

Collected Papers

IN HONOR OF

Helen Greene Blumenschein

James G. Bain

Herbert W. Dick

Richard A. Bice

Bertha P. Dutton

Jack & Dorris Boyer

Nancy Fox

Douglas Paul Brethauer

Harry L. Hadlock

J.J. Brody

David T. Kirkpatrick

Vernon Ralph Brook

Curtis Schaafsma

Charlie R. Steen

Edited by Albert H. Schroeder



Papers of the Archaeological Society of New Mexico:5

ALBUQUERQUE ARCHAEOLOGICAL SOCIETY PRESS

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View of Apodaca Trail to Dixon-Embudo via Pilar.

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PREFACE

This fifth release in this series of *Papers of the Archaeological Society of New Mexico* is the Society's first effort to honor one of its non-professional members, Helen Greene Blumenschein.

A dedicated and long-time member, Helen has devoted much of her energy to a variety of undertakings in the Taos locale, primarily in pursuit of her interests in art, archaeology, trails, and history. Her early work on prehistoric sites in that area served to draw the attention of professionals to further investigate the cultural remains of the region. As a result, the haze that once pervaded our view of the prehistoric past in and around the Taos region has been cleared to the point where an outline of the developments that took place is now evident.

In tribute to Helen, both professional and society non-professional friends and co-workers have contributed articles, many pertinent to her interests, to this volume as an expression of regard for Helen's accomplishments.

Again, special thanks are due to the Albuquerque Archaeological Society Press and especially to Richard A. Bice for handling the chores leading to the appearance of this volume in print. Sincere appreciation also goes to Phylis Hughes, who contributed the cover design, and to Nancy Fox, whose proofreading assistance was most helpful, and to Jeton H. Brown for the typing.

Albert H. Schroeder

August 1979



Helen Greene Blumenschein. *Laura Gilpin photograph.*

HELEN GREENE BLUMENSCHN

A BRIEF BIOGRAPHY

JACK and DORRIS BOYER

Known to many of her friends as Helen GB - or just HGB - Helen Greene Blumenschein is a delightful woman of strong character, many talents, and innumerable interests. Although she was born in New York, she spent her very young years in Taos, New Mexico, where her artist parents, Ernest L. and Mary Greene Blumenschein, pursued their profession. Helen remembers that her family lived in what is now Roberto's Restaurant on Kit Carson Street. They bought milk from a local dairyman who let four-year old Helen help milk his cows. Drinking water was purchased, a barrel a day, from Mr. Weatherman, who brought the water in from Viniteria Spring. When in Taos, Helen still goes to Viniteria for her drinking water. When she was four or five years old, her parents moved back to New York where they made their home until 1919. The then 10-year old Helen still remembers the train ride from New York to Raton, New Mexico, and the trip from Raton to Taos in a new \$500.00 Model T Ford driven by her father, the car barely making the Palo Flechado Pass. Those early years left a deep imprint on Helen.

In 1922, Mr. Blumenschein bought a Cadillac Touring car for \$2000.00, which car, according to Helen, lasted "forever," 20 years. In 1946, the family obtained a 4-door Packard Sedan from Hanlon's Funeral Home for \$400.00, which they sold for \$100.00 in 1960 to Mr. Kahn, Kahn's Shoe Store, Santa Fe. Mr. Kahn still owns the car.

Helen attended grade school at the Sisters of Loretto Catholic School in Taos. She spent her freshman and sophomore years at the Sisters of Loretto and at the Packer Collegiate School for Girls in Brooklyn, New York - one-half school year at each - and her junior and senior years at the latter. Upon graduation from high school, Helen was given the choice of college or art school in Paris, France. Her choice was Paris, where she studied for two and one-half years.

As a young child and teenager, Helen's interests were as keen and varied as they are today. Taos Pueblo Indian Jim Romero taught her to fish, which she still loves to do. Her first rifle was a gift from Mr. Burt Harwood who taught her to shoot. Her mother also gave Helen a rifle as did her father later. She always enjoyed young people and taught many young people to fish and hunt. Helen always has loved nature and has a keen desire to help save our environment. As a child, she learned to ride the family donkey, Brito, and remembers entering the donkey in races held on the town plaza. She and Brito lost one race when Brito, far ahead, stopped to look back at the "slow" followers, gave them a He-Haw, rested, and ended up far behind - an embarrassment to both rider and donkey.

Helen learned much about humanity from Dr. T. P. Martin, who often took her with him in his horse-drawn buggy on family sick calls. Her parents stopped this fascinating pastime when she innocently related things she had seen and heard and repeated stories that Dr. Martin had told her along the way.

One does not spend many hours around Helen without becoming aware that she is a patriotic American. It was this spirit of patriotism that caused Helen to join the Army WACs in 1942, a decision that resulted in her going on missions to strange places during World War II. She joined the WACs as a private, was chosen for Officer Candidate School, graduated as a 2nd Lt., soon was promoted to 1st Lt., and was one of the first 500 WACs to replace men in some military areas. Her first assignment was at Ft. Smith, Arkansas, where a typist was needed. Helen does not type! She then was assigned to Army Emergency Relief as a Public Relations Officer and was one of the first to hear the stories from Guam of the Japanese Bansai, the noise and scare tactics of psychological warfare. After a month in Ft. Smith, Helen went to a base in the Boston, Massachusetts area and was placed in charge of physical culture.

When a call came from someone to head the Army Health and Warfare Department in New York City, Helen requested the assignment. When

asked what she knew about New York City, she told them that she had been born there - and was given the assignment! Her experience on this job Helen found to be an education in itself. She always had a keen interest in people and in this position, not only did she help families who came to see their men in service, but she helped all sorts of needy people, many types she had never encountered before. In this work she overcame all kinds of fears which one so often experiences when dealing with people different in some respects from ourselves.

Helen then requested overseas duty and was sent to the South Pacific Area where she spent much of the next one and one-half years reading (censoring) mail, both in English and Spanish - not exactly the kind of assignment she had hoped for. The first base assignment was Port Moresby, New Guinea where a young Australian captain took her out in his jeep every Sunday, and Helen sketched. The aborigines, called "fuzzy wuzzies," were so fascinated with her sketching that they climbed all over the jeep; as a result Helen's friend "electrified" the jeep to keep the natives off.

From Port Moresby, Helen moved first to Biak, then to Leyte, then to Manila in the Philippines. It was in Leyte that she contracted pneumonia, developed abscessed lungs, and for some time was very ill. After recuperation, she again censored mail until she convinced her superiors that the Philippine girls would be good at this task.

Helen spent some time on the Battleship Missouri, the ship on which the peace treaty with Japan was signed. In October 1945, she returned to the USA - a 21-day trip by ship - pleased to have served her country well when need was great.

Always an artist in a home of artists, Helen was encouraged to independently develop her own style. Her parents believed that too often student artists learn to copy the style of their teachers, and so encouraged Helen to follow her own inspiration. She taught herself illustration because she believed then and still believes that the technique of illustrating is of great importance to become a good artist. There being within her family unit the mutual criticism

necessary for an artist's best work, Helen reached outward into many fields.

Helen's artist friend, Johanna Glaman Jones, has said:

Two words come to mind when I think of Helen: integrity and sincerity. Both qualities are evident in her character and in her work. Whether she is doing a portrait or a landscape, it is apparent that she knows what she is about. The portrait catches the character of the sitter, and the landscape shows that she is a close observer of nature. Her approach is direct, and she paints with authority based on excellent training and inherited artistry.

Helen says that her preferences as to types of painting are first, portrait and second, landscape.

The Indian influence is strongly evident in her portraits. Her principal models were and are Don Mondragon, Telesfor, and Popslee Romero. All three, having worked for many years in the Blumenschein home, are great friends of Helen now as they were of her parents.

From 1932 to 1936, Helen studied lithography and silkscreening at the Art Students League in New York. Most of her print-making has been since World War II. Encouraged to develop her own creativity by her exceptionally talented and perceptive parents, Helen's mediums include oils, water colors, pen and ink drawings, charcoal portraits, print-making, and silk screens. Her works have been exhibited nationally and abroad. She had many one-woman shows and today is doing some of her finest work.

Having concentrated her energies for so long on developing her artistic talents, the great field of archaeology all around us in Taos had somehow escaped Helen. An old friend, Orval Shreeves, first aroused her interest in this field when in the early 1950s he told her about finding ruins on the rim of the Rio Grande and took her to see the sites. She was captivated by what she found and by the manner in which the ruins or pit houses were arranged on the rim and on the slopes. When she began her archaeological excavations, she recruited high school students who were interested in learning and helping with

the excavations. She dug carefully, preserving artifacts and meticulously covering the sites so that there would not be erosion and decay. During this time, Helen was studying and reading everything she could and collecting a library of her own in the field of archaeology.

