery beginning during Glaze C times, extending through D, into E. By all estimates, this fundamental change in the trade network occurred in the late 1400s and maintained considerable stability into the late 16th century (Warren 1979: 190-191).

The only odd glaze sherd recorded outside of the reservoir itself was found in the arroyo below the breach. It is from a polychrome jar exhibiting a glassy, dark-brown paint that was a bit runny. The glaze-enclosed filler is dark-red, the slip medium gray-brown. That on the rim interior is cream-white. It is quite possible that this specimen has eroded from the upstream reservoir silts.

Although overlap in both types and time is possible between the pottery found within and outside of the reservoir, some of the sherds from the silt fill are unquestionably more recent in age and different in character from the pottery associated with the dam embankment. The former must correlate with the late occupation of Blanco as represented by Group C, D, and E rims in the collection housed by the Laboratory of Anthropology, Museum of New Mexico. In terms of conventional dating, the presence of these Glaze groups would extend the occupation of Pueblo Blanco into at least the 1500s (Lang 1977: 412-413; Mera 1940:5; Warren 1979: 43).

Among the sherds from the reservoir sediments, the identifiably latest ware is Glaze D, which came into being in the 1400s and appears to have been becoming common during the first half of the 16th century (Lang 1977:243). By virtue of slip and temper attributes of some specimens, there is reason to suspect the presence of Glaze C as well, a type that was prominent at the turn of the 15th century (Ibid.: 412).

CONCLUSIONS

The pottery on and about the reservoir embankment can be roughly dated to the middle to late 1400s. All evidence suggests that this pottery is associated with the primary use of the reservoir. Pottery of demonstrably later date is found in the silts of the storage area. It has been suggested that after silting-in of the reservoir, pits may have been excavated into the sediment for purposes of limited water collection and that pottery potentially dating from the late 15th and early 16th centuries was there deposited in the process of water use and vessel breakage.

ACKNOWLEDGEMENTS

My thanks go to the following persons for their help in the development of this paper: Dolores Campbell, Frank W. Eddy, Laura Holt, Matthew Lang, Hope Merrin, Mary Ann Moser, Curtis Schaafsma, William
F. Turney, Regge Wiseman, and Rankin Wolf.

Santa Fe, New Mexico

ENDNOTES

1 Other activities associated with the reservoir are indicated by the presence of a spent argillite micro-core, 16 flakes and shatter fragments of argillite, hornfels, and selicified wood, and an argillite flake scraper.

2 Unthickened rims are reported by Kidder (87, 113) for both Glaze II and early Glaze III ollas. Slip and design features of the Blanco specimens make Glaze I (A) affiliation most likely.

3 The pottery so far recorded at the north reservoir is of no particular help in dating the earlier low dam that partially underlies this feature. Sherds associated with the exposed portion of the early dam may well be of much later date and derived through erosion off the superimposed embankment.

4 Inventory of surface pottery on the roomblocks and trash mounds of Pueblo Blanco was begun in late July by Timothy Baugh, Dolores Campbell, Frank W. Eddy, and myself. Although the inventory is incomplete, at least one major roomblock appears to have been trash-filled during a time when Cieneguilla was the common painted pottery.

5 In his identification of these rims, Regge Wiseman (pers. com.) recorded 16 Glaze A (2 Agua Fria and 14 Cieneguilla); 10 Glaze B, 20 C, 23 D, and 9 E.

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LARGE ANASAZI SITES OF THE MONTEZUMA VALLEY,
SOUTHWESTERN COLORADO: DEFINITION
DISTRIBUTION, AND FUNCTION

FREDERICK W. LANGE
HOLLEY R. LANGE

INTRODUCTION

North of the San Juan River are a number of large sites with collectively unique architectural relationships involving Great Kivas, towers, and combinations of kivas in roomblocks. These large sites have different internal configurations than pueblos such as Pueblo Bonito (Chaco Canyon) or Cliff Palace (Mesa Verde), and the majority of the structures at the large site of Yellow Jacket have been referred to as "kiva-houses" (Wheat, personal communication). These kiva-houses consist of high densities (50-100 or more) of kivas associated with limited domestic architecture, and were built between 1050-1250 A.D. Sites with such high numbers of kivas are known only north of the San Juan drainage, and may reflect major sociocultural differences between Anasazi groups north and south of the San Juan. Focusing on the Montezuma Valley in southwestern Colorado, we will attempt to delineate the geographical and temporal nature of these large sites and to offer some insights into their function. Extensive excavation at different sites is required to clarify the issues raised.

Discovery and Early Research

The prehistoric ruins of southwestern Colorado were first noted by Dominguez and Escalante in the late 18th century and were later surveyed and described by Captain J.N. Macomb (1876), J.S. Newberry (1876), W.H. Jackson (1876, 1878), and W.H. Holmes (1878). However, serious archaeological exploration of the region did not begin until the early 20th century, when Dr. T. Mitchell Prudden, a medical doctor from Cambridge, Massachusetts, made an extensive survey of the San Juan drainage area (1903, 1914, 1918). Traversing the territory by horse and buckboard with cowboy and Navajo guides, he visited, excavated, and recorded many sites north of the San Juan River. After these early explorations and excavations, there was a tendency to overlook such sites, and attention was given to the more accessible and eye-catching sites within what is now Mesa Verde National Park. Only recently (Wheat 1983; Bradley 1987) has research been focused again on those areas described by Prudden.

Environment

The Montezuma Valley (Figure 1) is on the northern edge of the rich prehistoric Anasazi culture area of the San Juan River, which was and is also the most environmentally productive section of the region. As Roberts (1929:8) wrote:

The San Juan itself and its northern tributaries, the Piedra, Pine, Animas, and Mancos, have their sources on the slopes of the San Juan Mountains in southern Colorado. They are the only streams which carry a never-failing supply of
water. The three great tributaries from the south, the Largo, Chaco, and Chin Lee, are almost wholly dry for a great part of the year.

Prudden (1903:227) further described the environment, noting that "Spruce, pine, pinon, and cedar flourish upon the higher hills, while upon the lower levels scrub-oak, sage-brush, and greasewood stretch for miles over the rocky slopes and along the broad arid valleys."

LARGE SITES IN SOUTHWESTERN COLORADO

The Montezuma Valley

In the Montezuma Valley are a limited number of large sites with components dating from A.D. 1050-1250, often but not always with the architectural features of towers, high frequencies of kivas and associated roomblocks, and Great Kivas. Less than a dozen known sites fit into this category, among them Yellow Jacket Ruin, Goodman Point, and Sand Canyon (Figure 1). Rohn (1983:177) summarized some of the large sites data for southwestern Colorado, and his effort is expanded in Table 1.

Chenault (personal communication) is seeking other possibly similar sites through remote sensing and ground survey. Yellow Jacket (Figure 2) has in excess of 100 regular kivas, and both Sand Canyon (Figure 3) and Goodman Point (Figure 4) have in excess of 80. It is interesting to note the different internal arrangements of these sites. At Sand Canyon they occur in both contiguous series and non-contiguous patterns along both sides of the head of the canyon. At Yellow Jacket, these kivas are in a unique linear relationship across a large, flat mesa top, like so many round beads on a string. At Goodman Point the kivas have a distribution similar to that at Sand Canyon.

Chronology and Ecological Setting

The known large sites date from Pueblo II and Pueblo III (A.D. 900-1275). Both Sand Canyon and Goodman Point are located in a rough horseshoe fashion (Figures 3, 4) around canyonheads and are associated with permanent sources of water where there are low marshy areas rich in vegetal and animal resources. Yellow Jacket does not seem to fit this horseshoe pattern, but does occupy a canyonhead location.

The Yellow Jacket, Goodman Point, and Sand Canyon sites were also strategically placed along the elevational continuum between the Dolores Valley rim (ca. 2,666 m) to the east, and the river valley bottoms of the San Juan (ca. 1,333 m) to the south. People living near the midpoint of this continuum would have been better able to adjust to the agricultural impact of changing climates. Examples from other parts of the world, such as the east slope of the Andes, demonstrate that intermediate habitation along a subsistence continuum provide the best guarantee of success.

Cultural features such as low dams and diversion channels are often present. The canyonhead location of these sites provided easy access to clay for ceramics and building material resources of the canyon bottoms and taluses. Although the canyonheads appear to have been the unique loci for these
Figure 1. Map of the Montezuma Valley area.
Figure 2. Detail of the Yellow Jacket Site.
Figure 3. Detail of Sand Canyon Site, courtesy of William Lipe. (Used with permission, Crow Canyon Archaeological Center.)
sites, the local topography of individual sites determined the internal organization of each. Comparison of Yellow Jacket, Goodman Point, and Sand Canyon shows the influence of local topography and indicates that individual site patterns, as well as the differences in patterns from site to site, are more geological than cultural in origin. However, the presence of the same suite of constituent architectural elements and preponderance of kivas adapted to the different settings suggests the significance of the overall architectural assemblage.

Descriptive Criteria of Large Sites

The evolution of this site pattern, in which a large site is surrounded by numerous smaller sites, is unclear. Some of these smaller sites date to the Basketmaker III period (A.D. 400-700). At present we do not know if any of the large sites are underlain by significant Basketmaker remains. Some Basketmaker material has been seen on the surface of the Yellow Jacket Ruin, although its horizontal/vertical extent is unknown. Excavations at Sand Canyon have terminated at bedrock, with no Basketmaker materials underlying later components.

Malville (n.d.) and Malville and Neupert (n.d.) identified archaeoastronomical alignments at the main Yellow Jacket site (5MT5). We do not know if these, or similar, patterns are present at other large sites.

The main architectural elements of the large sites are (1) Kiva and Houseblock Complexes: In Prudden's (1903: 234-235) concept, the "unit type" pueblo was the basic building block of Anasazi pueblo architecture, consisting of "...a single row of rooms...with a straight wall upon the back, and a short, right-angled wing at each end, the whole forming approximately one side of a square. This usually opens southward, with an estufa (kiva) occupying the partially closed court." He continued "...there may be eight or ten rooms at the back with two or three in each wing." This would establish a room/kiva ratio of from 6/1 to 10/1 for the unit type pueblo. A generally accepted average for room/kiva ratios at small village sites in the Montezuma Valley is 10-15 rooms per kiva. Prudden also commented (1903: 234) that "This simple form is so common, and it enters frequently into the structure of many of the larger and more complex buildings," but the kiva/roomblock ratio (something that Prudden was not concerned with) presumably remained more or less constant.

The kiva/roomblock ratios are much lower in the large sites, and we need different terms to deal with those architectural features in those contexts. Table 2 summarizes kiva/roomblock ratios derived from examination of maps of Goodman Point (Joe Ben Wheat sketch map), Sand Canyon (Bradley 1987:Figure 1), with Pueblo Bonito (Lekson 1984) added for comparison.

As noted, there has been no attempt to count the rooms associated with the kiva rows at Yellow Jacket, but it is estimated that the ratio would approximate those for Goodman Point and Sand Canyon. Clearly these unique cultural/architectural phenomena, combining kivas and associated roomblock architecture, are not simply
<table>
<thead>
<tr>
<th>Site</th>
<th>Kiva</th>
<th>Towers</th>
<th>GK</th>
<th>Tri-Wall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow Jacket</td>
<td>103</td>
<td>27</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Yucca House</td>
<td>84</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Toltec Ruin</td>
<td>80+</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Lowry Ruin</td>
<td>80+</td>
<td>P</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Wilson Ruin</td>
<td>74</td>
<td></td>
<td>1?</td>
<td></td>
</tr>
<tr>
<td>Goodman Point</td>
<td>67</td>
<td>2</td>
<td>incomplete map</td>
<td></td>
</tr>
<tr>
<td>Sand Canyon</td>
<td>87</td>
<td></td>
<td>(1)? not in direct assoc.</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Large Sites in Southwestern Colorado

<table>
<thead>
<tr>
<th>Site</th>
<th>Kivas</th>
<th>Rooms</th>
<th>Approx. Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand Canyon</td>
<td>87</td>
<td>281</td>
<td>3/1</td>
</tr>
<tr>
<td>Goodman Point</td>
<td>67</td>
<td>175</td>
<td>2/1 partial map</td>
</tr>
<tr>
<td>Pueblo Bonito</td>
<td>47</td>
<td>346</td>
<td>7/1</td>
</tr>
<tr>
<td>Yellow Jacket</td>
<td>103</td>
<td>?</td>
<td>ca. 2/1-3/1 (est.)</td>
</tr>
</tbody>
</table>

Table 2. Kiva/Room Ratios of Selected Large Sites
Figure 4. Detail of Goodman Point Site, Montezuma County, Colorado. Based on a sketch map by Joe Ben Wheat and revised by Wheat and F. Lange.

- Kivas
- Roomblocks
- Towers
- Great Kiva
- Drainage

--- Drainage
larger examples of Prudden's "Unit" concept. The term "Kiva Unit" is suggested to represent an architectural pattern incorporating a 2:1 to 4:1 ratio of kivas to rooms in these architectural complexes.

Yellow Jacket presents a special case of the "Kiva Unit" arrangement in which, as previously mentioned, the kivas form a linear relationship. The term "Kiva House" already suggested by Wheat is adequate to make this distinction.

(2) Great Kivas: By convention, Great Kivas seem to have a diameter larger than 40 feet, (regular sized kivas are approximately 20 feet in diameter, and intermediate sized kivas are from 20-40 feet in diameter). Both Goodman Point and Yellow Jacket have at least one Great Kiva associated with the main site; there is a report (Breternitz, personal communication) of a second Great Kiva at Goodman Point, but it has not been mapped. Also, there is a Great Kiva near, but not immediately contiguous to the Sand Canyon site. Most other known large sites appear to have either intermediate or Great Kivas.

As Wheat noted (1983:13) the center of numerical density for the concentration of Great Kivas (to the extent they have significance as cultural markers) has, with recent research and the review of previous surveys, shifted from the Chaco Canyon area to the Mesa Verde area.

(3) Towers: Yellow Jacket, Goodman Point, and Sand Canyon all have towers in conjunction with other principal architectural features; in some cases the towers are quite large—one tower at 5MT5 is approximately 24 feet in diameter. Towers also occur at sites such as Hovenweep that do not belong in the large site category; it is not certain that all large sites will have towers.

THE YELLOW JACKET EXAMPLE

The Area

The term "Yellow Jacket Ruins" refers to a concentration of prehistoric sites approximately 15 miles northwest of Mesa Verde (Lange et al. 1986), one (5MT-5) of which is a larger site. This area is generally considered a part of the Mesa Verde region (Breternitz 1983:85), and the name "Yellow Jacket" refers only to the geographical locus of sites on the upper end of Yellow Jacket Canyon. Approximately 25 smaller Basketmaker and Pueblo village sites form a semicircle on the western edge of the slope facing the large site, 5MT-5 (Figure 5). The large site has not been excavated, but extensive excavations have taken place in a number of the smaller village sites since 1954 (Brown 1975; Ellwood 1978; Hurth 1986; Stodder 1984, 1985, 1986; Swedlund 1969; Wheat 1955, 1980, 1983) with the most detailed data coming from 5MT-3, a medium-sized site with Basketmaker III, Pueblo II, and some Pueblo III remains.

DISCUSSION

How do we interpret these large sites? Considering only their size, they are distinctly different from other Anasazi sites in southwestern Colorado. The main Yellow Jacket site (5MT-5) is also very different in its fundamentally linear organization. There are large sites in other parts of the Southwest, and they may be only a regional variation on that
Figure 5. Approximately 25 Basketmaker and Pueblo village sites form a semicircle on the western ridge of the slope facing the large site, 5MT-5.
theme. We must keep in mind that none of the current large site data, with the very limited exception of data being generated at Sand Canyon (Bradley n.d.), are drawn from prehistoric large sites in Southwestern Colorado, nor does the large site configuration exist in historical or contemporary pueblos.

Each of the large sites, to say nothing of the surrounding smaller villages, represents a substantial construction effort. We can very quickly invoke arguments of "built by one family over a longer period of time", or "by many families over a shorter period of time." Obviously, we cannot make this distinction until excavations at large sites permit the definition of developmental sequences. There is no indication of any complex social organization or coerced labor in the building of these sites. Rohn (1983:176) has advanced a regional population estimate of 10,000-15,000 persons (a range of from 1,000-1,500 for eight sites) for the large sites in the Montezuma Valley during the Pueblo III period, based on comparisons with Mesa Verde.

To what can we attribute the presence of the large sites with Great Kiva, tower, and kiva-house/kiva unit patterns of architectural organization in southwestern Colorado? In terms of their scope and dimension, these large sites are not simply a case of an architectural "more of the same," but rather a distinctively different architectural pattern.

Social Function

Site 5MT-3: This site consists of four house-blocks, and thus far a total of 16 associated "regular" kivas have been excavated (Joe Ben Wheat, personal communication; Lange et al. 1986). The site is characterized by an exceptional number of tunnels (Figure 6) connecting kivas to kivas, and kivas to surface rooms. Carved floors have been found in three of the kivas, including one intaglio figure of Kokopelli (Figure 7). Cater and Chenault (n.d.) advanced the idea of multiple use (domestic as well as ceremonial) for some of the kivas, and they consider it highly likely that kivas were utilized for winter refuge from a seasonally frigid environment.

Rohn (1983:176) suggested that:

...the larger settlements functioned as ceremonial centers for occasional ritual observances, perhaps once every year or two years. I would doubt the presence of a concomitant political interrelationship in the sense of the Mesamerican ceremonial center....Instead, I would envision a pattern not unlike that seen among the present-day Pueblos where the Snake Ceremony is performed at Walpi and Mishognovi... yet is attended by Hopi from all ten villages. Similarly, the Corn Dance at Santo Domingo attracts people from all the Rio Grande Pueblos even though many of them perform a similar ceremony on a smaller scale.

There is no certainty that all large sites had identical or similar functions. We assume that most of the kivas at the large sites were more or less contemporary, constructed during the two centuries from 1050-1250 A.D. The associated rooms may have housed those participat-
ing in the ceremonies, maintaining the kivas, or may have been used for costume storage, etc., with habitation taking place in adjacent village areas (Figure 5). We cannot explain large sites through the traditional interpretations of kiva use by clans, fraternities, families, sodalities, or other groups. There are simply many more kivas than could have been used contemporaneously by any such groups.

Possible Domestic Function

Rohn (1983:176) suggested that the large number of rooms at 5MT-5 (Figure 2) was domestic, and that "the vast majority of all Pueblo III inhabitants of the Montezuma Valley lived in one of the larger settlements." Trash deposits on the eastern edge of 5MT-5 suggest habitation, but only excavation can resolve whether it was temporary or permanent, typical or specialized.

Problems of waste removal quickly become evident in any clustered population. The population suggested for 5MT-5 by Rohn (1983:177) of 1,200-1,500 would have quickly encountered such difficulties. The fact that the site was occupied for a relatively long period of time (at least 375 years) would suggest that the permanent population was relatively small.

FUTURE RESEARCH REQUIREMENTS AND TESTABLE SPECULATIONS

It is possible to imagine many uses for the large sites. They may have been (1) regional religious centers, (2) redistribution points for local and regional foods and raw materials, (3) nodes for interregional exchange networks, (4) population centers, (5) mortuary precincts, or, more likely (6) some combination of the above options.

(1) Regional religious center: Throughout the prehistoric world, larger than usual architectural remains, or architectural patterns different from the established norm have frequently been interpreted as being religious in nature. Kivas are traditionally classified as ceremonial spaces (although their multiplicity of function has been widely recognized). At large sites we have a significant dysfunction with other known patterns of kiva use. The evidence suggests either a different use of kiva spaces or a veritable explosion of religious behavior. The attempt to draw parallels between large annual gatherings at contemporary pueblos (Rohn 1983:176) and the large sites does not consider that the occasional arrival at modern pueblos of large groups from surrounding areas has not resulted in the construction of additional or specialized ceremonial spaces.

(2) Redistribution points: Large, nodal sites are frequently perceived as redistribution centers for food and other locally available but restricted resources. Many pueblo houseblock rooms function as storage rather than living spaces. Storage areas are an essential component in any redistributive system, but no storage areas have been identified at any of the large sites. Redistributive systems also require at least a minimal level of organizational and bureaucratic skill that is not reflected in archaeological sites in the Montezuma Valley.

(3) Focal points in regional exchange networks: Modal sites may also be viewed as administrative centers for
Figure 6. The site is characterized by an exceptional number of tunnels connecting kivas to kivas, and kivas to surface rooms.
regional exchange networks. Regional or long-distance ex-
change cannot be defined solely on the basis of studies at the
main center, and the quantities of so-called exotic materials at
surrounding sites are an impor-
tant key to exchange activities. Thusfar, the smaller sites
surrounding 5MT-5 have yielded
only minimal amounts of foreign
materials: a few oliva shells
from the Gulf of California,
lithics from Ute Mountain and
other regional sources, and
some ceramics, mainly from
northern Arizona. In contrast,
when we examine categories of
artifacts that are more commonly
thought of as being traded
throughout the northern South-
west, there have been excep-
tionally few examples of
obsidian, turquoise, or Chacoan
ceramics found. Artifact
comparison between 5MT-5 and
surrounding villages will be
necessary to evaluate this model.

(4) Population centers:
Although there is general
agreement that some populations
lived at the large sites, it is
less clear whether large, resi-
dential elements were present
on a year-round basis. Certain-
ly, the estimate of 1,200-1,500
for Yellow Jacket offered by
Rohn (1983:177) would have caused
significant problems in terms
of food procurement, firewood
gathering, potable water manage-
ment, and human and household
waste disposal. Such numbers
would have also been incompatible
with a strictly ceremonial focus
of the site.

(5) Mortuary precincts:
The relatively larger number of
individuals (500-1000) and
associated grave goods reportedly
recovered from trash middens
through nonscientific digging
at 5MT-5 has led to some specu-
lation that it was a mortuary
precinct (Joe Ben Wheat, personal communication). Midden placement of mortuary remains is common in prehistoric pueblo sites, and given the size of the site, the numbers are not unusual when compared to 5MT-3 (90+ burials from four house units and 16 associated kivas).

(6) Combinations of the above; Given the unique nature of the large sites, the possibility that we are dealing with a combination of the above uses is fairly substantial. The large site pattern does not "fit" with known archaeological or ethnographic examples, and there is a high probability that we are dealing with a multiplicity of uses, even within different subareas of the same site. For example, on 5MT-5 there is a relatively dense scatter of trash (ceramics and lithics) over the southern two-thirds of the site, even between the rows of kivas and houses. However, between the northern extent of the western alignment of kivas, and the Great Kiva and the three-story structure on the north end of the site (Figure 2), the ground is almost bare.

It is also possible that each of the large sites had an entirely different function. Until we have a better understanding of relative chronologies of the large sites, we will know little of their collective and individual functions or the level of information exchange and stimulus diffusion that accompanied their evolution.

Even while providing explanations for the possible use of these large sites, the question still arises: Why did they develop in southwestern Colorado during Pueblo II and III times? For a possible explanation, we turn back to the ecological setting of the large sites and the richness of the available local resources, especially the year-round availability of water. When Roberts (1929:8) wrote: "The San Juan itself and its northern tributaries...are the only streams which carry a never-failing supply of water. The three great tributaries from the south...are almost wholly dry for a great part of the year," he noted a significant difference between the Anasazi of southwestern Colorado and those to the south in New Mexico and west in Arizona and Utah.

The choice of large site locations at the heads of the canyons may have been strictly practical, or may also have had symbolic overtones. Particularly in arid zones, there is evidence of a human desire to discover and to venerate the sources of the life-sustaining water. Can we speculate that the Anasazi may have built specialized sites at the canyon heads, near the sources of permanent water? Can we delineate an intellectual heritage related to the environmental and hydrological advantages of the region? Modern day Pueblo Indians still return to Mesa Verde to make offerings—is it possible the large sites may represent an earlier form of pilgrimage?

CONCLUSION

Excavations at large sites in southwestern Colorado are vital to (1) test for contemporaneity, (2) establish comparative developmental sequences, (3) test for architectural standardization, or lack thereof (on both an intersite and intrasite basis), (4) examine broader patterns of intrasite and intersite differences and similarities, and (5) understand.
their relationships to surrounding sites.

When excavated, how similar will the 103 small kivas at 5MT-5 be compared to each other and to any of the Pueblo II and Pueblo III kivas found at 5MT-3? There is very little consistency in pattern in the known kivas from 5MT-3 and 5MT-2, and this lack of patterning is reflected throughout the ethnographic and archaeological literature. Any regular patterns at 5MT-5, or at any other large sites, would be an important indicator of the level of social integration and continuity involved in building those sites. Based on the 5MT-3 example, when excavated, will they all be connected by tunnels? How many of them will have carved floors? We know so little about the large sites and the smaller site complexes surrounding them that we cannot assume they all served the same or similar functions.

Understanding the large sites of southwestern Colorado is perhaps the most important problem facing Southwestern archaeology, but this journey of inquiry, as with many others begins with the first step. As Joe Ben Wheat wrote (1983:14) "We've never dug one of these things. We don't know what they are." Detailed surface mapping and extensive excavation are obviously the first step.

ACKNOWLEDGEMENTS

This article, written in honor of Charles H. Lange, is also in memory of Elizabeth March Lange. We would like to thank Joe Ben Wheat for the opportunity to become involved in research at Yellow Jacket; the contents of this article reflect many hours of discus-

sion with him, although he is not to be blamed for any misinterpretations we may have made, or limbs we may have crawled out on. We would also like to acknowledge the help of Mark Chenault, John Cater, J. Andrew Darling, Richard Lange, Susan Kepecs, and Frank Eddy at various stages in the development of this paper. Ann McKibben and Nick Lang drew the various figures.

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On the master site inventory of the Laboratory of Anthropology for the State of New Mexico, 29SJ427, also designated as LA 40427, was first recognized officially as an archaeological site on May 8, 1972, when two members of a Chaco Center survey team noticed the pictographs. The site is located beneath an overhang of the cliff face at the base of the mesa below and east of Peñasco Blanco, a classic Great Pueblo or town site at Chaco Canyon, New Mexico (Figure 1).

The narrow ceiling of the overhang has three pictographs on it: A hand, a crescent, and a star-like motif (Figures 2, 3). The hand is roughly lifesize, about 14 cm wide x 18 cm long; the crescent and star are both about 18 cm in diameter, and the distance from the crescent to the star is about 30 cm, center-to-center.

All three are painted in dark red pigment, probably hematite-based. I assume that the correct viewing position is not facing the cliff but looking outward toward the east and the open sky, with one's back to the cliff.

On the cliff face beneath the pictographs is another, much larger pictograph consisting of three concentric circles and a center dot, all in the same dark red pigment; the intervening spaces of the circles are filled with yellow pigment, probably limonite-based. Extending horizontally from the right edge of the circles is a long, flame-like depiction, also in dark red (Figures 2, 4). Curiously, those who have described and discussed the circles (Brandt et al. 1975; Brandt and Williamson 1977; Ellis 1975) make no mention of this "tail." It is fainter than the circles and clearly visible at the site but less so in the photograph (Figure 4). The overall length of the circles and tail is about 131 cm.

This group of pictographs is possibly incomplete. The break in the ceiling visible in Figures 2 and 3 is fairly recent, postdating the paintings. Additional pictographs might have been painted on the ceiling; however, two searches of the floor and talus produced no evidence of this.

INTERPRETATIONS

Discovery of 29SJ427 began a debate among archaeologists, astronomers, and others regarding the interpretation of the pictographs and the implications for the function of the site. Three interpretations have been suggested: (1) the pictographs on the ceiling represent the A.D. 1054 supernova, as recorded by the Chacoan Anasazi (Brandt et al. 1975; Brandt and Williamson 1977, 1979; Williamson et al. 1977); (2) the pictographs indicate the site was a Chacoan Anasazi sun-watching station and, secondarily, a shrine (Ellis 1975); and (3) a combination of interpretations 1 and 2 (Brandt and Williamson 1977, 1979). To these three must be added a fourth possibility: The null hypothesis; the site was not one of these but served an
entirely different purpose.

29SJ427: A Depiction of the A.D. 1054 Supernova

This interpretation is based on a comparison of the crescent and star motifs with the presumed appearance of the supernova to the ancient Chacoans, as inferred from analysis of astronomical data. Here the crescent represents the moon and the star, the supernova; the two are in approximately the same position vis-a-vis one another as the moon and supernova appeared in A.D. 1054. Somewhat similar crescent and star depictions are found on rocks at other western North American sites, including the Village of the Great Kivas near present-day Zuni pueblo. Chinese chronicles also contain data thought to refer to the A.D. 1054 supernova. Taken together, these data are seen as support for this first interpretation of 29SJ427 (Brandt et al. 1975; Brandt and Williamson 1977, 1979; Mayer 1977; Young 1982).

The hand motif is more problematical (Brandt et al. 1975). The hand might mark the site as sacred (Ellis 1975:76), a practice found among modern-day Pueblos (Ellis and Hammack 1968). The historic Tewa of the Rio Grande, possible descendants of some prehistoric Chacoan Anasazi, recognize a constellation consisting of "five stars at the tips of imaginary fingers, and one at the wrist" which they call the "hand" (Harrington 1916:50). This constellation has not been positively identified by scholars, and it is not correlated with any constellation we usually recognize. Harrington (1916:50) notes that there is no Spanish name for the "hand," as there is for many other Tewa constellations.

I first thought the "hand" might be Cassiopeia, but Harrington (1916:50) states, "Cassiopeia is not known to the Tewa." He could be wrong of course, but I have no evidence that he is. A second possibility is that the "hand" is Auriga in which Capella, the third brightest star in northern latitudes, would be either the index or middle finger. I think that is a reasonable possibility given the constellation's position at the time of the supernova. However, I can find no evidence that Auriga (as I have described it, not the classic description of it as a charioteer) or Capella is recognized by any of the Pueblos. This does not mean, of course, that Auriga cannot be the hand motif at 29SJ427, only that there is no ethnographic support for the hypothesis.

If the Tewa "hand" can be identified, and if it can be shown to be a constellation in close proximity to the A.D. 1054 supernova at that time, these data would lend support to the interpretation of the three pictographs on the ceiling as a prehistoric depiction of the event. Hand motifs are not commonly found at the other rock art sites thought to be depictions of the supernova (Mayer 1977), although hand pictographs and petroglyphs are quite common throughout the Anasazi area, including Chaco Canyon.

Ellis (1975:60) argues that although the Chacoans would likely have been impressed by the supernova, there is no reason to assume they recorded it. Her research among modern Pueblos indicates that they do "not record exciting events" but repetitive ones, e.g., the solstice sunrise.
Table 1. Summary of Features for the Zuni Sunwatcher's Station.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cushing</th>
<th>Bandelier</th>
<th>Stevenson</th>
<th>Mindeleff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Location:</td>
<td>Ma-tsa-ki</td>
<td>Matzaquia</td>
<td>Matsakia</td>
<td>Matsaki</td>
</tr>
<tr>
<td>Orientation:</td>
<td>east^a</td>
<td>east</td>
<td>east</td>
<td>east</td>
</tr>
<tr>
<td>Architecture:</td>
<td>open tower</td>
<td>no data</td>
<td>wall</td>
<td>wall</td>
</tr>
<tr>
<td>Height:</td>
<td>no data</td>
<td>&quot;low&quot;</td>
<td>about 3'</td>
<td>2 1/2 to 3'</td>
</tr>
<tr>
<td>Shape:</td>
<td>square</td>
<td>no data</td>
<td>semicircle</td>
<td>rectangular</td>
</tr>
<tr>
<td>Construction:</td>
<td>no data</td>
<td>grayish sandstone slab, 2' high</td>
<td>sandstone slab, 2' x 14&quot;</td>
<td>thin sand stone slab</td>
</tr>
<tr>
<td>Upright Stone:</td>
<td>&quot;pillar&quot;</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>Sun Symbol:</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Hand Motif</td>
<td>yes</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>New Moon Symbol:</td>
<td>yes</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>Morning Star Symbol:</td>
<td>yes</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>Fetishes</td>
<td>no data</td>
<td>9 pebbles</td>
<td>12 concretions</td>
<td>no data</td>
</tr>
<tr>
<td>Talley:</td>
<td>pine-wood</td>
<td>no data</td>
<td>2 incised</td>
<td>no data</td>
</tr>
<tr>
<td>Observer:</td>
<td>Sun Priest</td>
<td>no data^b</td>
<td>no data^b</td>
<td>Kia kwemosi</td>
</tr>
<tr>
<td>Companion:</td>
<td>Master Bow Priest</td>
<td>no data^b</td>
<td></td>
<td>(Chief Priest of the North)</td>
</tr>
<tr>
<td>Miscellaneous:</td>
<td>ancient stone chair</td>
<td>slab</td>
<td>threshold</td>
<td>small, flat recently built concretions.</td>
</tr>
</tbody>
</table>

Notes: ^a inferred from Cushing's description. ^b neither Bandieler nor Mindeleff apparently saw the site while it was being used.
and sunset points on the horizons. (However, the length of time that the supernova was visible—several weeks—could have qualified it as a repetitive event in Puebloan terms.) She also notes the absence of European records of the supernova despite its probable visibility there (it may have been recorded in the Near East [Hadingham 1984:143], but apparently was not recorded in Mesoamerica [Aveni 1980:96-97] although peoples there had a long-standing, intense interest in astronomical phenomena).