One of the pit houses she located, excavated, and preserved is located on her Arroyo Seco property. She found many pit houses throughout the valley and on the rim. Her work in the Taos Valley area has done much to interest other people in the archaeological wealth of this area. Her interest has reached out to others who have become serious archaeological students. She is certainly an amateur archaeologist to be recognized and appreciated, and as such was honored in 1969 as the recipient of the New Mexico Archaeological Society's Achievement Award for History and Archaeology in the Taos Valley. Helen also wrote and published materials on her archaeological studies and findings.

In 1960, the Taos County Historical Society was formed, Helen Blumenschein being a charter member. She served in most official capacities of the society and supported its efforts and those of other organizations and foundations to preserve the history of Taos County. Her work through the society led her on many historic trail hunts, retracing and following old trails of Early Man and other Indians, and of the Spanish settlers, the fur traders, trappers, and scouts. History became her predominant interest during the 1960s and led to other publications.

In 1962, Helen gave her home, the historic home of the Blumenschein family, located on Ledoux Street in Taos, to the Kit Carson Memorial Foundation to be preserved as a historic artist's home. In 1966, the Blumenschein Home was designated a National Historic Landmark.

It is impossible in a biographical sketch to name the many ways in which Helen Greene Blumenschein has given of herself to serve. She worked to develop the first craft shows in Taos; she served on

innumerable advisory boards of different organizations, including the Forest Service and the Girl Scouts.

One must know Helen to know her generosity and thoughtfulness as well as her many other attributes. Even then, one learns about Helen from others! Her mind is not on herself, but on the things she wants to see done and to be a part of doing. Though she travels much and has spent much time in Europe, Helen comes home to her Taos friends - the same Helen who left - our son would say, "Just Helen."

Kit Carson Memorial Foundation, Inc.
Taos, New Mexico

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- 1973 *Selected Petroglyphs in Rio Arriba County*. Pruett Press,
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Santa Fe.

1979 (cont.)

Recuerdos - Early Days of the Blumenschein Family, Tecolote
Press, Silver City.

BIOGRAPHICAL NOTES

Exhibited prints nationally and abroad, 1936-1945. Prints purchased by Carnegie Institute, 1951; New York City Public Library; Newark, New Jersey Library and Orange, New Jersey Library.

First prize, oil, Studio Club, New York City, 1938; 1st prize, water color, Pen and Brush Club, New York City, 1946; 1st prize, oil, Expressionist Class, New Mexico State Fair, 1951.

Prizes and Prints in New Mexico and Arizona State Fairs in 1930s. Honorable Mention, oil, Los Alamos, New Mexico Art Show, 1970. 2nd prize, 20"x30" ink drawing, New Mexico State Fair, 1970.

One-man show of charcoal heads, Oklahoma City Art Center, 1951; Terre Haute, Indiana, 1958; New Mexico Museum of Art in Santa Fe in the 1930s, 1940s, and in 1964; Los Alamos, October 1964.

Prints and drawings, Midland, Texas, 1967; Denver, Colorado, October 1967; National Oklahoma Drawing Show, Oklahoma City, Oklahoma, 1974; Museum of New Mexico, Bicentennial Permanent Collection Show, Santa Fe, 1976-1977 -- Taos Indian charcoal head "Manuel Lujan"; Flagstaff, Arizona, Blumenschein Family Show, Spring, 1979.

New York World's Fair Lithograph, 1940; Print Show - Venice, Italy, 1941; Print Show - Sweden, 1941.

Listed in *Who's Who in Art*, in *Women of the West*, and in *American Women*.

COMMITTEE AND BOARD PRESENTATION

HONORS

Board Member of the Archaeological Society of New Mexico, 1961-62, 1965, 1965-69.

President of Taos County Historical Society, 1961-62, 1965; Board member, 1963-68; Chairman, Historic Sites, 1968-69; Editor of History Letter, 1960-70.

Member, Citizen's Advisory Board, U. S. Forest Service, Carson National Forest, 1963-66, 1967-69.

Member, Advisory Board of Northern New Mexico State Library, 1965-67.

Served one term, August 1967-70, New Mexico Arts Commission Board.

Recipient of New Mexico Archaeological Society's Achievement Award for History and Archaeology in Taos Valley, 1969.

Member Advisory Council, Kit Carson Memorial Foundation, Taos, 1974-75.

Present Art Consultant, Blumenschein Home Memorial, Taos. Honored by Taos County Historical Society for Distinguished Service.

A PRELIMINARY REPORT ON THE EXCAVATIONS AT LA 12143, GALLUP, NEW MEXICO

DOUGLAS PAUL BRETHAUER

PREFACE

In June 1978, the Archaeological Society of New Mexico held its annual field school at a prehistoric site in Heaton Canyon, near Gallup, New Mexico. This year's field school was the second held in Heaton Canyon by the archaeological society and was a continuation of salvage work that has been carried out intermittently by the Gallup Archaeological Society over the past several years.

When circumstances permit, a field school can, and should, pursue two goals. First, it can provide people interested in archaeology an opportunity to learn methods of excavating sites, recording information, and analyzing artifacts. These activities will allow an archaeologist to make sense out of the collections of data which begin to emerge. This in itself is important since not only is public interest in archaeology extraordinarily high at the present time, but also economic development threatens many of the remaining sites, and it is imperative that those who dig be given a chance to learn the best possible methods and techniques for "doing archaeology." In this way, what is done will not be lost to either the archaeological community or the general public.

The second, and equally important, goal of a field school is to report on what has been done, with the hope that the work may make a small contribution to our understanding of the prehistoric past. With the firm backing of the Board of Directors of the ASNM, funds were allotted from the field school's limited budget to support the writing of this report. In so doing, hope was expressed that the 1978 field school could contribute to our understanding of Anasazi prehistory as manifested in Heaton Canyon.

If this report meets these expectations, it is due in part to the help and encouragement of many persons. These include:

Harry Hadlock and Betty Kelley, members of the Field School Committee, who spent many uncounted hours before, during, and after the field school making the many arrangements necessary for the success of the undertaking;

Ralph Thode, Sylvia Abeyta, and other members of the Gallup Archaeological Society, who have been hospitable and helpful, and whose knowledge of local archaeology provided much food for thought;

Richard Bice, ASNM Board member, who visited the site, offered his encouragement, and shared his expertise with the participants;

Dr. Caroline Davis, laboratory director, who did an outstanding job organizing the laboratory and teaching the principles of artifact analysis;

Martin Link, manager of Red Rock State Park, who graciously permitted the field school access to the facilities of the park for three weeks and patiently met our incessant need for keys;

Bob Weber and Helene Warren who gave seminar programs on geology and ceramics, respectively; and, finally,

the participants, Sylvia Abeyta, Betty Ayer, Charles and Kay Black, Al Blanchard, Margaret Foster, Betty Kelley, Bob and Nina Lee, Dixie Miles, Richard Newton, Carol Piskoty, Melanie Sloan, Becky Spencer, and Betty Terry, whose interest and good humor made this dig an enjoyable, interesting, and friendly experience.

INTRODUCTION

For a variety of reasons, the small prehistoric settlements common in many areas of the Southwest have begun to receive more attention from professional archaeologists than formerly. After many years of effort, a number of large ruins in many portions of the Southwest--Chaco Canyon National Monument is the outstanding example

in the Gallup area--have been partly or wholly excavated while many of the smaller, outlying sites have often been ignored. This bias has begun to change in recent years, for both practical and intellectual reasons.

From a practical point of view, public laws now protect archaeological sites on federal and state lands. However, this involves the need to protect or otherwise "mitigate" the effects of construction on smaller prehistoric sites which happen to lie in the path of industrial development. Archaeologists now deal in terms of regional patterns of settlement and land utilization in undertaking excavations and investigations of small prehistoric sites that, in some instances, may appear to be peripheral to the most important developments in prehistoric Anasazi society.

Intellectually, the natural and social sciences (including archaeology) view human societies from an ecological point of view, i.e., as parts of larger relationships that include both man and the natural world. Archaeologically, a single site can be seen as something which is a part of the natural environment, and consequently as something which interacts with many of its parts. Its existence is affected by the soil, the plants which grow in the area, the animals, the availability of stone and other mineral resources, and the climate, among those factors which most obviously affect a human settlement.

A prehistoric site usually can be related to other archaeological sites in a geographic region. Current emphasis also includes the cultural environment--to discover what patterns may exist to help explain why a particular area was utilized, and how these patterns may have affected the "structure" of human communities and the sources of change within them. From this point of view, small sites cannot be ignored since their existence is probably linked in some way to larger sites and to the community as a whole. Not to consider such sites would be similar to trying to understand the development of the United States without leaving its largest cities or considering the natural resources that have enabled it to industrialize.