Some (Brandt and Williamson 1977, 1979) disagree with Ellis, noting the problem of placing too much reliance on ethnographic analogy. They suggest that Pueblo lunar observations in conjunction with the morning and evening star may be remnants of a tradition that began at the time of the supernova (Brandt and Williamson 1979). This seems unlikely; the moon and Venus are prominent and important enough in Pueblo astronomy to have been observed for themselves.

Finally, there is the problem that every researcher, including me, assumes all the pictographs to be coeval. From a visual examination they appear to be, but in the absence of physical and chemical analyses, this assumption remains unproved. It is reasonable as long as one recognized that it is unproved.

29SJ427: A Chacoan Anasazi Sun-Watching Station

Ellis (1975) interprets the pictographs to mean that 29SJ427 was a Chacoan sun-watching station and, secondarily, a shrine; others agree with her, at least in part (Brandt et al. 1975; Brandt and Williamson 1977). Ellis's interpretation is based mainly on Cushing's ethnographic data, specifically the following description of a Zuni sun-watching station:

Each morning, too, just at dawn, the Sun Priest, followed by the Master Priest of the Bow, went along the eastern trail to the ruined city of Ma-tsa-ki, by the river-side, where, awaited at a distance by his companion, he slowly approached a square open tower and seated himself just inside upon a rude, ancient stone chair, and before a pillar sculptured with the face of the sun, the sacred hand, the morning star, and the new moon. There he awaited with prayer and sacred song the rising of the sun. Not many such pilgrimages were made ere the "Suns look at each other," and the shadows of the solar monolith, the monument of Thunder Mountain, and the pillar of the gardens of Zuni, "lie along the same trail." Then the priest blesses, thanks, and exhorts his father, while the warrior guardian responds as he cuts the last notch in his pine-wood calendar, and both hasten back to call from the house-tops the glad tidings of the return to of the spring (Cushing 1883:38-39).

Cushing's description, however, is not the only one of the site. There are three other contemporaneous accounts, all written between 1879 and 1883 but published later than Cushing's. The first is by Adolph Bandelier:

FEBRUARY 26 [1883]: Shall go out of Matzaquia today....Ground plan of the ruins of the pueblo of Matzaquia...including the
Figure 1. View to the west-southwest across Chaco Canyon showing the locations of A - the general area of Site 29SJ423, a shrine; B - the ruin of Peñasco Blanco; C - the general area of the stairway connecting the canyon bottom with the mesa top; and D - Site 29SJ427. (Photograph by Jonathan E. Reyman.)

House of the Sun, which is new. The slab is about two feet high and made of grayish sandstone. The figure of the sun is a simple circle with eyes and mouth and no nose nor ears.

In front of the slab lay nine curiously shaped pebbles arranged in three rows each.

The threshold of this low and small structure was of stone, one smooth slab composing it. The opening faces east...

(I write this on the 28th).

...In the evening I painted, and Mr. Cushing read to me his latest article. It is very interesting. (Lange and Riley 1970:43-44).

The second is by Stevenson:

The Kia'kwemogi (Chief Priest of the North) carries the kia'tchiné (a bundle containing prayer sticks and cotton loops)...to the base of Ma' tsakiia (a ruin on a knoll), where the kia'tchiné is deposited...
The pe'kwin alone visits the shrine on the summit of the knoll, but no plume offerings are deposited here. This shrine...consists of a stone wall, semi-circular in form, about 3 feet high, the inner space being about 3 feet wide and opening to the east.

A sandstone slab, about 2 feet high and 14 inches wide, with a symbol of the sun 4 inches in diameter etched upon it stands against the apex of the wall. A smooth-surfaced stone on which are cut a number of lines is inserted in each side of the wall about 8 inches above the base. Some of the priests declare that the lines on the south
side of the wall indicate the number of years the present incumbent has served.3

(aThe statement regarding the number of lines was made previous to the appointment of the present sun priest). Nine concretions form a square on the ground before the etching of the sun, and there are three smaller ones in front of these. Concretion fetishes, valued as bringing fructification to the earth, are found in all the fields. A small flat stone rests on two of the larger concretions (Stevenson 1904:118-119).

And Mindeleff wrote:

Matsaki is situated on a foothill at the base of Taaaiyalana, near its northwestern extremity...At the northern edge of the village a primitive shrine has been erected in recent times and is still in use. It is rudely constructed by simply piling up stones to a height of 2 1/2 or 3 feet, in a rudely rectangular arrangement, with an opening on the east. This shrine, facing east, contains an upright slab of thin sandstone on which a rude sun-symbol has been engraved. The governor of Zuni, in explaining the purpose of the shrine, compared its use to that of our own astronomical observatories, which he had seen (Mindeleff 1891:86).

Bunzel's later account refers to the site but does not describe it. Her account differs notably in that the observations are made at sunset whereas the others are made at sunrise. A view of the western horizon is therefore indicated:

Before the summer solstice the Pekwin makes daily observations of the sunsets from a shrine at Matsaka, a ruin a few miles east of Zuni. When the sun sets behind a certain point on the mesa to the extreme northwest the Pekwin begins his plantings to the sun and to the ancestors (Bunzel 1932:537).

Two photographs of this site were recently published (see Zeilik 1985a, 1985b). One is Stevenson's probably taken between 1879 and 1883; the second was taken by Robert Lowie sometime around 1920; it shows the site little changed from Stevenson's time. The site is apparently no longer extant (Zeilik 1985b:S88).

Table 1 summarizes the basic data from the first four accounts. Several points bear mentioning: (1) given that the four accounts are contemporaneous, there are significant variations among them in specific details, e.g., Cushing and Stevenson differ on which priest accompanies the Pekwin to the site, and Cushing's is the only account to include possibly all symbols depicted at 29SJ427. Unfortunately, he does not describe the appearance of the Morning Star (presumably Venus) symbol;8 (2) both the Zuni site and 29SJ427 afford the observer a view of the eastern sky, although the horizon is much closer at 29SJ427;9 (3) the overhang, per se, at 29SJ427 might be the functional equivalent of the architecture at the Zuni site, but there is no evidence at 29SJ427 for any of the other features mentioned in the four accounts, e.g., the concretions, stone chair (the horizontal stone or slab noted in the Bandelier and Stevenson accounts could refer to what Cushing
calls a chair; see Ellis 1975: 80), incised stone, and so forth; (4) the presence of a flame-like motif or tail extending from the concentric circles at 29SJ427 (Figures 2 and 4) indicates that this motif, interpreted by Ellis (1975) and others as a sun symbol, could be something else. I suggest that the circles and tail represent a comet or shooting star, both of which are recorded among the Pueblos (e.g., Dutton 1963: 94, 116; Parsons 1929:266; 1932:342; 1936:108-109; Stephen 1936:1016-1017) and both of which are repetitive events in Ellis's (1975) terms; and (5) although 29SJ427 partly resembles one description of the Zuni sun-watching station (in terms of some symbols depicted), it is markedly different from the other accounts and also from descriptions of other Pueblo sun-watching stations recorded in the literature, e.g., Ellis and Hammack 1968:30-31; Lange 1959:55-56, Plate 8b; Mindeleff 1891:147-148; Stephen 1936:30, 62; Stevenson 1904:109; and White 1932:84-87. 29SJ427 is also markedly different from other Chacoan sun-watching stations, such as the solstice windows of Pueblo Bonito (Reyman 1976b).

This lack of similarity between the historic Zuni site and 29SJ427 demonstrates one problem inherent in using ethnographic analogy for archaeological interpretation, especially where a specific prehistoric-historic continuum has not been established. Connections between Chaco Canyon sites and possible prehistoric Zuni sites such as the Village of the Great Kivas have been suggested for more than 50 years (Roberts 1932), but further confirmation is needed. Connections between Chacoan sites and historic Zuni sites are even more tenuous, pointing up the considerable analytical problems in dealing with comparisons of archaeological and ethnographic data. This is made clear in Young's (1982:152-157) discussion of modern Zuni interpretations of crescents, stars, and other rock art. Young shows that it is difficult to determine whether these interpretations represent genuine Zuni interpretations or recent, revised ones culled from the anthropological literature and discussions with scholars. Many Zuni are well read with regard to what has been written about them by various scholars. Accordingly, they have modified their interpretations of rock art, in some cases, in accordance with what they have learned, as Young shows to be the case at the Village of the Great Kivas and other sites.

So far this discussion has focused on a comparison of 29SJ427 with the Zuni area sun-watching shrine because this is the comparison made by the authors cited above. There are, however, other Pueblo sun-watching stations reported in the ethnographic literature. Several of these are noted above, and I have summarized the data (Reyman 1971, 1976a, 1976b, 1980b; see also Zeilik 1985a); they need not be repeated here. None of these sun-watching stations reported in literature bears much resemblance to 29SJ427. Of all the Pueblo sun-watching stations reported in the literature, the Zuni site most closely resembles 29SJ427; but as was shown, the similarity between the two sites is not significant.

Therefore, the interpretation of 29SJ427 as a Chacoan Anasazi sun-watching station is unconvincing. The third interpretation -- that the site depicts the
Figure 2. The cliff face and overhang at Site 29SJ427 showing the locations of A— the relatively recent break in the ceiling of the overhang; B— the 3 pictographs on the overhang ceiling; C— the possible comet or shooting star motifs on the cliff face; and Arrow— the direction of the open sky and horizon. (Photograph by Jonathan E. Reyman.)

A.D. 1054 supernova and was a sun-watching station -- has the weaknesses of both interpretations without resolving the problems of either.

The Null Hypothesis

Major problems exist will all three interpretations of 29SJ427. Although the pictographs can be interpreted as astronomical symbols, their meaning is ambiguous; we cannot be sure that they do, in fact, represent a specific astronomical event such as the A.D. 1054 supernova, or mark the location of a sun-watching station or other prehistoric astronomical site. Given the length of time that the supernova was visible, it could have been seen in conjunction with many other objects. In the absence of other data, e.g., identification of the hand motif, equation of the star motif with the supernova remains problematical; it is possible, but it is not necessary nor is it constrained to be so by the depiction (Doyle, personal communication 15 i 87).

Ellis’s secondary argument that the site was a shrine lacks supporting evidence, which she does not provide. Finally, the assumption that all the pictographs are coeval is unproved.

These facts raise the possibility of the null hypothesis: 29SJ427 served no astronomical function. I was prepared to accept the null hypothesis until an alternative was suggested by a Pueblo friend and anthropological consultant.10

An Alternate Interpretation11

My Pueblo consultant suggests that 29SJ427 was a sun-watcher’s shrine, a place where the sun-watcher, and perhaps other priests, came to pray and place offerings.
His suggestion agrees with Ellis's (1975) secondary interpretation of the site.

To avoid the problems Young (1982:155-156) discusses, which were noted earlier, I first determined that my consultant had not read the archaeological literature pertaining to 29SJ427. Shortly thereafter, we drove to Chaco Canyon and spent time walking the canyon bottom on both sides, stopping occasionally to look at rock art. Sometimes independently, sometimes in response to questions, he offered interpretations of these depictions. Some were identified as Anasazi, some as recent (historic) Pueblo, some as Navajo, and some as having no meaning for him (interestingly, most of the last group are considered by archaeologists to be Anasazi).

Reaching 29SJ427, he looked at the pictographs and said that the site was a sun-watcher's shrine. Asked why he gave it this interpretation, he replied that the symbols were similar to those at a shrine located near his pueblo. Asked whether the sun-watcher makes observations from his shrine, he replied, "No." He added that observations are made from a site within the pueblo; the shrine is visited by the sun-watcher after making the observations, as he follows a circuit, representing the sun's path, around the pueblo, leaving offerings as he reaches each shrine (cf. Ellis 1975:62). There are four shrines, one in each cardinal direction as determined by traditional Pueblo practice (see Reyman 1976c); none is visible from the pueblo.

He added that there should be a pueblo, the main village with which 29SJ427 was associated, fairly close by; he did not know that the site is east of and below Peñasco Blanco (Figure
a classic Chacoan Great Pueblo. The proximity of Peñasco Blanco confirms his statement and lends support to his interpretation of 29SJ427. Furthermore, just east of 29SJ427 is a prehistoric Chacoan stairway cut into the cliff face, by which one can easily ascend from 29SJ427 to Peñasco Blanco, or descend from the pueblo to the site (Figure 1). This also seems to add weight to the interpretation of 29SJ427 as a sun-watcher's shrine.

His interpretation of the pictographs is as follows: The crescent is the new moon which was observed for planting and hunting purposes; the star-like motif is the sun, observation of which establishes the yearly calendar. Other astronomical observations (lunar and stellar) and observations of changes in flora and animal movements are incorporated within the framework of the solar calendar. He could not interpret the hand other than to note that hand motifs are found at some sun-watcher's shrines and that only the sun-watcher knows their meaning. This seems to confirm Ellis's (1975:76) statement that the hand symbol, in this context, marks a sacred site. The concentric circles and the flame-like motif or tail could be a large shooting star. I asked if it could be a comet; he answered, "Maybe." A comet, he said, is a large, slow-moving shooting star. However, he does not know why a comet or shooting star would have been depicted at the site because both have evil, unlucky, and dangerous connotations; as such, they are not represented at sun-watcher's shrines near his pueblo (cf. Dutton 1963:94, 116; Harrington 1916:49).

I plan to test his statements about the shrine near his pueblo but have not received permission to visit the site. His Pueblo does have a myth suggesting the people originated in the general Chaco Canyon area, but so do other present-day Pueblos. I want to obtain more details of this myth and also check to see whether there are motifs at the shrine other than those motifs at 29SJ427; I also want to see whether the arrangement of the symbols is similar. My consultant is unable to be specific on this last point, not having seen the shrine for several years. His statement about the likelihood of the main village being located nearby is noteworthy because of the following account regarding Peñasco Blanco:

Occupying a conspicuous point in the village of Kintiel...is an upright slab of sandstone...A similar feature was seen at Peñasco Blanco, on the east side of the village and a short distance without the enclosing wall. Both of these rude pillars are, in character and position, very similar to the upright stone of known use in Zuni. A hundred and fifty feet from this pueblo is a large upright block of sandstone, which is said to be used as a datum point in the observations of the sun made by a priest of Zuni for the regulation of the time for planting and harvesting, for determining the new year, and for fixing the dates of certain other ceremonial observances. By the aid of such devices as the native priests have at their command they are enabled to fix the date of the winter solstice with a fair degree of accuracy. Such rude determination of time was probably an
aboriginal invention, and may have furnished the motive in other cases for placing stone pillars in such unusual positions. The explanation of the governor of Zuni for a sun symbol seen on an upright stone at Matsaki has been given the description [Mindeleff 1891:96, cited earlier] of that place (Mindeleff 1891:147-148; cf. Lange and Riley 1970:69-70; Fewkes 1891:4; Stevenson 1904:109).

I have not located the slab Mindeleff mentions, nor have I seen reference to it in the published or unpublished reports on Peñasco Blanco. The site is much disturbed since Mindeleff was there, and the slab could have been removed or destroyed. The former presence of a slab which might have had an astronomical function fits with my consultant's information; that is, this suggests that solar observations were made at Peñasco Blanco, with the sun-watcher's shrine (if 29SJ427 was such) located farther away and not visible from the town, as is the case at my consultant's pueblo. Following his suggestion to its logical conclusion in terms of ethnographic analogy, we should expect to find the remains of other shrines to the north, south, and west of Peñasco Blanco (29SJ427 is to the east, toward the rising sun, which might account for the sun symbol). It should be noted that 29SJ427 is below Peñasco Blanco whereas there is a general tendency for shrines to be placed at high points around villages (e.g., Harrington 1916; Mindeleff 1891). However, this is not an absolute, and shrines are found in other locations.

One possibility for a south shrine is site 29SJ423 (Figure 1) located about 450 m south and 37 m above Peñasco Blanco (Hayes and Windes 1975). Despite its elevated position, it is not easily visible, if at all, from the pueblo. This site is coeval with Peñasco Blanco. This lends further support to my consultant's interpretation of 29SJ427 as a sun-watcher's shrine.

CONCLUSIONS

None of the first three interpretations of 29SJ427 is wholly acceptable. The third, a combination of the first two, does not eliminate the shortcomings of either. One cannot reject completely either the supernova or sun-watching interpretations, but this review of the data indicates that neither hypothesis is well supported.

The alternate interpretation seems more likely, and its ethnographic basis makes it a potentially testable hypothesis. If I secure permission to visit the shrines near my consultant's pueblo,12 I plan to evaluate whether 29SJ427 was, indeed, a sun-watcher's shrine.

Illinois State University

NOTES

1 Information regarding the discovery of 29SJ427 was provided by John Stein, Clarion Cochran, and Earl Neller. The help of my Pueblo friend and consultant has been invaluable. The comments of C. Randall Morrison and the calculations of Carl J. Wenning were useful, and I am grateful to them; I alone am responsible for any errors of fact or interpretation. This research was supported by an Organized Research Grant from Illinois
Figure 4. Vertical cliff face below the overhang showing A - the concentric circles, and arrows - the fainter, flame-like or "tail" motif, all of which may represent a comet or shooting star. (Photograph by Jonathan E. Reyman.)
There is a difference of opinion as to whether Jack Cully or John Stein first noticed the pictographs (John Stein, personal communication, 10 ii 84; Clarion Cochran, personal communication, 23 xii 83).

Michael Zeilik, an astronomer at the University of New Mexico, concurs (personal communication, 13 x 83).

That the red pigments are the same in all cases is inferred from visual examination. The National Park Service, which oversees the Chaco Culture National Historical Park, has not permitted us to take pigment samples for physical and chemical analyses. That the pigments are hematite-based is inferred from experiments made in 1974 using local, hematite-bearing sandstone from which we produced pigments in the same colors as those used on the pictographs, as measured using the 1975 Munsell Soil Color Charts: Hue 10R, Value 3, with variation between Chromae 4 and 6.

Again, visual replication by experiment using local materials and not from an analysis of the actual pigments used the pictograph.

I am indebted to Carl. J. Wenning, Planetarium Director, Illinois State University, for his help in calculating the A.D. 1054 position of Auriga.


Because Cushing's description differs so from the other three, Zeilik (1985b:888) suggests that Cushing might be inaccurate, exaggerating, or describing another site. The greatest discrepancies are in Cushing's reference to the site as an "open tower" and in the motifs depicted on the "pillar" (which I equate with the slab noted in the other accounts). I think Cushing describes the same site, although calling it a tower is an exaggeration. It seems unlikely to me that the Zuni had more than one sun-watching site in the same location. I cannot explain the differences in the motifs other than to note that if the site were multifunctional, different features, paraphernalia, and personnel (the priests accompanying the Pekwin) might be used at different times. Note b in Table 1 might also be relevant in this regard.

The Zuni site actually affords the observer a view in all directions, although it faces or opens to the east. Cushing notes that observations were made around dawn; Bunzel states that they were made at sunset. Different observing times, possibly for different purposes, might explain why the different priests are reported to accompany the Pekwin to the site. All of these have implications for a multifunctional interpretation of 29SJ427.

Because of his request for anonymity, and in accordance with the American Anthropological Association Code of Ethics with respect to anonymity, I cannot identify this man by name, Pueblo, or office other than to note that he is a fairly high-ranking religious officer. He is obviously not the priest charged with sun-watching duties. He has given permission for me to publish this account.
I discussed this interpretation briefly at a 1983 conference on prehistoric astronomy held at the University of New Mexico.

To date, negotiations for permission have not been successful. They are ongoing.

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White, Leslie
<table>
<thead>
<tr>
<th>Year</th>
<th>Author(s)</th>
<th>Title / Contributions</th>
</tr>
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On September 8, 1680, Governor Antonio de Otermin wrote a lengthy report concerning the Great Pueblo Revolt that had swept across the Kingdom of New Mexico less than a month before. In that catastrophe 21 missionary friars and more than 400 colonists had lost their lives, and Spanish rule north of El Paso had been totally extinguished.

The governor in his report used a recurring phrase to refer to New Mexico. Repeatedly, he called it "this miserable kingdom" (Hackett 1937: III, 327-35). Those were not new words applied in the aftermath of the bloody revolt, but rather they represented an expression that over the years had become common place in dispatches sent to Mexico City by frustrated and desperate officials in Santa Fe (Burke 1973: 129). Indeed, both in the centuries before and after the 1680 tragedy crown officers, churchmen, and others regularly used the terms "miserable" and "misery" in speaking of New Mexico's land and people.

Spanish scholar Americo Castro (1971: 583) has suggested that misery and misfortune have dogged the people of Spain from the beginnings of their history. That view finds an echo in the writings of numerous other social commentators, as, for example, Ramon Menendez Pidal (1966: 18) who asserts that the Spaniard traditionally has led "a way of life devoid of comforts." Or as William Lytle Schurz (1964: 81) put it, "Life is hard for him... he has never known what 'security' is... for there is little abundance in Spain."

The conditions or circumstances contributing to a state of misery in the mother country were evidently duplicated in the colonies, at least in New Spain. At the end of the 18th century, Bishop Manual Abad y Queipo of Michoacan observed that in colonial society there were no "gradations between classes, no middle position. There are only the rich or the miserable, the noble or the vile." In his view the large majority, comprising mixed-bloods and Indians, were in a state of want because of "their color, ignorance, and misery" (Floyd 1966: 18).

Another outspoken figure of the late colonial years, Miguel Ramos de Arizpe, found the chief source of misery in archaic economic policies imposed by the royal government, rather than in social inequities. As the elected representative of New Spain's four Eastern Interior Provinces to the Cortes in Cadiz, he presented in 1811 a report to that body indicting the colonial commercial system, "which although it has enriched a few, has impoverished and kept all the rest of the Spaniards wrapped in misery..." When residents of his province, he noted, attempt to do business at annual trade fairs they experience firsthand the evil effects of restricted commerce, so they end by paying "tribute to their miserable bondage." And later, with a dramatic flourish, he speaks of his people's "tears born of misery" (Benson 1950: 40, 24, 19). A half-century afterward a Mexican observer stated that the misery had long since become permanent (Berge 1975: 24).

Perhaps nowhere in the Spanish Empire can better examples be found of the conditions that
reduced colonists to a state of misery, than in Governor Otermin's "miserable kingdom" of New Mexico. Although other regions of New Spain's northern frontier suffered through natural and man-made disasters, none seemed quite as awash in misery as benighted New Mexico.

In English, the word misery bears the primary meaning of wretched and the secondary meaning of poverty-stricken. In the Spanish of colonial New Mexico, however, miseria definitely signified poverty, in the first instance. But then, we should note, that Hispanic poverty was virtually synonymous with wretchedness of circumstances.

Upon reaching Santa Fe for the first time in 1704, New Mexico Governor Francisco Cuervo y Valdes hastily wrote the king, declaring, "I have never seen so much want, misery, and backwardness in my life (Casados 1983: 26). Being a native of Spain, and a well-traveled man, the Governor in his words can be given considerable credence. So too can Durango's Bishop Benito Crespo who made a pastoral visit to the upper Rio Grande in 1730. "This land is the poorest I have seen," he reported bleakly (Adams 1954: 104).

The poverty of the country -- its scarcity of resources -- was a recurring theme in contemporary documents. Father Garcia de San Francisco at Senecu below Socorro spoke in 1661 of "this miserable land of New Mexico" (Hackett 1937: III, 157). And Governor Alberto Maynez (SANM, II, no. 2625) in 1815 judged that his jurisdiction "es pais miserable por naturaleza" (is inherently a miserable country).

It is clear that human misery was a condition of life in New Mexico even before the arrival of the Spaniards. Wittfogel and Goldfrank (1943:24) remind us that, "The nightmare of a world that is 'dry and barren' recurs hauntingly in the Zuñi emergence myth as well as in recent stories. Zuñi memory is emphatic about the tribe's former poverty and insecurity....It is more than probable that the feeling of insecurity (was) to some extent present in all the Pueblos."

Evidence exists, as well, that the feeling persisted until recent times. Hawley, Pijoan and Elkin (1943: 556), for example, noted in the early 1940s in a study of Zia that, "The possibility of food shortage...is the primary anxiety of each individual in the Pueblo."

The fact was, conditions of aridity offered only limited opportunities in New Mexico for the practice of agriculture. Land suitable for irrigation was not plentiful, and dry-farming was at best small-scale and often no more than marginally successful. Originally the Pueblos had sought to combat the specter of famine by storing away as much as a seven years' supply of grain.

When the first Spaniards learned of this custom, they at once imposed levies upon the Indians' horde of corn and the reserves were rapidly depleted. As a result, the drought and ensuing famine of the 1660s took a heavy toll among the Pueblos. A short time before this disaster, a Franciscan missionary had referred to the inhabitants of New Mexico, both Indian and European, as "poor and miserable subjects" (Autos 1947: 36). Perhaps the wonder is that in the face of famine the colony survived at all.

Periodic drought, accompanied by suffering and death,
was accepted in Hispanic New Mexico as inevitable and as a primary cause of human misery. Residents of the El Paso Valley (then a part of New Mexico) characterized themselves in 1780 as, "the miserable people who inhabit these remote lands" (SANM, II, no. 793). The governor at Santa Fe sounded a similar note in 1806 when he described the scarcity and misery produced by drought and bad harvests. And he cited the large number of "miserable ones, experiencing hunger" as a consequence of crop failure (SANM, II, no. 2012).

As the population expanded in the later colonial and early Mexican periods, the increasing shortage of available farmland caused almost as much hardship as the regular droughts. In petitioning for farm plots on the Pecos River in 1822, Manuel Antonio Rivera supplied an example. In approaching the appropriate government agency with a request for a grant, he wrote: "I appear before you and inform you of the misery incurred by me and by other individuals with me, as to our wives and children for not having any lands where we could plant some corn" (SANMI, no. 899). Clearly, the degree of misery prevailing in New Mexico was most commonly governed by problems of food production. Yet, all areas of economic endeavor here were retarded so that the wretchedness of daily life can properly be said to have had multiple causes. Stock raising was inhibited by unrelenting Indian hostilities. Mining failed to develop through lack of technical knowledge and capital. Timbering received no encouragement because of poor transportation and the total absence of sawmills. Unimproved roads and trails plus vast distances imposed a serious check on commerce. The few cottage industries had limited access to markets, and hence, found it impossible to expand. And finally, official manipulation of the coinage and arbitrary government controls over many facets of the economy kept business at all levels in turmoil. Consequently, New Mexicans knew little else than a familiar misery.

In 1806 Governor Joaquin Real Alencaster, assessing the fruits of two centuries of privation and misery, painted a most unflattering picture of New Mexico's citizenry. In an official report he depicted them as "miserable creatures" with few skills or abilities, unfit for soldiering, and indifferent to the universal misery and ignorance that plagued their frontier society (Cunningham 1806-1807: 36-37). Later when Anglo Americans entered the Southwest by way of the Santa Fe Trail and wrote in their journals of the backwardness and misery manifested in all departments of domestic life, they were merely restating an observation that Hispanic commentators had been making for centuries.

The portrait of New Mexico's bleakness presented here can provide a salutary antidote to the romantic gloss that has come to overlay the Spanish colonial years. Nevertheless, care must be taken not to overstate the case. While New Mexico may have, indeed, been isolated, poor, and unprogressive in the extreme, still its people managed to maintain their hold on the land in the face of unparalleled adversity and even to grow in numbers, so that at the end of the Spanish era theirs was the most populous and important of New Spain's far northern borderlands provinces.

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THE ANATOMY OF A DISPERSIVE GALLINA VILLAGE

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Space disallows a full discussion of the interpretation of settlement patterns relative to the social and religious order of a Gallina community. Greater details of this have been published (Dick 1980:57-82). Two terms can describe the brevity two forms of Anasazi culture: 1) dispersive society, pertaining to scattered or widely spread habitations, and 2) cohesive society describing habitations as "sticking tightly together," as in contiguous-room, apartment-style communities.

Examples of cohesive societies are numerous; the multi-room pueblos of Chaco Canyon, Mesa Verde, the Hopi pueblos and Taos Pueblo are famous examples. The Gallina settlement patterns, the Valdez phase in the Taos area and the Navajo, provide examples of dispersive societies.

The cohesive society reached its epitome with the compact pueblo or multi-storied apartment house and formal ceremonial chambers. The religion consisted of rituals led by priests; the secret rituals were practiced in special rooms or buildings (kivas) set aside for that purpose. These rooms are easily identified archaeologically.

The Navajos offer a modern example of a dispersive socio-political-religious pattern. The dispersive society in this case is based to the greatest degree upon lateral bonds of kinship, which cannot be overstated. The nuclear family, consisting of husband, wife, and unmarried children, is the basic social unit. The society is both matrilineal and matrilocal, and the married couple often builds a house in the vicinity of the wife's mother. The husband continues to retain ceremonial, economic and other ties with his mother's family. Members of a larger group of relatives, the extended family, usually live in the same general locality and constitute a functioning group of relatives who cooperate in agriculture, house-building, and other tasks.

The Gallina culture seems to fit best with the dispersive societies as described above.

For nine seasons, from 1972 through 1980, Adams State College of Colorado maintained a permanent field camp on the Casados ranch at Llaves, New Mexico, midway between Regina and El Vado Dam in Rio Arriba County, north-central New Mexico. During this time we excavated 18 surface houses, 17 pit houses and 10 sizable miscellaneous structures. Between 1971 and 1981, a period of 11 years, we surveyed approximately 53,800 acres. The total number of pit houses recorded was 382; the surface houses numbered 557, and there were a large number of ancillary structures.

Our major excavation efforts were to define and excavate completely three dispersive village units in the Llaves region. Our goal was to determine and interpret all architectural, economic and social aspects of a probably interacting community. The major analysis is still underway.

Evidences of Gallina culture encompassing several phases cover some 3,278 square miles or 2,097,920 waterless acres in
north-central New Mexico. The major concentration of ruins is in the Ojitos and Llaves region, in an area of 1,440 square miles.

The sites on Huerfano Mesa presented an ideal beginning. Huerfano Mesa is an isolated erosional feature five miles north of Llaves. It is made up of alternating layers of clay and sandstone of Cretaceous age. It is about 30 acres in size and stands 50 feet above the flats of Capulin Creek. The mesa is physically divided into two equal parts by a shallow fault-line trench, covering .8 of one acre, filled with stone-lined horticulture terraces. Several surface houses on the south edge of the mesa appear to have been earthquake-damaged and later repaired.

Gallina houses exhibit an outstanding similarity and regularity of basic interior features. These features are found in both the surface houses and the pit houses, which were often contemporaneous. By placing house drawings over graph paper, we were able to determine the relative areas of the interior features, and so determine their proportions to each other and to the interior as a whole.

Both the surface house and pit house floor areas are divided into a main room which averages 58% of the house space, and an anteroom averaging 17% of the floor area. The bins partitioning the main room from the anteroom take up 7.5% of the floor space; the hearth and deflector area in the main room average 3.4% of the total floor area; the shelf around the walls of the main room takes up 14.7% of the floor space. All of the listed proportions were about the same for both pit houses and surface houses. The actual floor area of the rectangular surface houses was 13% greater than that of the round pit houses.

Based on our estimate of 3.5 persons per house, which is discussed in more detail later, the pit houses provided 40 square feet per person of liveable space; the surface houses 45 square feet per person. (In a modest modern house the average is 340 square feet per person.)

Although distinctions are difficult, we found it necessary to formulate a tentative structural chronology for the house forms on Huerfano Mesa, as follows:

Rosa Phase - A.D. 800-1050
250 years
Capulin Phase (tentative)
A.D. 1050-1100 - 50 years
Llaves Phase - A.D. 1100-1266 (or 1275) - 166 years

House orientation is determined by a line running through the ventilator and the center of the anteroom, hearth, deflector and main room. Houses of the Rosa Phase are oriented east and west; those of the Capulin and Llaves phases are oriented north and south. One pit house on Huerfano Mesa was constructed with an east-west orientation; it could be attributed to the late Rosa Phase as found in the Gobernador area west of Llaves. Several pit houses which we designated Capulin Phase possessed interior features like those of the late Rosa Phase but had a north-south orientation like those of the Llaves Phase. We conjecture that the change in house orientation from east-west to north-south occurred in the Llaves area about A.D. 1050.

The Llaves Phase houses are a culmination of a clear evolutionary sequence in house
construction details, encompassing a time of 700 or 800 years, from Basket Maker III times through late Pueblo III times. The Gallina culture exhibits a remarkable conservatism through house construction and settlement pattern that persisted for 800 years, until its end by A.D. 1266 when only a handful of survivors wandered from the area to coalesce with more successful cohesive groups on the edge of the Gallina territory, perhaps to the south to the Jemez area. The scenario is reminiscent of the migration of a few Pecos Pueblo people to the Jemez Pueblo in the early 19th century.

On Huerfano Mesa, the 18 houses are evenly dispersed in mixed clusters of pit houses and surface houses, two or three to a group. We subjectively determined that only 11 of the 18 houses were occupied at the same time and formed a viable population between A.D. 1200 and 1266. It is probable that during the Llaves Phase only 61% of the houses on the mesa were occupied at a given time. Two of the total of 18 houses on the mesa were burned; a rectangular pit house with a construction date of A.D. 1242, was occupied about 12 years; and a surface house with a construction date of A.D. 1261, was occupied about 20 years before being burned. We were able to determine the occupation time for all houses on the mesa by a conjectured plaster coat formula, discussed later.