Because LA 12143 is a small, prehistoric Anasazi site, an effort will be made in this report to place it in both its ecological and larger social contexts. Although a definite statement is difficult and risky to make, small Anasazi sites similar to it are more numerous than later, larger village sites in Heaton Canyon and elsewhere (Washburn, 1974, pp. 325, 331; Vivian and Mathews, 1965, pp. 29-30.) By studying LA 12143 and other such sites, a contribution to the study of an important developmental period in Anasazi prehistory may be made. In addition, an effort will be made to explain the selection of Heaton Canyon as one area in which prehistoric settlement occurred. This report is preliminary in nature, however, and future work may alter some of the conclusions reached herein.

THE ENVIRONMENT

Site LA 12143 is located on the western slope of Heaton Canyon, about one mile north of Gallup, in west central McKinley County, New Mexico (Fig. 1). The elevation of the site is approximately 6750 feet. Geographically, this section of the state is a part of the Colorado Plateau physiographic province (Maker et al., 1974a, p. 78).

In general, the area in the vicinity of Gallup and Heaton Canyon is characterized by "broad mesas and plateaus interspersed with numerous deep canyons and dry washes, steep, picturesque mesa-breaks, and canyon walls." Although several permanent streams drain portions of the Colorado Plateau province, the streams in the immediate Gallup area, including the Rio Puerco of the West and its tributaries, are considered to be intermittent. Elevations range for the most part between 5000 and 7500 feet, although a few isolated peaks rise to 8500 feet (Ibid., p. 78). Because of the variability found within the region, the environment immediately surrounding Heaton Canyon will be discussed in greater detail below.

Geology

According to Kirk (1914, pp. 28, 34, 37, 66), Heaton Canyon is part of the Gallup Basin, a structural formation (a large syncline)

which is bounded on the east by The Hogback and on the west by an indefinite line which passes near Manuelito, New Mexico, 16 miles to the west. Stratigraphically, the oldest rocks in the Gallup Basin are the Zuni sandstones, which date from the Jurassic Age. The remaining stratigraphic levels are Cretaceous, and in order of decreasing age are as follows:

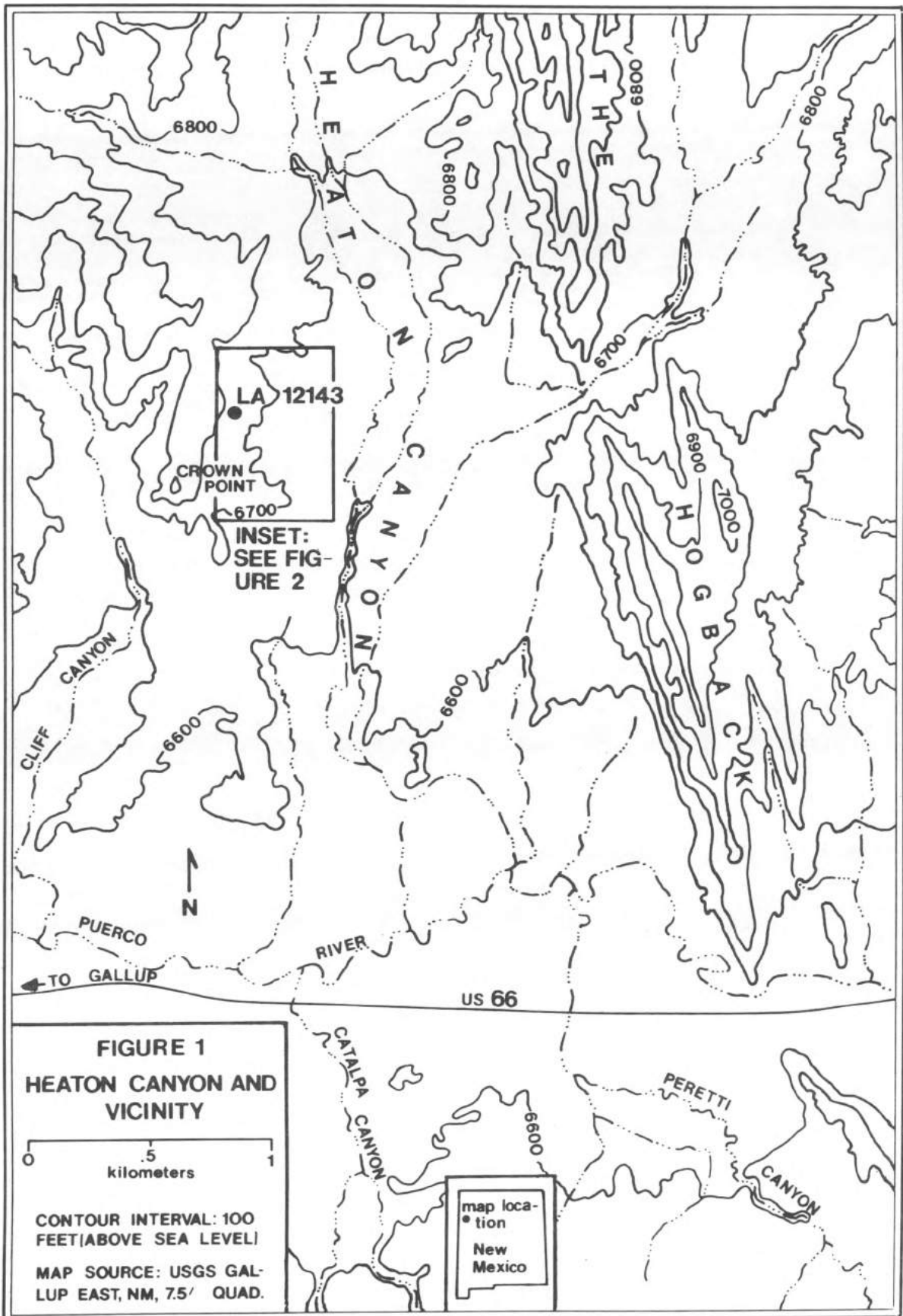
1. Dakota sandstones
2. Mancos shales, clays, sandstones, and fossil-bearing limestones
3. Mesaverde sandstones, clays, shales, and workable coal beds

Only Mesaverde sandstone is exposed in the Gallup Basin, although in many places it has been covered by (geologically) recent stream deposits, some residual soils, and aeolian fill. Mesaverde sandstone is exposed on Crownpoint Ridge west of LA 12143 (within 10 meters), and this outcrop is probably the source of many of the sandstone artifacts found in the excavation. Kirk notes that Mesaverde sandstones are of good structural quality, highly durable, and of uniform color, even when weathered. In its type locality, on Mesa Verde, Colorado, this sandstone "consists of two massive sandstones, between which occur thin sandstone and shale beds, interstratified, and including workable coal." The lower bed of coal serves as a horizon marker for the Mesaverde stratum in the absence of fossils and has been traced by Kirk in the Gallup Basin. It is thought to pass immediately west of LA 12143 on Crownpoint Ridge.

In addition to the sandstone and coal, high-grade surface residual clays, said by Kirk to be suitable for the manufacture of brick, tile, and terracotta, are available from the Mesaverde formation.

Physiography

LA 12143 was built on what field school participants called "Gnat Hill"--actually a ridge formed by the accumulation of aeolian