This author with Hugh Davidson (Dick and Davidson 1985:31-42) using interior house space measurements of the 11 houses thought to have been occupied at the same time, determine the village population by three methods. Using the Naroll constant formula (Naroll 1962:187-89) we determined the population to be 31 persons. Using Eddy's (1966:491) estimate of 3.5 persons for a Rosa Phase house, the count would be 39 persons. Last, by using the common number of 4 for the primitive nuclear family, the total would be 44. Whether the population was 31 or 44 people, it was small.

Both in excavation and in site survey we found the size variation of some pit houses to be much greater than that of any surface houses. Some pit houses measured were 40 feet in diameter. Pit houses can be either round or rectangular. Late Llaves Phase pit houses are generally large and rectangular. We conjecture that the first surface houses, which were rectangular, were constructed about A.D. 1100.

One of our interests was the method and quantity of food storage, especially maize. An obvious place for convenient storage would seem to be the interior bins of the house. However, they contained baskets, sandals, caches of stone flakes, pottery vessels, cloth, stone tools, to mention but a few of the items recovered.

In burned houses it was not unusual for charred maize to occur throughout the house fill above the interior bins, often with a number of broken ollas all mixed with masses of roof adobe and other massed of adobe showing strange and intricate wood moldings that obviously were not roofing. In every burned house, baked clay masses were easily separated into two classes, roofing and non-roofing, which were measured and recorded. After excavating the first burned surface house it occurred to us that the strange
moulds were parts of storage bins which had been built upon the roof of the house. Both pit houses and surface houses had roof storage bins, but they occurred more often on surface houses.

Mary Murray (Dick 1978:41-50), an excavation supervisor in 1977, set about testing the hypothesis that interior storage was not adequate to fulfill maize storage needs of the Huerfano Mesa people. Searching the literature, she found that Stephens (ed. Parson 1936: 954-55) in 1892 calculated that per capita annual consumption of corn by the Hopi averaged 692 pounds, equivalent to seven 100-pound sacks. It is probable that even more corn was used by the Huerfano Mesa people as they lacked domestic animals and foreign introduced fruits and plants.

A Hopi household stored for three purposes: 1) consumption, 2) seed for planting and 3) a carry-over surplus in case of crop failure.

Both Collins (1914:300) and Forde (1931:390) provide the information that 32 pounds of maize seed is required to plant the average Hopi acre; Woodbury (1961:38) states that the average Hopi yield of maize seed per acre is 672 pounds, remarkably close to the per capita consumption of 692 pounds previously mentioned. Interestingly, the 32 pounds of seed corn planted would be multiplied 21 times or a return of 2000%, a good food investment.

Using the figure of 3.5 persons per household, the following estimates for the quantity of maize required per person is: 692 pounds for consumption, 32 pounds for seed, a total 724 pounds and ideally a full carry-over of 724 pounds equaling 1,448 pounds per person. The requirement for the household would be 5,068 pounds or some fifty 100-pound sacks of shelled maize. This amount of maize would require 98 cubic feet of bin storage. The average interior storage space for each of the 11 houses under consideration would be for only 2,201 pounds of shelled corn, the equivalent of twenty-two 100-pound sacks; the interior bins would provide only 43% of the required space; 57% more space would be required. Murray concluded that the main maize storage took place in roof bins for surface houses and in outbuildings for pit houses; late period pit houses also adopted roof bins. The interior bins were used for equipment and material storage. We suspect that some of the stone slabs in the fill in unburned buildings, which we had supposed were stone paving on the roof, were probably stone covers for roof bins; these might provide our only evidence of roof bins in unburned houses.

Other bits of horticultural trivia: each household would require 7.6 acres and would use 241 pounds of seed corn, or two and one-half 100-pound sacks. At the time of 61% occupancy of the houses on Huerfano Mesa, at least 83 1/2 acres would have been required for sufficient maize to be grown for the community.

In all three of the villages completely excavated in the Capulin Creek drainage, disappointingly few houses had been burned; of the total houses excavated only 14% were burned; perhaps by the inhabitants themselves as a ceremonial offering to an in-residence death and the resultant taboo, reminiscent of the Navajo. On
Huerfano Mesa, of the 18 houses, representing three phases, only two were burned, both late in time - a late pit house (ca. A.D. 1242) and a late surface house (ca. A.D. 1261). In the Hacha village only one late surface house was burned, of a total of six houses. In the Capulin village one late surface house was burned out of a total of five houses excavated.

Several pieces of evidence have led us to believe that, in this area at least, the burned houses were deliberately set fire by their owners rather than by accident or by raiders, though it is possible that in other districts internecine raids may have played a part in building burning.

The method of roof construction of most Gallina houses greatly reduces the danger of accidental conflagration. The roof of clay, six to eight inches thick, was applied directly over the wooden poles with no intervening cedar bast, sage branches, tree branches or other flammable insulating material. The interiors of the Gallina houses contained very little flammable material, yet they burned with such great intensity as to presuppose the presence of a great deal of fuel, which must have been added deliberately. In a surface house in Capulin village the deep, stone-lined, fire pit had been emptied of ash and sealed with a shaped stone slab and clay mortar, prior to the burning of the house; the hearth could not have been a contributing factor in an accidental conflagration. Further, the fire was not so intense that in some sections numerous twigs and branches of pinyon, juniper and sage were charred but not fully consumed. We conjectured that this material was added prior to the deliberate house burning.

Another matter of special interest was the short term of occupancy of the houses that we excavated. All of the houses were probably dark, damp, smoky, vermin ridden and generally gloomy when both ventilator and the roof entryway-chimney had to be mostly closed during the long cold winters. It is probable the people were plagued with carbon-coated lungs and excessive radon gas exposure; the radioactive gas is common to buildings with mud floors in northern New Mexico and is thought to cause lung cancer. Although the carbon might have proved detrimental to the health of the inhabitants, it proved to be most useful to the archaeologist.

All of the house interior walls were plastered, usually with multiple finish coats of a fine-grain, sandy, light gray plaster over a thick, rough coat of common clay. Each of the finish coats, in time, became blackened by fireplace smoke and lighted brands within the house. We conjecture that each successive coat was replaced at least every four years to enhance the light in the usually dark, house interior. Thus, by counting the coats of plaster and multiplying by four we could determine the approximate duration of house occupancy.

The range of occupancy for 17 houses was from four to 28 years; the average was 12 years and the median was 12 years (half of the houses were occupied 12 years or less and half 12 years or more). A contributing factor to short house occupancy could be attributed to the rapid rotting of the ends of the bearing logs in the roof, particularly in pit houses.
Still another cause for short-term house occupancy was the crawling vermin build-up.

The largest pit house on Huerfano Mesa was a round structure 25 feet in diameter, which possessed some features not common to other houses. The occupancy of this structure, by plaster count, was 68 years during the Llaves Phase; it could have served as a council house and is the longest used building on the mesa. There was no evidence of common domicile use.

In conclusion, a conjectural reconstruction of the Gallina culture social organization from some of the archaeological evidence is attempted: The Gallina people probably had clans in which members felt a strong sentimental bond with one another, but in which only traces of political and religious functions existed, if any at all. The local groups should be thought of as "towns" or "villages" in only the broadest sense; they were usually sprawling settlements of houses and fields scattered over a considerable area. The social control of people in a scattered community would be much less than that of a cohesive society with closer daily face-to-face relations; yet, on the other hand, there might be less bickering and no sense of "cabin fever" as often found in cohesive pueblos.

Perhaps, as the Navajo, the Gallina people placed greater stress upon the welfare of the individual. The prime emphasis in religion might have been in curing illness by individuals rather than by groups or religious societies. Religion probably revolved around part-time shamans with curing and weather-control specialties.

The possible existence of weather magic, both sympathetic and imitative, is based upon caches of ceremonial objects pertaining to water that we found in three different houses, one in each of three different villages.

As with the Navajo, witchcraft may well have been a menacing and persistent belief; its presence can be considered to have been a possible factor in excessive house-burning in some areas.

Was control of potable water sources, water being rare in many areas of the Gallina territory, a possible factor in internecine raiding and burning?

While careful, thorough, goal-oriented excavation, combined with our rich recorded heritage of living Indian cultures to draw on for comparison, we stand a good chance of transforming the Gallina archaeology into meaningful ethnology in the years to come.

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The 1839 announcement of the invention of photography roughly coincided with the beginnings of the trans-Mississippi expansion of American culture (Taft 1938). Photography in the Southwest lagged behind this expansion, and not until after the Civil War were there significant numbers of photographs made in the area. Following completion of the railroads through the Southwest in the early 1880s, many photographers became intrigued with the area's startling geological features and diverse Indian groups. Indian ceremonies became one of the attractions that drew photographers. In the 1890's the Hopi Snake ceremony at Walpi was considered to be one of the major photographic opportunities of the Southwest.

Photographs of ritual relay racers were taken at Taos Pueblo in 1871; a movie of a southwestern Indian dance was filmed in 1898 when movie film was first available commercially. From 1870 to about 1910 there were few formal tribal restrictions on photography of Indian ceremonies. However, by the 1920s, 50 years after the Taos photographs were made, many Southwestern tribal groups prohibited photography of their ceremonies.

There are 50 tribal groups in the Southwest—an Indian cultural area that includes the states of New Mexico, Arizona, part of Colorado, and in Mexico, Chihuahua, Sonora and part of Sinaloa. Today, there are over 400 ceremonies performed annually in the area. Of the 34 tribal groups performing ceremonies, 21 prohibit photography of all or most of their ceremonies. The general public can photograph some ceremonies of 13 tribal groups, usually upon payment of a fee. There are over a dozen ceremonials, tribal fairs, powwows, arts and crafts shows at which photography of Indian dances is permitted.

The history of photography of southwestern Indian ceremonies was obtained from: photograph collections held by 25 institutions, published and archival documents, private interviews and observations of ceremonies from 1970 to the present. Bar charts in Figures 1 to 7 show when and where photography of ceremonial subjects was permitted or was prohibited. Justification for or against photography of southwestern Indian ceremonies is revealed in the different attitudes and value systems of non-Indians and Indians.

Photography of Hopi religious ceremonies is not permitted. Restrictions of photography of the Hopi Snake Dance at Walpi started in 1913-1915; prohibition of photography of all Hopi ceremonies became almost completely effective in the late 1920s.

The Snake dances of the Hopi villages in north-central Arizona have fascinated large numbers of non-Indians for at least 100 years (Bourke 1881, 1884). The Snake ceremony is just a part of the year-round Hopi religious cycle that includes their Bean, Flute and masked kachina ceremonies. This ceremony culminates late on an August afternoon with the Antelope society holding and the Snake society dancing with
Figure 1. Bar chart showing when photography was allowed at Zuni and Hopi pueblos.
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Figure 2. Bar chart showing when photography was allowed at Keresan and Jemez pueblos.
snakes in the village plaza—a ceremony whose main purpose is rain making and promotion of garden crops. Six Hopi villages performed Snake dances ca.1910-1911: Shungopavi, Shipaulovi, Oraibi and Hotevilla in even-numbered years; Walpi and Mishongnovi in odd-numbered years.

Hopi Snake dances were photographed in 1885. Photographs of Walpi Snake dances in the 1890s show the presence of many photographers on house tops and on the plaza within a few feet of the dancers and snakes. 2

Photographer Ben Wittick comments about the 1899 Walpi dance, "There were visitors from San Francisco, Chicago, New York, New Orleans, Los Angeles, etc., and anybody with a Kodak!" (Wittick 1899). Wittick photographed the ceremony at Walpi from the mid 1880s until his death in 1903 of a rattlesnake bite. He was planning to take a rattlesnake to his Walpi friends for their Snake Dance (Packard 1970:46).

Of the 1901 Walpi Snake Dance, G. Wharton James wrote, "It was decided that the photographers present must be kept within a certain line...It will not be long before one can write a learned and accurate paper from the standpoint of the scientific ethnology on the change in religious ceremonies owing to the camera," (James 1902; Lyman 1982:119-124; Longo 1980). One of Thomas A. Edison's motion picture crews filmed the 1901 Walpi Snake ceremony. 3

In the early 1900s as the number of visitors and photographers coming to the Walpi Snake dances increased, the resident Indian agent Supt. Leo Crane became more and more upset and said, "Each tourist packs one of those devices sold by Mr. Eastman...I proposed to increase the tribe's revenue by taxing each visitor a dollar for the camera privilege...the clan thought it good business, and asked me to arrange it...One dollar! Yet there were many who sought to evade and forced unpleasantness," (Crane 1925:251-255). In August of odd-numbered years, Crane dreaded the arrival of hundreds of non-Indians to see the Walpi dance. These visitors, from as far away as Canada and Europe, had to struggle by horseback, wagon or early-day cars over 80+ miles of desert between the railroad and Walpi.

Crane's annual reports are filled with pithy comments on these visitors, "This dance is a national show...the reservation is particularly interesting to archaeologists, ethnologists, sociologists, artists, photographers, and practically every sort of 'ogy' and 'ologist' for whom there is reason to exist...most of them considering the place as a playground and wishing to indulge in a free-for-all method of entertainment...." Crane's list of pet peeves were: "INDIAN TRADERS: worse than the Indians. TOURISTS: worse than the Indian Traders; including interested but undisciplined 'friends,' curio hunters, actresses, authors, moving-picture fiends, and just plain wandering open-mouthed TOURISTS. Last but not least--THE SNAKE DANCE." Crane said much of the work load at Keams Canyon Agency dealt with traders, tourists, the Snake Dance and "1,678,923 1/2 reports to the Indian office," (Crane 1912-1919). Events leading to the first official restrictions of photography of a specific southwestern Indian ceremony centered around the August 21, 1913, Walpi Snake Dance. A few days before the ceremony Cato Sells, Commissioner of Indian Affairs in Washington,
D.C., sent Supt. Leo Crane a letter and telegram stating, "Taking pictures (of the) Snake Dance should be permitted for historical purposes only and not for commercial use," (Crane 1913). Permits to attend the ceremony were issued by Crane to 500 to 800 non-Indian visitors, and he tried to control photography. The number of visitors was increased by Arizona Governor W.P. Hunt's party, including ex-President Theodore Roosevelt and two of his sons, plus attendant photographers from Phoenix. Perhaps the apprehensions of Crane and Sells over the presence of Hunt and Roosevelt led to restrictive orders on photography.

When Crane arrived at the Walpi dance plaza late in the afternoon of August 21, 1913, he was surprised to find two sets of photographers set up to make movie films: the Kolb brothers from their nearby Grand Canyon studio and also Victor Miller of Pathé's Weekly. Crane allowed these photographers to make films after he had extracted a promise that an agreement would later be signed that the films would be used only for private or historical purposes. The Kolb brothers signed the agreement after the ceremony. Miller did not show up for the signing party and attempted to get off the reservation with his film. Crane gave pursuit. Imagine a night-time chase of ca.1910 cars over the wagon tracks of the Hopi-Navajo reservation. Miller was slowed by a flat tire. Also his local driver probably did not relish a night crossing of Jeddito Wash, since the Hopi Snake Dance was famous for inducing powerful thunderstorms that in minutes filled washes with rushing water. Crane caught Miller an hour after midnight. Miller was arrested, taken to an agency headquarters and held until the next day. He was released along with his equipment, but his film was confiscated and sent unopened to Washington (Crane 1913). Later Crane observed, "Because of this untoward happening, and the wild cries of wounded vanity heard in Washington, the Commissioner became annoyed. He issued a crushing order that no photographs, still, animated, or out of focus, should be permitted thereafter," (Crane 1925:251-255). The Kolb film is at the University of Northern Arizona. A Library of Congress film, showing Teddy Roosevelt at the 1913 Walpi Snake Dance, probably can be attributed to Victor Miller, the Pathé's Weekly photographer. The checkered and quixotic history of the Miller film is a tale yet to be completely traced: a film confiscated during a midnight chase on the Hopi-Navajo reservation in 1913, sent undeveloped to Washington and identified in the archives of the Library of Congress in 1986.

Confirmation of these events and ensuing restrictions on photography was made by Thelma B. Towle, an Arizona writer, through interviews she had in 1957 with photographers who had been present at one or another of the Walpi ceremonies of 1913, 1915 and 1917 (Towle 1957). Towle thought Hopi objections to photography became stronger after introduction of movie cameras because this increased the chance for commercialization of the ceremony.

The number of photograph collections found of Hopi Snake dances, dating from 1885 through 1914, was 131; 7 collections were found for the 1915-1923 period but dates for two are
Figure 3. Bar chart showing when photography was allowed at the Tiwa pueblos.
Figure 4. Bar chart showing when photography was allowed at the Tewa pueblos.
questionable; no Snake Dance photographs were found dated later than 1923. From 1885 through 1923, hundreds of photographers must have recorded the Hopi Snake dances.

The numbers of photographers interested in documenting the complete Hopi ceremonial cycle were never as great as those who photographed only the Snake Dance. Joseph Mora lived at Hopi and recorded the full Hopi ceremonial cycle by paintings and photographs in 1904-1906 (Mora 1979). Kate Cory also lived at Hopi and photographed most of the Hopi ceremonial cycle from 1905 to 1912 (Wright, Gaede and Gaede 1986). The last major photographic effort of the complete annual cycle of ceremonies was by Emry Kopta who lived at Hopi 1912-1922. A Kopta photograph of the Walpi Snake Dance ca.1921-1923 shows observers with cameras. Photography of some Hopi ceremonies into the 1920s perhaps can be partially explained by a change in the administration of the reservation—Supt. Crane was transferred to New Mexico in 1919, and his prohibition policies may not have been enforced rigorously after he left.

Strange as it may seem, several photographs exist of a demonstration Hopi Snake Dance performed on the Capitol Plaza in Washington, D.C., May 15, 1926, before Vice President Dawes and 5000 other citizens. Its purpose was to show that Hopi ceremonies were not inhuman or cruel, as had been contended by organizations who wanted to prevent the annual performances. Arizona's Senator Cameron said the dance was not as bad as the Charleston (Billingsley 1971:109, 123; New York Times and the Washington Post for May 16, 1926).

Perhaps the last, if not the only, available movie film of a Hopi masked Kachina Dance was made by Clifford Paul in 1926.

The initial 1913-1915 restrictions of photography at Hopi must be attributed to officials of the Bureau of Indian Affairs—they even charged camera fees. This action was effective in reducing the number of photographers at Hopi ceremonies. However, some photography of Hopi ceremonies continued until the mid 1920s, mostly by photographer-friends of the Hopi. At rare intervals from that time to the present, a few photographs of Hopi social dances have been made.

At present, photography of general Hopi scenes and of some social dances is permitted on special occasions with tribal and individual village permission. Photography of Hopi religious ceremonies is prohibited and is controlled primarily on a village basis with help from tribal police. A pamphlet distributed at the August 24-25, 1984, Shungopavi Snake Dance admonished visitors, "Because of the sacred character of the dance, picture taking, recording of songs and sketching of any part of the dance will not be permitted and will be strictly enforced. Any attempt of the above will not only cause you embarrassment but may also cause your camera, tape recorder, or sketching materials to be confiscated."

Individual villages also control attendance at certain ceremonies. The general public was barred from the 1985 Mishongnovi and the 1986 Shungopavi Snake dances, the only two villages still performing this dance.

ZUNI PUEBLO
Photography of Zuni religious ceremonies has been banned since the mid 1920s. The number of Zuni ceremony photographs is considerably fewer than those available for Hopi ceremonies. The most active period of photography at Zuni was from 1879 to 1900.

John Hillers photographed a Harvest Dance and Zuni Koyemshi ritual clowns at Zuni ca. 1880. The Taber Co. of San Francisco, working for the 1886 Hemenway Expedition, photographed a Zuni War Dance and made one shot of the Shalako kachinas leaving the village.11

Apparently the Zuni objected to photography of their famous Shalako ceremony as early as the late 1890s. Ben Wittick noted of the 1897 Shalako ceremony, "... (I) go to bed mad, but consoled that if I didn't get photos, others didn't... up for breakfast... six Shalakos are gathered... I quickly walk behind the crowd and drop six plates uncaught... Tried to get (another) good view, but the Zunis discovered me and interposed -- got a couple of attempts."12

The 1923 Shalako ceremony was filmed by Owen Cattell and his brother from the Museum of the American Indian in New York City. A visiting anthropologist noted that "Zuni and Isletan youths posted themselves before the camera and ruined most of Mr. Cattell's film," (Stephen 1936:12). Another witness said, "The Cattell brothers thought they had it all fixed to take some moving pictures--a thing that Douglas Fairbanks had attempted to do three years ago and failed... The Cattells took a few of them, and then set their camera in a conspicuous place... The Priest of the Bow jumped in front of the camera." (Zuni Hearings 1924). However, one of the existing 1923 Cattell films of Zuni has a 9-minute sequence of the outdoor portion of the masked Shalako kachina ceremony--the Cattells were more successful than either the anthropologist or the Priests of the Bow realized.13

No photographs have been found of ceremonies conducted inside Zuni houses, i.e., the winter kachina dances and portions of the Shalako ceremony.

Few photographs have been made of Zuni ceremonies since the mid 1920s. However, mural paintings by Zuni artist Alex Seowtewa on the walls of the old Zuni Mission Church show complete and accurate details of lifesized Zuni kachinas (Lyon 1977); also see the kachina paintings by Duane Dishta (Wright and Dishta 1985).

Small dance groups formed at Zuni perform social-type dances at ceremonials, county fairs and the New Mexico State Fair--photography and audio-video recording of these dances occurs.

JEMEZ AND THE KERESAN PUEBLOS

All eight of these Pueblos prohibit photography in the 1980s, but the dates of initial prohibition vary.

The people of Santo Domingo Pueblo, noted for their spectacular Corn Dance, objected in various ways to photography of the dance in the early 1900s. Sometimes the Indians cast "showers of pebbles at Kodak fiends."14 Jesse Nusbaum said, "Photographs prohibited and cameras busted by Indian guards... Had Frank Butts of Santa Fe who was carrying opened umbrella shield me and camera from the view of Indians, then quickly raise and lower it when I was
### APACHES, NAVAJO AND UTE

#### Number of collections

<table>
<thead>
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</tr>
<tr>
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<td></td>
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#### Figures

**Figure 5.** Bar chart showing when photography was allowed at Apache, Navajo and Ute ceremonies.
Figure 6. Bar chart showing when photography was allowed at Tarahumara, Mayo, and Yaqui villages.
ready to take a picture." Santo Domingo's Koshare ritual clowns almost started a riot in 1921 when they found a man with a camera. By 1924 huge notices were posted at the edge of the village saying no photographing is permitted. Several Kodaks were broken in 1933.

Santo Domingo's attitude toward photography was supported by archaeologist Dr. Edgar L. Hewett, "It would not be unreasonable to expect the Indians to smash cameras... Suppose, while you are at worship in your church on some great festival day, a crowd of boisterous Indians were to drive up...(and) set up cameras snapping photographs right and left..." (Santa Fe New Mexican, Aug. 3, 1918).

There are over 30 collections of photographs of the events associated with the August 4 Santo Domingo Corn Dance, dating from the 1880s to the 1920s. As yet few if any photographs of the many other ceremonies performed at Santo Domingo have been found.

The most recent and celebrated aerial photographs of a Santo Domingo ceremony were published in the Santa Fe New Mexican on January 24 and 29, 1984. Accusations, lawsuits, apologies, apologies not accepted, negotiations all ended a year later, with the Santa Fe New Mexican abjectly apologizing to Santo Domingo and setting up a summer job program for Indians, providing free advertising for village events, and assigning a member of the newspaper staff to learn about Indians (Albuquerque Journal, and Santa Fe New Mexican, Feb. 1, 1985). These photographs show that a ceremony was in progress, but few details can be recognized.

Very few photographs exist of San Felipe, Santa Ana or Zia ceremonial material, suggesting they did not permit photography. Although Cochiti, Acoma and Jemez have prohibited photography since the 1920s, several photographs of their ceremonies were taken before that time, mostly of their Corn Dance. Laguna after several years of vacillation finally prohibited photography in the 1980s of their September 19 feast day ceremonies at Old Laguna--photography of ceremonies in the out-lying villages of Laguna may take place from time to time.

TIWA PUEBLOS

Taos Pueblo has banned photography of most of its ceremonies since about 1920, although a few photographs were taken from time to time until about 1960. Taos Indians ca. 1910 threw dust at photographers. Some of the earliest photographs of a southwestern ceremony were those taken of Taos ritual relay racers on Sept. 30, 1871. A large number of photographs of early Taos ceremonies are at Kit Carson Memorial Foundation, Taos.

Isleta prohibited photography of ceremonies in 1889 (Lummis 1889). A Mary Pickford movie was made at Isleta in 1912, and a few seconds of the film are devoted to a dance. Isletans may have always objected to photography. Picuris Pueblo permits photography of some of its ceremonies but prohibits photography of its Pole Climb. Very few photographs exist of Sandia Pueblo ceremonies, and photography has been banned since the 1920s.

Tortugas village, on the southern edge of Las Cruces, NM, has tenuous ties with the Tiwa--its ancestry can be traced to Indians who retreated southward
Indian ceremonials organized by non-Indians and by Indians.

<table>
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<td></td>
<td></td>
</tr>
<tr>
<td>SANTA FE (NM) Festa</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>GALLUP, NM INTER-TRIBAL CEREMONIAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLAGSTAFF, AZ ALL INDIAN Powwow</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>SANTA CLARA, NM POYE CEREMONIAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SANTA CLARA, NM FALLS CEREMONIAL</td>
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<td></td>
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</tr>
<tr>
<td>NORTHERN INDIAN PUEBLO (NM) A&amp;CO SHOW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNOKI CEREMONIALS PRESCOTT, AZ</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 7. Indian ceremonials organized by non-Indians and by Indians.
with the Spaniards after the 1680 Pueblo revolt (Lyon 1976). Tortugans are extremely proud of their celebrations on December 10 to 12 in honor of Our Lady of Guadalupe. They host a feast for all comers and the ceremonies have been completely open for photography. Recently there have been some comments that photography in coming years may have to be controlled. Collections at New Mexico State University, Rio Grande Historical Collections have early photographs of Tortugas ceremonies.

TEWA PUEBLOS

Four of six Tewa villages have always allowed photography of most of their ceremonies. The villages of San Juan, Nambe, Santa Clara and San Ildefonso permit photography and charge fees for camera permits. These fees have increased in the last 15 years from $2 to the present fee of $5-$10 per ceremony. Both San Ildefonso and Santa Clara have recently banned audio-video recording, and permits now state that photographs are for personal use only. This current ban on audio-video recording probably is an attempt to prevent commercialization of the recording, especially the audio portion, as the songs are considered to be sensitive religious material. Photography is not permitted for their most sacred ceremonies, e.g., Turtle Dance at San Juan, Basket Dance at San Ildefonso.18

Tesuque has restricted photography for many years, but from time to time a few photographers were given permission to film or photograph. Pojoaque Pueblo resumed its dance ceremonies in 1972 after a hiatus of 100 years; they banned photography in the 1980s.

There is no straightforward answer to why four Tewa villages permit photography of many of their ceremonies. Edward Dozier, an anthropologist of Santa Clara ancestry said, "Pueblo Indians are beginning to discover that fees charged for taking photographs...are a convenient way to bring revenue into the pueblo," (Dozier 1970:185). Fred Harvey Indian Detour tourist groups often visited Tewa villages in the 1920s, and segments of dances were performed for them by arrangement and probably for a fee. Starting in 1919, Tewas performed several of their dances at the Santa Fe Fiesta with pay of $7 to $10 per dancer. We can only speculate that these performances were a welcome source of income and led to a certain amount of tolerance to the presence of tourists and to photography (Sweet 1981:97ff; 1985:50).

APACHES, UTE AND NAVAJO TRIBAL GROUPS

At the four Apache reservations, only the Mescalero prohibit photography by the general public, although exceptions were made in the 1970s, allowing an anthropologist and also a German TV crew to photograph and film Mescalero ceremonies.

Southern Utes and Mountain Utes allow photography of their social Bear Dance but not of their sacred Sun Dance.

Photography of Navajo ceremonies has not been and is not today regulated by any formal policy of the tribal council of the Navajo Nation. Recording of Navajo ceremonies has been done a few times in the last 100 years. Some photographs were obtained surreptitiously. Most often permission to photograph
a ceremony was obtained by beforehand negotiations and payments were made to the people involved. In the late 1970s Navajo medicine men formed a nonprofit corporation to receive health insurance funds. The bylaws stated that no camera, television or recording equipment be allowed inside a shelter where a curing ceremony was in progress (Parezo 1983:33, 73). Membership in the organization was voluntary, and not all medicine men joined.

Most traditional Navajo religious rites deal with curing of disease or restoring well-being of one or two patients. A medicine man, often called a Singer, conducts the curing ceremony that may last nine nights and intervening days. Large numbers of Navajo attend the last two nights.

Navajo ceremonies offer a wealth of photographic subjects: sandpaintings on the floor of a ceremonial hogan or lodge, group singing and dancing, corral-type dressing rooms made of evergreen boughs, and in earlier days horse races, rooster pulls and other social events. Photographers of Navajo ceremonial subjects took their photographs out of ceremonial context—the subjects were posed, and lighting conditions dictated when and where the photographs were taken.
Figure 9. One of the earliest photographs yet found of the Zuni Shalako ceremony, taken in 1886 by the I.W. Taber Photo Company. This company was hired to photograph the Hemenway Expedition’s work at Zuni. The 9-foot tall kachinas are leaving the village after dancing all night. They will not reappear for another year. (Bancroft Library, University of California, Taber photograph 4653.)

Portions of the Nightway ceremony (Yeibichai) were photographed at Shiprock, NM, in 1920, by Arthur Chapman. He said, "Several tourists with cameras of the ordinary type were ejected from the big hogan where the sandpaintings were made." However, Chapman did take photographs, through the connivance and help of the Indian Agent and a trader. Chapman said, "No excuse is here offered for taking pictures in defiance of the Navajo's wishes, except that permanent records of Navajo sandpaintings should be made for the benefit of a world that is seeing Indian ceremonials and traditions vanish all too quickly" (Chapman 1921).

Unquestionably, the most complete photographic and film documentation of Navajo ceremonies was made in the winter of 1963-1964 by the American Indian Films Group of the University of California, Berkeley, directed by Samuel A. Barrett. Barrett obtained permission to photograph Navajo ceremonies through the assistance of Kenneth E. Foster, director of the Museum of Navajo Ceremonial Art in Santa Fe, NM (now Wheelwright Museum). Foster and his Navajo interpreter along with Barrett made arrangements, actually they created a bit of fiction, whereby the staff of the group was accepted as members of the family of the patient undergoing the curing ceremony. Since members of a patient's family share the cost of a ceremony, the group made payments to the Singer and all others involved, acting out the fiction that they were members of the patient's family. Thus, the traditional method of a patient's family being responsible for the costs was kept intact. The group made color films of a hand-trembling rite, and complete coverage
**Navajo ceremonies have been photographed a few times from 1900 to the present, but only by carefully arranged beforehand permission.**
of the Red Ant Way, Mountainway, Nightway and perhaps one other ceremony.\textsuperscript{19}

As mentioned previously many early Navajo photographs and films were taken out of ceremonial context. Perhaps this separation of the recording process from the actual ceremony satisfied objections that photography would cause loss of ritual power, adversely affecting the cure of the patient and physically interrupting the ceremony. These early objections probably are still valid today. Permission for the general public to photograph might allow Navajo ceremonies to become tourist attractions—a situation not yet acceptable to many Navajo. However, photography of Navajo social dance competitions is permitted, e.g., the competitions held in early October at the Northern Navajo Fair, Shiprock, NM.

Although it is a relatively rare occurrence, recording portions of a Navajo ceremony still occurs.

**TARAHUMARA, MAYO AND YAQUI VILLAGES**

Tarahumara villages in Chihuahua, Mexico allow photography of their ceremonies, especially if gifts of food or cigarettes are offered.\textsuperscript{20} Photography in Mayo villages of Sonora and Sinaloa, Mexico may be possible, but usually they prefer that photographs not be taken.\textsuperscript{21} The same is true for the Yaqui villages in Sonora.\textsuperscript{22} The Yaqui village of Guadalupe near Phoenix, AZ, prides itself, so villagers say, on never allowing photographs of their ceremonies to have been taken. The three Yaqui villages in Tucson have had a yes/no and a selective policy toward photography, but they have essentially banned all types of recording in the 1980s.\textsuperscript{23}

**CEREMONIALS ORGANIZED BY NON-INDIANS OR BY INDIANS**

Southwestern ceremonial are celebrations organized for entertainment and commercial purposes and usually include Indian dances. They are an institution dating back at least to the commemoration of Mexican Independence when Pecos Indians performed an Animal Dance at Santa Fe in 1822 (James 1846:143). To attract Easterners and their money, Santa Fe organized another celebration in July-August 1883, three years after completion of the railroad to the city. This Tertio-Millennial Exposition brought Indian groups from as far away as Zuni and the Mescalero reservations to perform ceremonies. It provided a choice opportunity for some of the earliest photographic documentation of southwestern Indian dances.\textsuperscript{24} Santa Fe grasped the ceremonial concept a third time in 1919, forming the annual Santa Fe Fiesta. Edgar Hewett and Lansing Bloom organized dancers from seven tribal groups to perform at the fiesta. There were many photo opportunities.\textsuperscript{25} By 1928 there was a reduction in the number of dance groups at the fiesta for several reasons (Sweet 1981:108; 1985:2, 76).