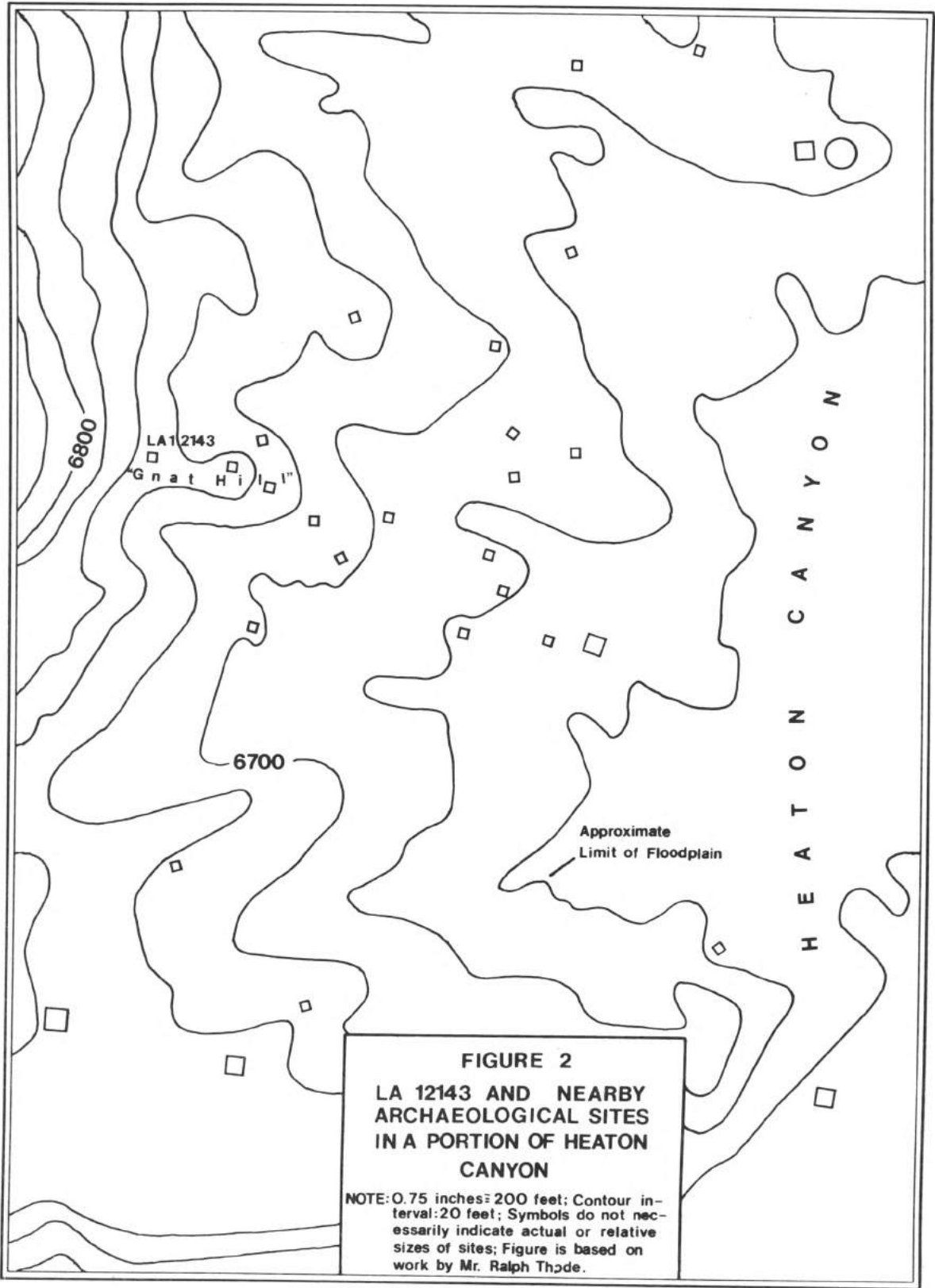


**FIGURE 1
HEATON CANYON AND
VICINITY**

0 0.5 1
kilometers

CONTOUR INTERVAL: 100
FEET (ABOVE SEA LEVEL)
MAP SOURCE: USGS GAL-
LUP EAST, NM, 7.5' QUAD.

map loca-
tion
New
Mexico



and alluvial fill derived from the erosion of Crownpoint Ridge west of the site (Figs. 1 & 2). Gnat Hill is only about 10 to 15 meters wide at the site and slopes off rapidly on the north and south sides to small arroyos and drainages below. The ridge abuts the sandstone outcrops of Crownpoint Ridge on the west within ten meters of the site, and to the east it slopes gradually and merges with the Heaton Canyon floodplain.

The amount of land that is relatively flat and suitable for building or other activities is quite limited. The question arises as to why this area was chosen for habitation over other roomier locations. One possible clue is offered by Roberts (1939, p. 171), who commented on the locations of several 'unit-type' structures excavated by him in eastern Arizona. Three of the units were located on sloping ground. Drainage would be away from the site, he noted, and "...it prevented standing water from seeping into the mud mortar and softening the foundations."

A second clue is that corn fields in Heaton Canyon would be visible from Gnat Hill. Hack (1942, p. 28) reports that floodwater farming techniques, especially *akchin*-type fields (at the mouth of intermittent arroyos) require constant monitoring on the Hopi Reservation.

The course of the floodwater across the field is in part controlled by the labor of the farmer who aids in spreading the water by digging channels to areas that are in danger of being left dry. One can see the Hopi farmers out working in the fields during almost every flood of the growing season. Sometimes water will be diverted to each plant individually if there is danger of drought.

The site lies about 24 meters above the flood plain of Heaton Canyon and is about 1/2 km. (about 1/3 mile) west of the arroyo that marks the present channel. The length of the canyon is approximately 4.9 km. (3 miles) from its head to the confluence with the Rio Puerco (Fig. 1). The width of the floodplain varies considerably. At its confluence with the Rio Puerco, Heaton Canyon is about .4 km.

(1/4 mile) wide, and directly east of LA 12143, the floodplain is about .8 km. wide. Upstream, Heaton Canyon narrows and the floodplain diminishes. It begins 4.9 km. upstream amid low hills and mesas. The slope of Heaton Canyon is about 1.5% where a floodplain exists.

The use that the prehistoric inhabitants made of Heaton Canyon is unclear. However, at least two farming techniques would have been possible, considering the physiography of the area. First, floodwater farming using akchin fields would have been possible at the ends of the short, lateral arroyos which drain from Crownpoint Ridge and the Hogback into Heaton Canyon, and possibly within side drainages in the main channel of Heaton Canyon (Fig. 1). The mouth of intermittent arroyos is the point where the velocity of the water decreases, the silt is deposited, and an alluvial fan forms. These are the most common locations for Hopi fields (Ibid., p. 26).

Secondly, fields may have been located along the main channel of Heaton Canyon. In the Hopi country, this type of field is common in locations where the channel is shallow and water can be diverted to the fields with little difficulty. Hack (Ibid., p. 29) notes that these are also akchin fields, but differ in that the channel continues downstream. At present, the latter method would be possible in many places along Heaton Canyon, because the channel has become deeply incised through erosion.

Soils

The soils in Heaton Canyon belong to the Lohmiller-San Mateo soil association (Maker et al., 1974a, p. 16). These soils occur predominately in valley bottoms and on floodplains and terraces adjacent to intermittent drainages. Lohmiller-San Mateo soils develop in alluvium from sedimentary formations dominated by sandstone and shale.

The only significant difference in local relief within this soil association consists of slightly elevated ridges and low hummocks in areas of active wind erosion. Although occupying gently sloping landscapes, the soils

in this association are susceptible to erosion, particularly gully erosion... The soils are typically deep, medium- to fine-textured, and free of toxic accumulations of salt.

The report also notes that nearly all of McKinley County's irrigated farmland is located within this soil association, which is widely distributed and often occurs in small, irregularly-sized parcels.

The soil in the breaks above the site belongs to the Travessilla-Persayo soil association. One component of this association is Rock Land, which

occurs dominately on the steep escarpment and break areas. It is a complex of very shallow soils, outcrops of interbedded sandstone and shale, and other types of sedimentary rocks. The sandstone outcrops commonly occur as vertical or nearly vertical exposures and ledges. A thin mantle of stony or gravelly soil material often occurs between the ledges and outcrops of bedrock (Ibid., p. 22).

The surface soils on Gnat Hill consist of a fine, reddish sand deposited by alluvial and aeolian action. The surface fill contains small pebbles of sandstone, limonite, and hematite; both the latter were originally concretions within the sandstone mass (Bob Weber, Personal Communication, 1978).

Water

In his paper on the geology of the Gallup area, Kirk (1914, pp.32-33) discussed the water resources in some detail.

...none of the streams in the Gallup Basin is perennial. The melting snows along the Hogback keep springs flowing in the canyons there during most of the year, and shallow water of good quality is found in the sand at any time... The small valleys are often dammed at narrows to conserve the supply for animals and for irrigation.

Kirk terms the drainage pattern in the eastern part of Gallup Basin "trellised," i.e., there are a relatively large number of arroyos flowing laterally into the main drainage within the canyons.

Climate

The modern climate of the Colorado Plateau region is characterized as semiarid and continental. Its features include cold winters, warm summers, light, variable precipitation, low relative humidity, and much sunshine. At Gallup (elevation: 6530 feet), the average annual precipitation is 10.65 inches, half of which falls in the summer and early fall "rainy season." According to Maker et al. (1974b, p. 8), snowfall ranges between 15 and 40 inches per year. The average number of frost-free days is 121.

As is well known, the weather of New Mexico is closely related to its elevation (with some qualifications). As the elevation increases, rainfall also increases. In addition, the number of frost-free days decreases as elevation increases, and temperatures are generally lower. This characteristic has a very large bearing on both historic and prehistoric aboriginal agriculture. Its significance can be seen by studying the modern-day Hopi Indians who live in a semiarid region similar to Gallup in northeastern Arizona. According to Hack (1942, p. 23), there is a rather narrow range of elevation in which corn can be grown successfully. Corn requires a growing season of 120 days or longer and, with floodwater farming, a minimum of 9-11 inches and a maximum of 12-13 inches of rainfall. Above a certain elevation--roughly 7000 feet--rainfall is adequate for agriculture, but the growing season hovers around 110 days. Thus, there is a constant danger that either early or late frosts will destroy the crops unless the corn was harvested in the green stage.

On the other hand, at lower elevations (4000-5000 feet) floodwater irrigation is difficult because of inadequate rainfall (9 inches or less) and the danger of flash floods in the arroyos. Hack has shown (Ibid., p. 24) that the Hopis have recognized the importance of locating their fields in the "middle zone," the zone in which crops will be well-watered but relatively free of the dangers of unusually late spring or early fall frosts. It is quite likely that prehistoric groups were also sensitive to this climatic variable.

Choosing the best areas to farm (in terms of elevation) did not guarantee primitive farmers a good crop. Fluctuations in monthly and yearly rainfall amounts have a large bearing on the successful practice of agriculture. To compensate for the likelihood of drought, it is important that both the soil's waterholding capacity and the suitability of an area for water-retention devices be considered. In its early periods of growth, corn can rely entirely on groundwater from winter snows, but it is the rainy season, however, which is most critical for determining the success of the harvest (Vivian and Mathews, 1965, p. 9). Corn requires a minimum of 6.4 inches of moisture in July and August under floodwater-farming conditions. It is plain that no area within the favorable farming belt receives this amount in a "typical" year: Gallup receives 3.55 inches in July and August (Maker et al., 1974b, p. 72); Chaco Canyon receives 2.45 inches (Vivian and Mathews, 1965, p. 9); and Kayenta, north of the Hopi Reservation, receives 3.0 inches (Hack, 1942, p. 22). These data point out that efforts must be made in all three areas to utilize the existing water in an efficient manner if farming is to be feasible.

The foregoing climatic data apply to the present, but the question must be asked whether the prehistoric environment was in any way similar to today's, and if so, to what degree. Unfortunately, a discussion of the research into the prehistoric climate is complex, and it cannot be easily summarized in a preliminary report. Nevertheless, tree-ring dates from Chaco Canyon summarized in Vivian and Mathews (1965) indicate that droughts of varying intensities have occurred periodically since at least the A.D. 700s. Present-day precipitation (into the 1960s) is also considered to be a dry period which began with the drought in the 1930s.

According to Vivian and Mathews, the early prehistoric droughts did not seem to have seriously affected the human populations. They conclude that the major changes which occurred in the Chaco Canyon environment in the last 800 years have been physiographic (the denudation of vegetation and subsequent erosion), not climatic.

This point is also discussed by Washburn (1974, p. 327) who surveyed portions of the Rio Puerco of the East. She suggests that, although climatic conditions may have deteriorated in the early pueblo periods, severe dislocations may not have occurred until farmland was destroyed by arroyo cutting (a physiographic change), a process which may not have begun until late PII or PIII times.

We may tentatively conclude that Heaton Canyon's prehistoric climate did not differ significantly from today's. However, we must recognize that this summary does not do justice to the literature available on this subject.

Vegetation

Residents of LA 12143 had access to two distinct, but overlapping, vegetation zones. On the Heaton Canyon floodplain and on the lower slopes of the ridges, a number of shrubs, flowers, and forbs can be found, including rabbitbrush (*Chrysothamnus nauseosus*), big sagebrush (*Artemisia tridentata*), prickly pear (*Opuntia* sp.), saltbush (*Atriplex canescens*), squawbush (*Rhus trilobata*), Rocky Mountain beeplant (*Cleome serrulata*), broom snakeweed (*Gutierrezia sarothraea*), black greasewood (*Sarcobatus vermiculatus*), and small quantities of grasses, including grama grass (*Bouteloua* sp.).

All these plants are common to the northern New Mexico semiarid steppes, although the original density and distribution of these plants in Heaton Canyon is difficult to determine. The presence of sagebrush is often an indicator of disturbed soils. This plant will invade valleys and replace grass when overgrazing occurs (Woodbury, 1947, p. 120). Its roots will grow 20 to 30 feet deep if necessary, and it will survive on less water than grass (Ibid., p. 124). Soil disturbance in Heaton Canyon would seem to have been severe, partly because of grazing and partly because of bulldozing activities in the adjoining city dump.

On the steep slopes and ridges above the site and on Crownpoint Ridge, a related but distinct vegetation complex is found in the

pinyon-juniper belt. Pinyon (*Pinus edulis*), juniper (*Juniperus monosperma*), and wavy-leaf oak (*Quercus undulata*) are found in relatively small numbers. Cholla (*Opuntia imbricata*), squawbush, and grasses and forbs are also found in the gravelly and rocky soils.

The present distribution of these plants probably is identical to the prehistoric distribution. The explanation, briefly, is that pinyon and juniper have relatively shallow root systems, and grow best on thin, rocky, poorly-watered soils. In that environment, the competition with grass is less (Emerson, 1932, p. 357). In fact, pinyon and juniper will not grow where the soil moisture is excessive (Woodbury, 1947, p. 125). The amount of pinyon and oak growing near LA 12143 is inadequate for either species to have been the sole or major support for the human population of any site in Heaton Canyon. Nevertheless, many of the plants are known from ethnographic accounts to have been used for food, medicine, fuel, and other sundry uses, and their presence near LA 12143 could have made the area more attractive to people living nearby.

Whiting (1950) made a thorough study of the Hopis' uses of wild plants; some uses of those found at LA 12143 are listed below.

<u>Plant</u>	<u>Uses</u>
piñon (<i>Pinus edulis</i>)	food (seeds); wood used in construction; gum used for cuts and sores; gum used in waterproofing and repairing pottery vessels; gum used in a paint preparation.
juniper (<i>Juniperus monosperma</i>)	emergency food (berries); wood used in construction; heated twigs used for bruises and sprains; tea from leaves, a medicine for digestive system disorders; newborn children rubbed with juniper ashes; rake used for clearing brush; bark used as tinder; chinking in walls and roofs; a decoction given to women after childbirth.
beeweed (<i>Cleome serrulata</i>)	leaves cooked as greens; flavoring with meat and other vegetables; seeds gathered and ground; a black dye.
saltbush (<i>Atriplex canescens</i>)	coloring for piki bread; a kiva fuel.

<u>Plant</u>	<u>Uses</u>
squawbush (<i>Rhus trilobata</i>)	leaves make a beverage; berries used in dyeing wool; twigs used in basketry and in cradle construction; buds used as perfume or deodorant; roots used as a "consumptive" with piñon; a kiva fuel.
prickly pear (<i>Opuntia</i> sp.)	fruit eaten.
sagebrush (<i>Artemisia tridentata</i>)	tea made for disorders of digestive system.
greasewood (<i>Sarcobatus vermiculatus</i>)	wood used in construction (pegs in walls, etc.); stirring implements; rabbit sticks; a kiva fuel.
rabbitbrush (<i>Chrysothamnus nauseosus</i>)	flowers make a yellow dye and an "inferior" green dye; used in construction of brush shelters; a kiva fuel.
oak (<i>Quercus</i> sp.)	wood used for making rabbit sticks, arrows, bows, digging sticks.
snakeweed (<i>Gutierrezia sarothrae</i>)	a medicine in gastric disturbances.

A complete survey of the grasses found in the area was not made.

Unfortunately, at present there is no proof that any of the above plants were used in the methods described in the foregoing list. Moreover, the archaeological evidence does not indicate whether any of the native plants might have played a critical part in the life of the community. Mr. Manion Jones, a member of the Gallup Archaeological Society, has suggested to the author that the depletion of firewood may have been a factor in the abandonment of LA 12143. He also observed that in modern times some areas near homesteads have been completely stripped of firewood in as little as 20 years. In my opinion, the suggestion is reasonable, especially if one keeps in mind the fact that other deleterious physiographic changes were also probably occurring at the same time. However, proof is lacking, and the answer to this and other questions will have to wait until further work is done in Heaton Canyon.

Animals

The bone recovered from excavated portions of the site has been analyzed by Ms. Michelle Semé of the Laboratory of Environmental Biology, University of Texas at El Paso. This section of the report is based on her work. A list of the bones recovered can be found in Table 1 (see Fig. 4 for the grids noted).

Of a total of 33 bone fragments recovered, 28 were identified by genus or species, 4 by class (mammalia), and 1 was unidentifiable. Most of the bones are in poor condition, and one fragment is burnt. The most common species was cottontail. Of the nine fragments recovered, three were found in the slab-lined fireplace. Four jackrabbit fragments were recovered, including the awl found in room 2. Seven unspecified rabbit or hare also were found. Thus, 20 of the 33 bone fragments were either cottontail or jackrabbit.