Many other ceremonials and powwows were organized in the Southwest by both non-Indians and Indians, and they all permitted photography.\textsuperscript{26} At the annual Smoki (Smoke-eye) ceremonials in Prescott, AZ, non-Indians perform their versions of Indian dances, including the Hopi Snake Dance.\textsuperscript{27} President Coolidge was initiated into the Smokis in 1924. Borrowing again
from the Indians, the general public is now prohibited from photographing actual Smoki ceremonies but can photograph the dancers afterwards.

REMARKS

Throughout 120+ years of photographic contact, Southwestern Indians developed several responses to tourists and their cameras. Outright prohibition was the reaction of 21 tribal groups to photography, Table I. Of the 13 southwestern tribal groups that permit photography, Table II, six of them withhold this permission for their most sacred ceremonies—a fact that emphasizes, at least in the 1980s, that prohibition is selective and can be based on sacredness of the ceremonies. However, in an economic contrast, both Indians and non-Indians often use Indian ceremonial dance and music as tourist attractions. Thus, Indians have developed a set of rationalizations as they have reacted to the inquisitive tourists and their photography (Sweet 1981:189ff; 1985:80).

Some individual Indians and tribal groups probably objected to photography from the very inception of the introduction of the camera to the Southwest. By the early 1900s there were several instances of Indians protesting the presence of photographers. The number of photographers and the problems of controlling them at Hopi Snake dances led the Commissioner of Indian Affairs to ban photography at these dances in 1915-1917. Perhaps of some import to those Rio Grande Pueblos who wanted to ban photography was the appointment in 1919 of their new superintendent, Leo Crane—the same man who implemented the ban of photography at the Walpi Snake Dance.

Tribal groups had several reasons for prohibiting photography: ceremonies were sacred and photography was considered to be an interference, a source of loss of ritual power and an act of disrespect; some Indians believed photographs took something away from them (Lummis 1925:ix); Indians resented commercial exploitation of their religion through sale of photographs; and in the 1920s, photographs of their ceremonies might have been used against them as documents by people who objected to the practice of Indian religions.

The early 1920s was a period of intense controversies over Indian religious freedom and land rights. Commissioner of Indian Affairs Charles Burke issued his infamous Circular No. 1655 on April 26, 1921, stating that certain Indian dances were considered "Indian Offenses" and were to be restricted. By 1925 many non-Indian individuals and organizations throughout the country had successfully defended religious and land rights of Indians. Attitudes changed within the federal government and in 1928 U.S. Deputy Indian Commissioner E.B. Merritt told the Pueblo Council that the United States did not wish to interfere with Pueblo customs and ceremonies (Santa Fe New Mexican, Nov. 9, 1928). The Indians came out of this period knowing that they had considerable public support to practice their religions as they wished and to regulate visitors to ceremonies.

Photographs of Indian ceremonies can be analyzed through the three elements of subject, photographer and photohistorian. Indian ceremonial subjects are
PHOTOGRAPHIC OPPORTUNITIES
IN
THE INDIAN SOUTHWEST: 1980s

OVER 400 CEREMONIES PERFORMED ANNUALLY
BY 34 TRIBAL GROUPS

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*No photographs permitted of some ceremonies

#No audio-visual recording

most often ritual dramas, including dance—a supplication for health, fertility or weather control to benefit the group or the individual. The photographer has a set of separate values and interests; a photograph may objectively capture a scene, but choice of time, subject matter, limits of context, methods of printing, and reasons for taking the photograph are highly subjective. The viewers, the photohistorians, last of the three elements, are also highly individualistic; they scan and interpret the photograph from their own set of interests in art, choreography, costumes, history, religions, etc.; the value of their interpretation is directly related to their knowledge or lack of knowledge of the subject matter. Richard Powers (1985:335) commented on the dependence and also the divergence of these three elements, "The final mystery of photography is that taker, subject, and viewer, each needed for the end product, circle one another warily, define one another in their own terms."

Photographers of Indian ceremonies had many reasons for their actions: a colorful experience captured, a souvenir collected, an artistic subject recorded, a source of saleable images, a scientific and perhaps altruistic desire to record something that was disappearing. Their actions have not gone without criticism. Susan Sontag comments, "After the opening of the West in 1869 by the completion of the transcontinental railroad came the colonization through photography... The tourists invaded the Indians' privacy, photographing holy objects and the sacred dances and places, if necessary paying the Indians to pose and getting them to revise their
ceremonies to provide more photo-
genic material," (Sontag 1977:64). Vine Deloria Jr. says that photog-
raphy was a powerful tool for record-
ing scenes in the West, but "it was also a weapon in the final skirmishes of cultural
warfare," (Lyman 1982:11).

Justification for photographing Indians at the turn of the century was expressed by Edward S. Curtis (1907) as a need to document "every phase of life among all tribes yet in primitive condition." Joseph Dixon had the same justification in 1913 for his book The Vanishing Race (Gold 1983). These two photographers often used the art-documentary mode of photography to illustrate Indian cultural subjects--their docu-
mentation often gave way to the precedence of photographic art in their publishing ventures. We can only comment that the art-documentary mode of photographing the "vanishing race," a race whose population has more than quadrupled in the 20th century, continues today and is not a vanishing enterprise.

Photographic documentation of southwestern Indian ceremonies has been accomplished through the efforts of hundreds of photographers. However, very few photographers were inclined or permitted to record an Indian ceremony from beginning to end. Notable exceptions are the works of the American Indian Films Group with the Navajo,19 and of George Dorsey (1902) and his team of photographers documenting the Hopi Snake Dance. For most ceremonies the photohistorian must use many archival sources to compile a complete sequence of photographs.

The role of the photograph collector was apparent at an early date, e.g., William Blackmore made his extensive Indian photograph collection in the 1860s and 1870s (Jackson 1877; Lyon 1979); and Adolph Bandelier collected photographs that accompanied his report written in 1887 for the Jubilee of His Holiness, Pope Leo XIII (Bandelier and Burrus 1969:112-115).

The efforts of photographers, collectors and present-day photo-
archivists have immense value to photohistorians, dance his-
torians, visual anthropologists, and those interested in history of religions. Indians themselves, whether individuals or tribal governments, are now using photoarchives as a valuable source to study their cultural history.

Indian reactions to pho-
tography developed over a period of four generations. Cultural contact with the camera probably puzzled and to some extent frightened the first generation. Photography was no stranger to the next two generations, and many individuals and tribal groups in the Southwest decided to prohibit the use of the camera at ceremonies. Now after four generations of cultural contact with the camera, the prohibition of photography has become a tradition among the majority of Southwestern tribal groups.

Emergence of Indian photographers brings a new compo-
nent into the cultural use of photography. They are aware of the success of non-Indian photographers and would like to have the opportunity to record their own ceremonies. However, in certain cases, refraining from photographing ceremonies can become for them a form of worship (Masayesva and Younger 1983:10). A native Indian photographers' association has been formed in Canada.28 The role of the Indian photographer
in documenting ceremonies is at its beginnings. The next decade, undoubtedly, will see that role expand along with that of the Indian photohistorian—they'll be following the traditions of their prehistoric ancestors who documented ceremonies in rock art, kiva mural paintings and pottery decorations.

Los Alamos, NM

ACKNOWLEDGEMENTS

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An early version of this study was presented April 19, 1985, at the annual conference of the Historical Society of New Mexico, Las Cruces, NM.

Presented April 12, 1986 at: Researching Dance Through Film and Video, a conference sponsored by the Congress on Research in Dance and the Human Studies Film Archives, Smithsonian Institution, held at the Museum of Natural History, Washington, D.C., 28 slides were used as well as a video tape containing the films of the 1913 Walpi Snake Dance made by the Kolb brothers and also by Victor Miller. The tape also contains the Hopi Kachina Dance filmed by Clifford Paul in 1926 and some of the footage shot in 1963 of the Nightway ceremony filmed by the American Indian Films Group.
## INSTITUTIONS REPRESENTED
### IN THE PHOTO SEARCHES

### KEY TO SYMBOLS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHS</td>
<td>Arizona Historical Society Library, Tucson, AZ</td>
</tr>
<tr>
<td>BCHL</td>
<td>Bethel College Historical Library, North Newton, KS</td>
</tr>
<tr>
<td>BMMOM</td>
<td>British Museum, Museum of Mankind, London</td>
</tr>
<tr>
<td>CHSPL</td>
<td>California Historical Society, Photo Library, Los Angeles, CA</td>
</tr>
<tr>
<td>HUNTL</td>
<td>The Huntington Library, San Marino, CA</td>
</tr>
<tr>
<td>KCMF</td>
<td>Kit Carson Memorial Foundation, Taos, NM</td>
</tr>
<tr>
<td>KOW</td>
<td>Kow-Ina Cultural Research Foundation, Grants, NM, not active in 1986.</td>
</tr>
<tr>
<td>LACM</td>
<td>Los Angeles County Museum of Natural History, History Archives, Los Angeles, CA</td>
</tr>
<tr>
<td>LOC</td>
<td>Library of Congress, Newsreel Collection, Theodore Roosevelt Collection; also the Prints and Photographs Division.</td>
</tr>
<tr>
<td>LOWIE</td>
<td>Lowie Museum, Univ. of California, Berkeley, CA</td>
</tr>
<tr>
<td>MAI</td>
<td>Museum of the American Indian, New York, NY</td>
</tr>
<tr>
<td>MNA</td>
<td>Museum of Northern Arizona, Flagstaff, AZ</td>
</tr>
<tr>
<td>MNMHL</td>
<td>Museum of New Mexico History Library, Santa Fe, NM</td>
</tr>
<tr>
<td>MNMLA</td>
<td>Museum of New Mexico Laboratory of Anthropology, Santa Fe, NM</td>
</tr>
<tr>
<td>MNMPA</td>
<td>Museum of New Mexico Photo Archives, Santa Fe, NM</td>
</tr>
<tr>
<td>NASPB</td>
<td>National Archives, Still Picture Branch, Audio Visual Archive Division</td>
</tr>
<tr>
<td>NAUSC</td>
<td>Northern Arizona University, Special Collections Library, Flagstaff, AZ</td>
</tr>
<tr>
<td>NMSRC</td>
<td>New Mexico State Records Center and Archives, Santa Fe, NM</td>
</tr>
<tr>
<td>NMSRG</td>
<td>New Mexico State University, Rio Grande Historical Collections, Las Cruces, NM</td>
</tr>
<tr>
<td>PMPA</td>
<td>Peabody Museum Photo Archives, Harvard University, Cambridge, MA</td>
</tr>
<tr>
<td>SINAA</td>
<td>Smithsonian Institution, National Anthropological Archives, Washington, D.C.</td>
</tr>
<tr>
<td>SWM</td>
<td>Southwest Museum, Highland Park, Los Angeles, CA</td>
</tr>
<tr>
<td>UNMSC</td>
<td>University of New Mexico, Zimmerman Library, Special Collections, Albuquerque, NM</td>
</tr>
<tr>
<td>USCSC</td>
<td>University of Southern California Library, Special Collections, Los Angeles, CA</td>
</tr>
<tr>
<td>WWM</td>
<td>Wheelwright Museum, Santa Fe, NM. Formerly Museum of Navajo Ceremonial Arts.</td>
</tr>
</tbody>
</table>
FOOTNOTES

1 In this study a tribal group is defined as composed of Indians who have shared culture, live on a reservation or enclave usually with communal ownership of land, form a distinct political entity, and some members speak a common native language. Thus, each Pueblo in New Mexico is considered to be a separate tribal group, because each has its own reservation and a separate government. The several Hopi villages are considered to be one tribal group since they share one reservation and have a single government, even though individual villages retain autonomy over ceremonies and some land usage. Most tribal groups in the southwestern United States maintain tribal rolls of members; the criteria for enrollment varies from group to group. The 50 tribal groups in northwestern Mexico and southwestern United States form one of the major cultures found in the area. In terms of Indian cultural boundaries, Indians in the area at the time of first contact with Europeans were bounded by the Plains Indian culture to the east, Great Basin Indian culture to the north, California Indian culture to the west and a diffuse boundary to the south by Mexican Indian and Mesoamerican cultures. Partially in jest, the area has been defined as extending from Durango, Colorado, to Durango, Mexico; and from Las Vegas, Nevada, to Las Vegas, New Mexico (Reed 1964:175).

2 The earliest Hopi Snake Dance photographs I have found to date were taken in 1885 by W. Calvin Brown of Albuquerque and also by Cosmos Mindeleff of the Smithsonian Institution. Two of Brown's photographs are in a private collection in Albuquerque. The Santa Fe Weekly Leader, Aug. 29, 1885, 4-3, comments, "Col. (W. Calvin) Brown, a photographer of Albuquerque, has given a vivid description of the Moqui Snake Dance as was given by the Moqui Indians on the 18th and has photographed views of the dance..." Cosmos Mindeleff photographed Snake Dances in August 1885 at Mishongnovi and at Walpi (Mindeleff 1886, 1887). MNMPA 85574 is a photograph of an illustration of a Hopi Snake Dance in Harper's Weekly, drawn by H.F. Farny from a photograph by Cosmos Mindeleff (Edwardy 1889). Also see Mindeleff's 1885 photographs of the Mishongnovi Snake Dance at SINAA 1817-a-1 through 1817-a-4. Many prominent photographers recorded the Snake dances and other Hopi ceremonies of the 1880s to the 1910s (location of collections): Charles Carpenter and Summer Matteson (MNA); Edward S. Curtis (Curtis 1907-1930:Vol. 12); Earle Forrest (MNA; HUNTL); G. Wharton James (MNMPA; James 1902); Carl Moon (HUNTL); Frederic Monsen (HUNTL); Joseph Mora (MNA; NAUSC; Mora 1979); H.F. Robinson (MNMPA); Adam Clark Vroman (LACM; HUNTL); George Ben Wittick (MNMPA). The Museum of Northern Arizona has the largest number of photographs of Hopi ceremonies.

3 The 1901 Walpi Snake Dance movie film produced by Edison is of relatively poor quality, see Newsreel Collection at the Library of Congress, copyright H11267, H11269, H11270, H11271, Dec. 12, 1901. Edward S. Curtis filmed the Snake Dance at Oraibi in 1904 and 1906 (Davis 1985:39,
Curtis filmed the Snake Dance in several different years, and portions of his Snake Dance films are included in The Shadow Catcher (McLuhan 1975, note: the music and drum beat used as background has no relation to an actual Snake Dance). The National Archives Motion Picture Collection film 48.107 is titled Acoma Pueblo, Snake Dance. Although this film shows street scenes in Acoma Pueblo, the Snake Dance sequence was definitely filmed at Walpi, because the distinctive Snake Rock pillar in the Walpi plaza is easily identified in the film; the date of this film is estimated to be 1905-1911.

4 The Snake Dance film made by Emery and Ellsworth Kolb is a combination of the 1911 and 1913 Walpi ceremonies. The 1913 portion shows Arizona Governor W.P. Hunt and ex-President Theodore Roosevelt. The film is a part of the extensive Emery Kolb collection at NAUSC. For more information on Emery Kolb see A Guide to the Kolb Collection, Discovery Series 17, NAU Libraries, 1980. Another film of the Walpi Snake Dance was taken by Santa Fe Railway executive and photographer William E. Kopplin probably in 1911. Prints from this film, some printed reversed, are in Dream Tracks (McLuhan 1985).

5 The Pathe's Weekly undeveloped film of the August 21, 1913, Walpi Snake Dance was sent to the Commissioner of Indian Affairs in Washington, D.C. The film now in the Library of Congress, showing Teddy Roosevelt at the dance, more than likely is the Pathe's Weekly film photographed by Victor Miller. The story is yet to be developed of how the undeveloped Miller film made its way through the Washington bureaucracy to LOC. See LOC unpublished Theodore Roosevelt Catalog: Hopi Indians dance for TR at Walpi, AZ, 1913; shelf location FAB1134, print; FRA6075, negative; FRA5714, positive; contact Wendy White Hensen, film librarian of T.R. Roosevelt collection.

6 Emery Kopta's photograph, MAI 27909, shows several observers with cameras at the Walpi Snake Dance ca.1921-1923. Kopta lived at Polacca, Hopi First Mesa, for most of the period from 1912 to 1922. He was a sculpture, and through his friendship with the Hopi he was allowed to photograph Hopi scenes and ceremonies during a period when restrictions of photography at Hopi were slowly taking effect. Several hundred ca.1920 Kopta photographs of Hopi ceremonies are at MAI, sent to this eastern location because Mrs. Kopta believed they were too sensitive for repository in Arizona. The Kopta collection at MNA has over 800 prints and 1200+ negatives, pertaining to Hopi daily life ca.1920. For details of Kopta and his work see (Breunig and Lomatuway ma 1983; Hurst 1982; Kopta Foundation 1982).