According to Semé, the faunal remains are in no way unusual. Except for the domestic cattle bone and the large mammal bone which are modern and intrusive, all others are considered to have been present when the site was occupied. The weathered dog bone is not considered intrusive. Dog remains are common in Basketmaker and Pueblo periods and are to be expected in sites in northern New Mexico and Arizona.

About one-half of the bone fragments occur in grid E10/N18, but this concentration may be more apparent than real since the site was not completely excavated. It is impossible to infer a function for the area (Room 3?) in which they were found, since the unexcavated portions of other rooms or work areas may contain similar quantities of bone. The only evidence of cooking is the burnt rabbit bone found in the slab-lined hearth. The eggshell fragments found in grid E10/N18 were not identified, but Semé notes that the speckling found on turkey eggs was not present.

It is quite likely that other animals were hunted and eaten by the prehistoric inhabitants of LA 12143. Many other mammals, birds, and reptiles live in the Gallup area, and if the findings at

FIGURE 3
LA 12143 BEFORE EXCAVATION

0 METERS

- STANDING WALL, RUBBLE
- ⊗ POTHOLE

CONTOUR INTERVAL: 25m below arbitrary datum

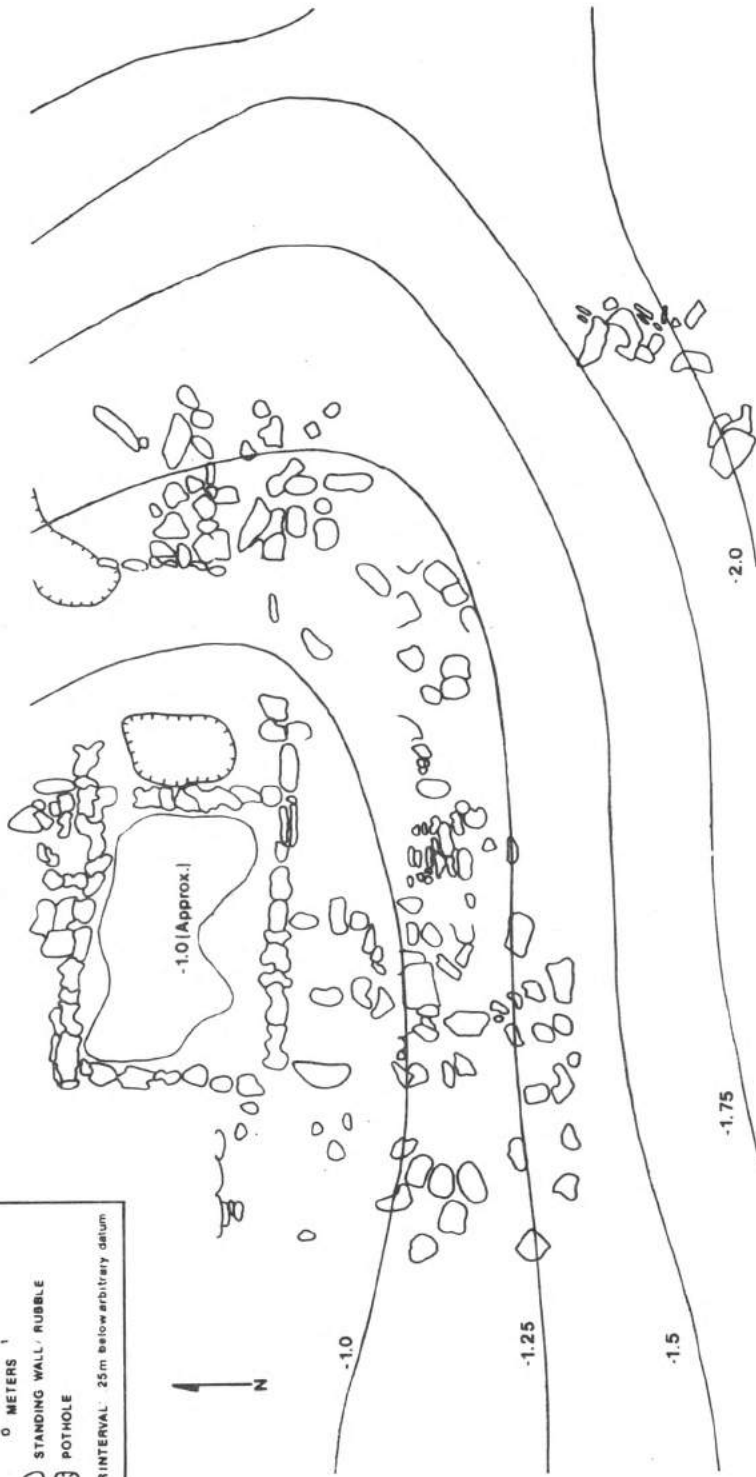


TABLE 1
LA 12143 FAUNAL MATERIAL

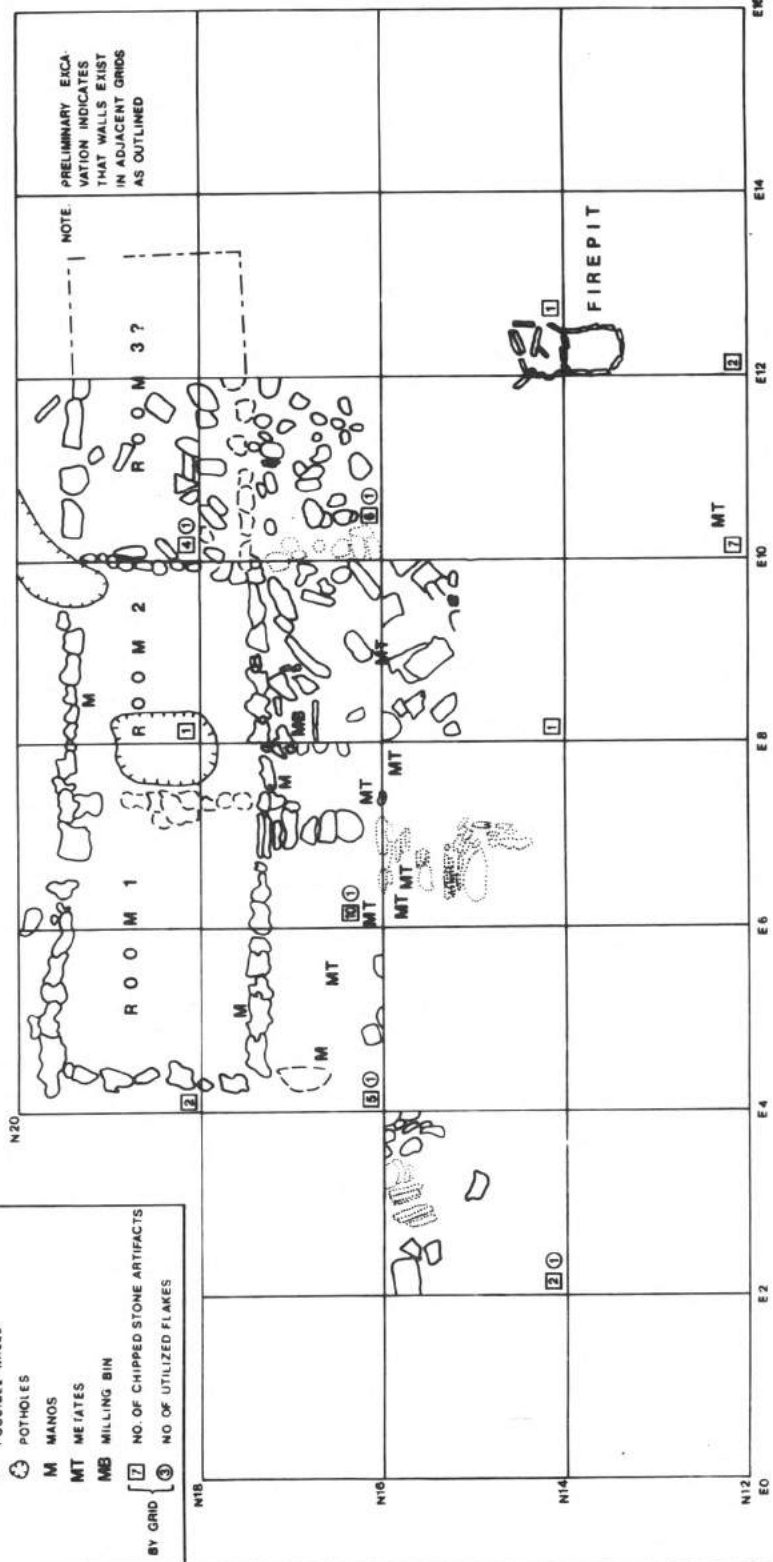
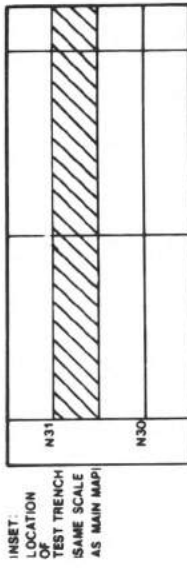
TOTAL BONE FRAGMENT COUNT : 33

	Room 1	Room 2	Slab-lined Firepit	E4/N18	E6/N14	E6/N18	E8/N14	E8/N18	E10/N12	E10/N18	TRENCH
Sylvilagus sp. [Cottontail]			3		1				1	4	
Lepus sp. [Jackrabbit]		1[Awl]								3	
Lagomorph fragments [Rabbit or Hare]			4[1Burnt]							3	
Dipomys sp. [Kangaroo Rat]							1				
Neotoma sp. [Woodrat]										1	
Canis familiaris [Dog]				4							
Lynx rufus [Bobcat]	1										
Bos taurus [Domestic Cattle]						1					
Very Large Mammal						1					
Medium Mammal	2										
Medium/Small Mammal										1	
Unidentifiable Bone			1								
Eggshell Fragments										4	
Material Other Than Bone								A*			B*

* A: Mineral, cone-in-cone; B: Charcoal fleck

FIGURE 4
LA 12143 - AFTER PARTIAL
EXCAVATION

- 0 METERS
- PROVEN WALLS OR RUBBLE
- PROBABLE WALLS
- POSSIBLE WALLS
- POTHOLES
- M MANOS
- MT METATES
- MB MILLING BIN
- NO. OF CHIPPED STONE ARTIFACTS BY GRID
- NO. OF UTILIZED FLAMES



Kin Kletso are a guide (Vivian and Mathews, 1965, pp. 16-23), all were used when the opportunity arose. Until further work is done at this site, however, this aspect of prehistoric life will not be well known.

FIELD METHODS AND PROCEDURES

The procedures used in this excavation were chosen to provide the participants with practical experience in excavation, measurement, recording, and other archaeological methods. An effort was made to record information in a standard way so that it would be accessible to other people who might work in the Gallup area.

Before excavation began, the entire site was gridded using a rod and transit to establish a base line and measure the elevations. Portions of the walls in rooms 1 and 2 had been exposed by treasure hunters (Fig. 3). Although this action destroyed any stratigraphy which might have existed in these rooms, it enabled us to determine the orientation of the site before excavation began. Both the structure and the grid system were oriented north-south (Fig. 4).

The basic excavation unit was 2 x 2 meters in size. This arbitrary size was chosen because the location of some walls, rooms, and other features was not visible when excavation began. As Figure 3 indicates, a large amount of stone rubble was present on the surface of the site. Some of the rock appeared to have washed down from the Mesaverde sandstone outcrops above the site; other rock seemed to have been used in the construction of the structure. The identification of wall fall was difficult because rooms of this period typically are not well constructed, and they deteriorate rapidly when abandoned (Hawley, 1938, pp. 252-253; Roberts, 1939, p. 98; and Wendorf, 1956, p. 376). For this reason, all rubble was measured and drawn before it was discarded.

Each grid was excavated in 10 centimeter levels determined with a line level and tape measure. In each grid, measurements were taken from the highest corner. In the absence of natural stratigraphy, this method proved to be satisfactory. If the excavation of the site

is ever completed, this system should help establish the relative stratigraphic placement of artifacts.

When artifacts were found, each was assigned a number which was then recorded in the field notebooks. Ground stone artifacts were given individual accession numbers. Bone fragments, charcoal, and ethnobotanical samples were bagged separately, while pottery and chipped stone artifacts were bagged by grid and by level. Overall, the number of artifacts was remarkably small, a fact which greatly simplified the recording and analysis of this year's collection. Drawings of the rubble and each crew member's field notes were also recorded so that all the information pertaining to a single grid is contained in one notebook. Collectively, the field notebooks form a standardized, permanent record of the excavation.

Pottery was analyzed by members of the field school under the supervision of Dr. Caroline Davis. Ground stone and chipped stone artifacts were analyzed by the author. Bone fragments were analyzed by Ms. Michelle Semé. Charcoal samples for radiocarbon dating and ethnobotanical identification were collected from the slab-lined fire-pit. These should provide interesting and corroborative evidence about the human occupation of the site when money becomes available for analysis. Pollen samples were not collected.

All the artifacts and records from this excavation will be permanently stored at Red Rock State Park, Churchrock, New Mexico.

ARCHITECTURE

Two rooms and portions of a third were uncovered during this year's field season. They are arranged in a single tier oriented east-west (Pl. 1). A second tier of rooms may exist on the south side of the three rooms, but the results of excavation were inconclusive. A firepit was excavated southeast of the main portion of the site. The masonry style suggests that the rooms probably date from the Pueblo II period, but because the sequence of events in the Gallup area may differ from that of Chaco Canyon, additional work is needed

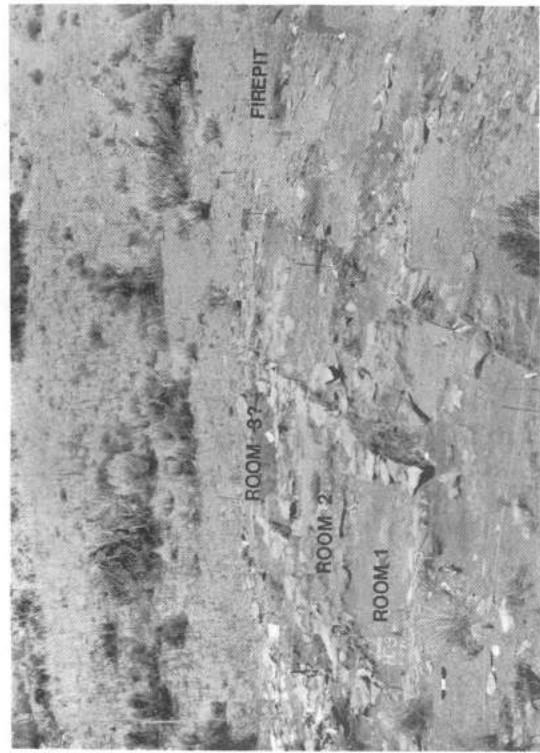


PLATE 1 : VIEW OF SITE FROM THE WEST

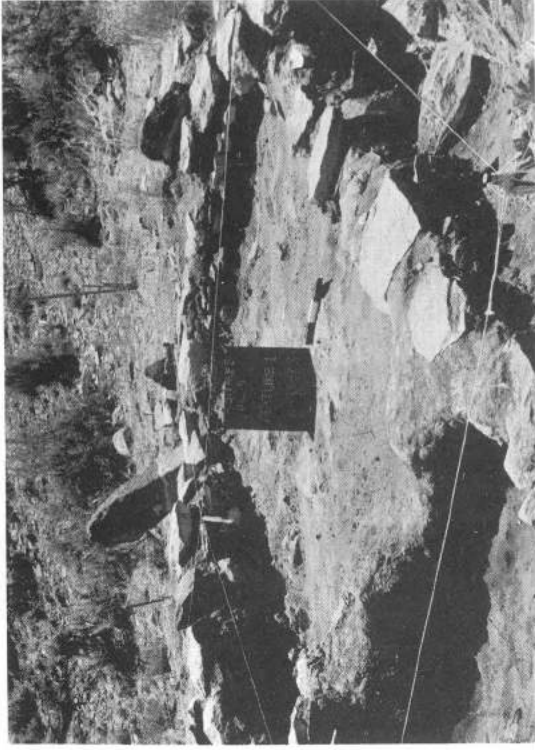


PLATE 2 : ROOM 1, VIEW TO SOUTHWEST

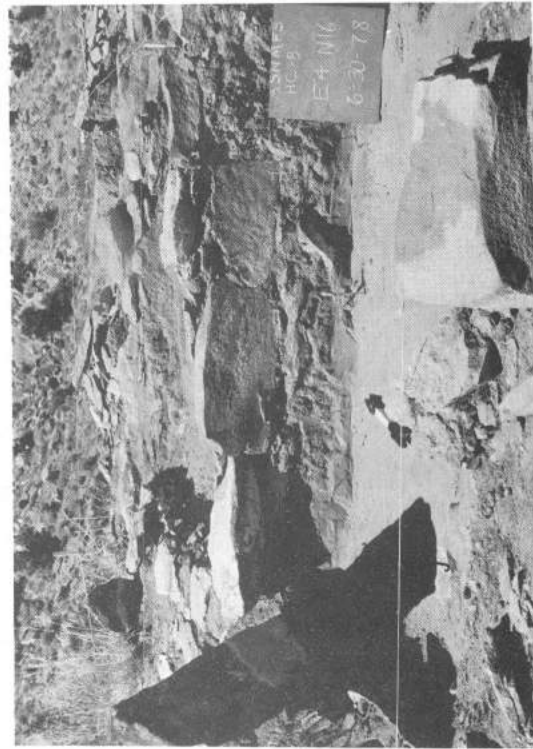


PLATE 3: DETAIL OF WALL CONSTRUCTION, ROOM 1, SOUTH WALL



PLATE 4: FIREPIT

to determine the site's exact chronological and cultural placement.