7 Photographs of five Hopi men dancing in the Capitol Plaza Washington, D.C., on May 15, 1926 are in the National Photo Company Collection, Prints and Photographs Division, LOC. There are eight photographs of the Hopi with thousands of spectators in the background, including Alice Roosevelt Longworth, Mrs. (Senator) Borah, Lady Isabella Howard, Count and Countess Szechenyi and others. Photos 39887 and 39921 of Lot 1237-1 show the Hopi dancing
with the snakes, Herbert E.
French photographer. See
Congressional Record Vol. 67,
pp.123, May 13, 1926, for Senator
Cameron's invitation "to everyone
to witness this unusual Indian
dance." These Hopi dancers
toured the country off and on
for six years, starting in 1924.
The group was organized by M.W.
Billingsley and they gave dances
and lectures throughout the United
States (The Arizona Republican,
Phoenix, January 29, 1930, pp.11).

8 Clifford Paul filmed a Hopi
Kachina Dance in June-July 1926
at Hopi First Mesa, probably at
Sichomovi village. The film is
six minutes long and is of the
Hopi Tasap Dance. The Tasap is
a Hopi version of a Navajo
Yeibichai Dance from the Night-
way ceremony. The Tasap is still
performed in the 1980s in several
Hopi villages. Clifford Paul was
born in 1892, died in 1960. He
was chauffeur for William Butter-
worth, president of John Deere
Co., Moline, IL. The film was
taken when Paul and the Buttre-
worths were touring the West.
Paul won a Packard car ca.1938
in a nationwide photo contest.
Paul's daughter, Ethel Armstrong
of Roswell, NM, has a copy of
the film and will be depositing
a copy at MNA.

9 A few photographs of a masked
Hopi Kachina Dance were taken in
1927 (Hegemann 1963). Hopi social
dances have been photographed at
various times from the 1920s to
the 1980s (Hegemann 1963; Coze
1957; Byrner ca.1935, MNPPA;
Smith in 1933, MNA; Page and
Page 1982). CBS Television
filmed Hopi scenes and a social
Butterfly Dance at Shipaulovi in
January 1979 for use on Charles
Kurlalt's Sunday Morning Show.
Tribal authorities granted
permission, "because it would
be a great benefit to the Hopis
in the long run as favorable
publicity, as compared to no
publicity which was detrimental
to Hopi interests in the recent
litigation over lands with the
Navajo Tribe." (Hopi newspaper
Qua Toqti for Jan. 11, 1979).
The Hopi Snake Dance con-
tinues to intrigue non-Indians.
Friar (1972:28) describes the
use of the dance in a theatrical
production, "Off-Broadway had
Sam Shepard's Operation Sidew-
inder, which premiered in March
1970 at the Lincoln Center Reper-
atory Theatre...the second act...is
almost completely devoted to
the Hopi Snake Dance...An ex-
perienced and excellent Hopi dancer,
Louis Moffie, trained the non-
Indian performers and staged
the dance sequence. Because of
its sacred significance, com-
plaints by Native Americans
were voiced against its use...the
attempt at accuracy and authen-
ticity in Operation Sidewinder
was dismissed by the Times critic
as...'Broadway Indians doing a
Broadway Snake Dance'."

10 Snake dances were last
performed at Oraibi in 1916,
Walpi in 1969, Shipaulovi ca.
The small Second Mesa village
of Mishongnovi closed its 1985
Snake Dance to the general public
perhaps, in part, due to the
increasingly large crowds attract-
ted to the event. Shungopavi
Snake Priest Reedford Quamahongniewa
sent a letter to the Hopi Tribal
Council, stating that their
August 23, 1986, Snake Dance would
be a Hopi-only affair (Gallup
Independent August 5, 1986).
This decision by the Hopis was
made following a July 28 Hollywood
press conference held by Academy
award winner Jon Voight, where
he spoke about a prophetic message
the Hopi people will share with
the world sometime soon. Flanked by Elizabeth Taylor and Hopi Thomas Banyacya, Voight posed for photographs and TV cameras (Navajo Times TODAY July 29 and 31, 1986). Many Hopis were disturbed by the news conference and Shongopavi immediately closed its 1986 Snake Dance to non-Hopi. Two weeks prior to the news conference Voight visited Mishongnovi. After the news conference Mishongnovi announced its Snake Dance, next in 1987, was closed to outsiders forever (private communication).

11 Photographer Timothy O'Sullivan of the Wheeler Survey was at Zuni in 1873. However, no single photograph of a Zuni ceremony can as yet definitely be attributed to O'Sullivan. John K. Hillers, photographer for the Smithsonian Institution, was at Zuni in 1879 and the early 1880s and probably during that period took photographs of a Zuni Harvest Dance, 2267-p SINAA and 106-IN-2384 PA at NASPB; also see 2355, 2275, 2371-a at SINAA for other Hillers photographs of Zuni ceremonial material; also 37941 at MNMPA. The Peabody Museum has an album of 27 excellent 8"x10" black and white photographs of the activities of the Hemenway Expedition at Zuni in 1886; all photographs in the album are attributed to the I.W. Taber Photo Co., San Francisco, CA. One photograph of a snow-covered field shows six Shalako kachinas leaving the village. There is a series of photographs of a so-called Zuni War Dance, and one of these photographs has Frank Cushing posing in the center with costume, bow and arrows. The Smithsonian Institution has a print of this Zuni War Dance tentatively attributed to O'Sullivan. Another photograph of this same dance is in the collections of the State Historical Society of Colorado and is attributed to William Henry Jackson; a copy of this latter photo is in the McNitt collection of NMSRC. the Bancroft Library has a similar photograph attributed to the I.W. Taber Co. Since there is a series of photographs at various stages of this Zuni War Dance in the Hemenway album, attribution of these 1886 photographs is most strongly associated with the I.W. Taber Co., rather than with either O'Sullivan or Jackson. Also I doubt that the speed of O'Sullivan's glass negatives in 1873 would have been fast enough to capture the action of the dance without blurring. Who made the 1886 Hemenway photographs for I.W. Taber is as yet not known. Zuni ceremonies through the 1890s were photographed by: Ben Wittick (MNMPA); Fredrick Monsen (HUNTL); Adam Clark Vroman (LACM); Matilda Coxe Stevenson (SINAA, MNMPA); Amelia Hollenbach (private collection); John K. Hillers (SINAA, MNMPA).

12 An undated manuscript by Ben Wittick, "A Visit to Pueblo Zuni, The Shalako Dance," is in Box 116 Wittick Collection at MNMHL. Wittick mentions that the day was a Sunday, which corresponds to the Nov. 28, 1897, Shalako ceremony. Wittick was also at the Nov. 20, 1896, ceremony.

13 The Cattell brothers were brought to Zuni by Fredrick W. Hodge. Hodge, backed by the Museum of the American Indian Heye Foundation, conducted archaeological investigations at the Zuni ruins of Hawikuh from 1917 to 1923. There are 11 Zuni films at the MAI, all filmed in 1923, presumably by the Cattell brothers and were directed by Hodge. Copies of
these films are also in the archives of the Zuni Archaeological Programs, Box 339, Zuni, NM 87327, but there may be restrictions to viewing some of the films. Four sections of the Cattell films contain ceremonial material: about 9 minutes of outdoor portions of the Shalako ceremony; about 9 minutes of a pilgrimage and ceremonies of rain priests; about 5 minutes of a summer kachina rain dance performed by the Kokokshi kachinas, sometimes called Longhair kachinas; 3 minutes of a Santo Dance, with bower for santos, banner, chorus of men with one drummer, women dancers wore squash blossoms in hair but no tablitas—a dance similar to the Rio Grande Pueblos' Tablita or Corn Dance. There was considerable factionalism among the Zuni people in 1923, and the filming done by the Cattell brothers under the direction of Hodge contributed to the factionalism (Zuni Hearings 1924).

14 References for the statements in this paragraph are to be found in: Santa Fe New Mexican Aug. 5, 1913, Aug. 3, 1918, Aug. 6, 1921; Kluckhohn 1928:76; Brett 1933:60; Harris 1934. A note on an envelope of Jesse Nusbaum photographs of the Aug. 4 Santo Domingo Corn Dance ca.1910-1911, reads, "Photographs prohibited and cameras busted by Indian guards," etc. (MNMPA). Visitors to the Aug. 4 Santo Domingo Feast Day celebration from 1972 through 1986 were given pamphlets, stating no picture taking, no sketching, no tape recording, no alcoholic beverages...failure to abide by the above rules will result in a fine. Photographs of ceremonies taken prior to the 1920s for the designated pueblos are in the following archives: ACOMA: SWM, HUNTL, LACM, UNMSC, CHSPL, MNMPA, KOW, NUMSRC, Curtis Vol. 16 (1926). SANTO DOMINGO: SWM, HUNTL, SINAA, LACM, KOW, MNMPA, NMSRC, PMPA. COCHITI: SWM, HUNTL, MNMPA, MAI, MNA, NMSRC. JEMEZ: MNMPA, MAI, and photographs published in books or articles by Elsie Clews Parsons, Albert B. Reagan, R.B. Townshend and Charles H. Lange.

15 Private communication, Hilton Remley.

16 The Sept. 30, 1871, photographs of Taos ritual relay runners were taken by Orloff Westmann, a photographer from the Elizabethtown, NM, gold-mining camp (SINAA 1943-c). He had to pose the racers, since the speed of his wet collodion glass plate was too slow to make an action photograph. Westmann was hired to do this job by William Blackmore, an English entrepreneur who was also an avid collector of ethnological materials (Lyon 1979). Blackmore's extensive collection of photographs of American Indians, dated in the late 1860s and early 1870s, is one of the earliest and most important collections available of the American Indian--mostly portraits (Jackson 1877). The collection is in SINAA and BMMOM.

18 Photographs of dances ca.1882 at San Juan Pueblo and Cochiti were probably taken by Henry Brown of Santa Fe and are listed by title in Bandelier and Burris (1969:112-114). T. Harmon Parkhurst, another Santa Fe photographer, made innumerable Tewa ceremonial photographs from about 1915 to the 1930s, and they document almost the entire dance cycle of these Tewa village (MNMPA). SINAA, NMSRC, and PMPA also have several Tewa ceremony photographs. NMSRC
has several films of ca.1930s Tewa ceremonies.

19 One of the earliest opportunities to photograph the Navajo was in 1864-1868, when a large portion of the tribe was incarcerated by the U.S. Army at Bosque Redondo near Fort Sumner, NM. None of the Bosque Redondo photographs viewed to date depicts a Navajo ceremony, even though many ceremonies were held there (Roessel, Ruth 1973:136, 215, 227, 260-265; Osburn 1985:404-407). After the Navajo returned from the Bosque Redondo to their homelands in northwestern New Mexico and northeastern Arizona, Timothy H. O'Sullivan of the Wheeler Survey photographed them ca.1874 at Fort Defiance, AZ. One of O'Sullivan's photographs shows twenty Navajo men in a circle dance (Roessel, Robert 1980:75), a dance with little ceremonial significance. In some of the following early photographs of Navajo ceremonial material, the subjects were posed or photographed out of ceremonial context (photographer, date of photograph, archive or reference): Nordenskiold 1891, NMSRC Sally Wagner collection 8001 and 8003; Lime ca.1894-1904, SINAA 55094-a, and see Parezo 1983:31; Vroman 1898, LACM V709 to V803 for general photos of the Navajo and V736 for photo of a rooster pull; Simpsov, 1901, MNMPA 37683; Curtis ca.1904, see Curtis 1907:vol. I, 92-140; Mora 1904-1906, MNA collection MS200-3; Schwemberger ca.1905, MNA Rechard collection MS22-8. Some of the notable collections of photographs of actual Navajo ceremonial subjects taken from the 1920s through the 1970s are: Armer, late 1920s and early 1930s, WWM; Hegemann 1926-1930, HUNTL; Foster 1963, WWM; Heick and Wharton 1963, LOWIE; Lair ca.1970s, WWM. Karl Luckert recorded the Coyoteway in January 1974 and his book has many photographs of the ceremony. He said, "Johnny Cooke was his faithful interpreter. Luke Cooke has been a devoted negotiator on our behalf...he volunteered to be our patient...he has insisted on bearing certain portions of the expenses himself...Man With Palomino Horse one of the two surviving Singers of Coyoteway has consented to have his chantway recorded and preserved for posterity...the greater portion of the expenses for this project has been paid by myself ..." (Luckert and Cooke 1979:ix, x).

The first motion picture film of a Navajo ceremonial subject probably was made by Edward S. Curtis in 1904 (Davis 1984:37). This film was made in the daytime and shows some of the masked dancers that appear during the 9th night of the Nightway (Yeibichai) ceremony. Curtis probably persuaded them to dance during the day, so that there would be enough light to make the film. This film is a part of The Shadow Catcher, a film biography of Curtis (McLuhan 1975). The sequence in this film is a mirror image of the original Curtis Yeibichai Dance and has been copied at 24 frames/second rather than the approximately 16 f/s camera speed used by Curtis. Emery Kolb, NAUSC, also made a short film of portions of the Nightway ceremony ca.1911. It, too, was filmed in the daytime, but the presence of background spectators and other material suggest that this film was made during the course of an actual ceremony. Laura Armer made a movie of the 6th-day activities of the Mountainway ceremony, held February 1928 near Ganado, AZ. Roman Hubbell, owner of
Hubbell Trading Post at Ganado, financed the film and provided the gifts to participants (Parezo 1983:32). A copy of this film is supposedly at the Southwest Museum (Armer 1953:5), and perhaps also at WWM. MAI has a 20-minute film, probably ca. 1930s, containing Navajo ceremonial material: sandpaintings in a hogan, masked Talking God, puppet dance scene, and night-time scenes of a Fire Dance.

The most complete films of Navajo ceremonies were made in 1963-1964 by the American Indian Films Group with Samuel A. Barrett, director; William R. Heick, cinematographer; Robert Wharton, photographer; David Peri, sound recorder; William Burke, apprentice. These films remain unedited to date (LOWIE). Video copies, reel-to-reel tape, of these ceremonies were given to the Navajo Community College, Tsaile, AZ. Portions of these films, including a hand-trembling rite and some of the Nightway ceremony, can be seen in the commercially available film Navajo: The Last Red Indians, 1972, 35 min., by Michael Barnes, producer BBC/Time-Life Films (Weatherford 1981:85).

There is a possibility the films of the American Indian Films Group may at sometime in the future be transferred from LOWIE to the Smithsonian Institution, Human Studies Film Archives. The WWM has many 4"x5" colored transparencies of Navajo ceremonies photographed by Kenneth Foster when he accompanied the American Indian Films Group in 1963. Navajo Indians were organized into a film project where the Indians were taught filmmaking and were encouraged to choose their own subjects. Most filmed objects or rituals. See the film Navajo Film Themselves (Weatherford 1981) and a description of the project (Worth and Adair 1972).

For Tarahumara ceremony photographs see (Bennett and Zingg 1976). This reprint contains 96 color plates from the large photograph collection of Fr. Luis G. Verplancken, S.J., of the Tarahumara Mission, Creel, Chihuahua, Mexico. John P. Schaefer has recent photographs of the Tarahumara ceremonies (Fontana 1979). Another large private collection of Tarahumara ceremony photographs is held by Jack Rodack of Tucson, AZ. Also see (Kennedy and Lopez 1981; Running 1985).

For Mayo ceremony photographs see (Crumrine 1977).

For photographs of the Mexican Yaqui ceremonies see: (Beals 1945; Spicer 1954; MNMPA 46298, 46301, 66299, 46300, 46302). MAI has a film of a Mexican Yaqui Deer Dance.

For photographs of the Arizona Yaqui ceremonies see: AHS collections for photos from 1920s to 1950s; MNMPA 37823 to 37827 taken in 1922; (Spicer 1940; Herbert 1960; Painter 1962; Fisher 1977). A short film sequence ca. 1930s of the Yaqui Easter ceremonies in Arizona is in Real Americans (NMSRC No. 325).

Photographs of Indian dances performed by Picuris, Acoma, Zuni and Apache Indians were taken in July 1883 at Santa Fe's Tertio-Millennial Exposition (MNMPA).

For photographs of Indian Dances at the Santa Fe Fiesta in the 1920s see the collections in MNMPA; films of the fiesta have been collected by Tom McCarthy of the Audio-Visual
For films of Indian parades and dances at the Gallup Ceremonial see the collections in NMSRC.

For information and photographs of the Smoki ceremonies see: collections at Smoki Museum, Prescott, AZ; NAUSC vertical file; Jesse Nusbaum collection MNMPA; LOC Prints and Photographs Division Lot 12337-4.

Native Indian/Inuit Photographers' Association (NIIPA), 210 Napier St., Hamilton, Ont. L8R 1S7, phone (416) 528-8487, has a goal "To promote an Indian photographic, educational network and to encourage as well as promote the usage of photography as a medium of the fine arts."

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1953 The Crawler, Navajo Healer. The Masterkey 27, 5-10.

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