Rooms

Room 1 had been partly excavated by treasure hunters prior to the onset of the field school. The room consisted of three walls (north, west, and south) constructed of sandstone blocks and slabs laid in a thick mixture of adobe and clay (Pls. 2 and 3). The eastern wall, which had been partly destroyed by potholes, consisted of irregularly-sized sandstone slabs set in a sandy, clayey mortar mix.

Room 2 adjoins room 1 on the east; it was not completely excavated. The north and south walls of room 2 are similar to those of room 1 and are probably continuations of them. The eastern wall of room 2 had been partially destroyed by a combination of treasure hunting and erosion. Enough of this wall remained, however, to establish the existence of this room with certainty.

A third room probably adjoins room 2 on the east. Its northern, eastern, and southern walls were traced by clearing the loose fill from the surface. The deteriorated condition of the south wall in grid E10/N16 initially made the identification of the wall's location somewhat difficult, but clearing the surface fill in adjoining grids made the existence of this wall and room 3 fairly certain.

It is possible that rooms 1 and 2 had originally been part of a single room that had been subdivided some time after it had been built. The wall which separates the two rooms is narrower and inferior in the quality of its masonry. Furthermore, the wall appears to abut the north and south walls of these two rooms, but it does not seem to join them. If these observations are correct, the original length of this room would have been slightly less than 6 meters. This is unusually large for rooms of this period, but it compares with a room excavated by Roberts in the Whitewater drainage of eastern Arizona (Roberts, 1939, p. 100). As archaeologists working in the area have noted, there is considerable diversity in room size and site layout (Wendorf, et al., 1956, pp. 361, 374, 378).

Several construction features suggest that a second tier-- perhaps only a part of a tier--of rooms may exist south of the three rooms. First, a large upright stone in grid E4/N16 aligns with the western wall of room 1 and suggests that it continues southward (Pls. 2 & 3, and Fig. 4).

A second alignment of stones can be found in grid E10/N16. It appears to be a continuation of the eastern wall of room 2, but this particular alignment was rather poorly preserved and large quantities of rubble were found within this grid.

In grid E2/N14 and in grid E6/N14, several layers of thin sandstone slabs were found lying on edge (Fig. 4). These slabs may indeed have been parts of walls, but if so they have been badly disturbed.

The large number of metates and manos found south of rooms 1 and 2 perhaps argues against the existence of a second row of rooms. Much of the daily life and work of the community, including the preparation of food, probably occurred outside. It is possible that this area may have been covered by a temporary ramada to shade the work area. In any event, more work is needed in this area of the site to determine in what ways the space was used by its inhabitants.

Masonry

By prehistoric standards, the walls were not well constructed, consisting of irregularly shaped sandstone blocks or several layers of roughly shaped sandstone slabs and small stone spalls set in a thick mixture of clayey mud. A typical wall segment is shown in Plate 3. In no instance were the walls more than 2 or 3 courses high in excavated portions of the site, but the poor state of preservation made it difficult to determine whether the walls were originally masonry to the full height of the room.

On the one hand, there are large amounts of sandstone cobbles and spalls in rooms and around the site (Fig. 3), and these may represent wall fall in part. However, other cobbles may be either parts of unexcavated walls or simply stones which have washed down from the upper slopes.

On the other hand, the commonness of low masonry walls in sites of this period suggests that it was an intentional architectural feature in LA 12143. The construction techniques employed by these early builders probably resulted in walls that were not capable of bearing the full weight of the upper portions of the walls and the roof. This can be seen in LA 12143 in both the location of this site where drainage is good and in the apparent efforts made to buttress the south wall of room 1 (Grid E6/N16). As several writers have suggested, the typical walls of this period may have consisted of "stone masonry, of jacal, of wattle and daub, of adobe, and possibly of brush" (Bussey, 1978; see also Roberts, 1939, p. 98; and Wendorf et al., 1956, p. 376).

In room 1, the western and northern walls were excavated about 25 cms. into the subsurface. This practice seems to be fairly common in sites of this phase and is reported from several sites in the White-water area of eastern Arizona (Roberts, 1939, pp. 172, 196). Due to disturbance and incomplete excavation, it was difficult to determine whether other wall bases were subsurface. The terrain slopes from west to east (Fig. 4), and the walls seem to follow the topography closely. The bases of excavated walls rest on sterile sand. Further insights will have to await additional excavation.

Hawley (1938) developed a chronological sequence of masonry styles in prehistoric architecture which traced changes as they occurred in Chaco Canyon. Her description of Pueblo II masonry (Ibid., pp. 252-253) is worth repeating here, although the relationships between Chaco Canyon and areas peripheral to it, such as Heaton Canyon, have not been entirely worked out. She terms the PII masonry style as "small spalled stone masonry," described as small blocks surrounded with small spalls or pot sherds in abundant mortar.

This masonry is made up of small blocks of sandstone set upon each other with a clay cushion between. There is no core. The blocks are surrounded with small chinking stones averaging but a fraction of an inch in thickness, or with pot sherds, characteristically the Escavada Black-on-white of that period. The wall is

narrow, averaging about 12 inches across, and its instability frequently resulted in bulges and bends in its line. The small spalls are set in merely to prevent the clay mortar from squeezing out between the blocks.

In Chaco Canyon, Hawley estimated this style lasted from ca. A.D. 900 to 950. An equivalent age cannot necessarily be assumed for the Heaton Canyon area, however.

Floors

No definite prepared floors were found in any of the rooms. A major problem in identifying floors at LA 12143 (and in comparable sites) is that adobe used as mortar in the walls and in the roof has tended to melt and merge with the floor after the site was abandoned. On several sites excavated northeast of Heaton Canyon by Wendorf and his associates (1956), it was found that floors were often indistinct or non-existent. They report that at Site LA 2699 they had difficulty in clearly distinguishing floor material from roof fall, although floors were present and made of a "heavy, reddish adobe." At Site LA 2700, no prepared floors were found, while at Site LA 2701 floors were found to be in "exceeding poor shape" and in most instances quite uneven (Ibid., pp. 363, 376, 379).

Room 1 at LA 12143 had been excavated by treasure seekers to a compact, reddish, sandy-clay, adobe layer. This may have been the living surface. However, because the length of time this "floor" had been exposed to the air (and subject to repeated episodes of wetting and drying) is unknown, it could not be positively identified.

A further problem in identification was that no definite hearths or storage cists were found, either of which might have helped to locate the actual floor. A slight ash stain was found in the southwest corner of grid E6/N16, but it was neither well preserved nor sufficiently concentrated to be useful as a floor indicator. This, coupled with the fact that artifacts were found on top of the melted adobe, in the adobe, and under the adobe in sand prevented us from clearly identifying any floors.

Roofs

No clearly identifiable post holes or roofing materials were found within any excavated portions of the site. Four adobe lumps were found in room 2 and one was found in grid E8/N14. The suggestion was made that these lumps might have been post molds, foundations upon which roof support posts were placed.

In the three small prehistoric sites in the Gallup area excavated by Wendorf and his associates, roof supports were either uncommon or absent. None were found in either LA 2699 or LA 2700. They assume that roofs were supported by the walls (Ibid., p. 376). In Site LA 2701 a possible small, rock-lined post hole was found in one of the rooms. The authors were not entirely sure that the feature was indeed a post hole, for reasons which were not stated.

Other Features

Two rock alignments in the northwest corner of E10/N16 abutting known walls may indicate the existence of a storage bin. It lies in the southwest corner of room 3. No artifacts were found in the "bin." Lack of time prevented complete excavation of the grid.

In grid E12/N12, a slab-lined firepit was uncovered and completely excavated (Pl. 4). The firepit measured 1.1 meters in length and .5 meter in width. The maximum depth of the firepit was about 35 cms. The hearth was completely covered by fill that washed downslope from the ruin (Fig. 4). Sufficient quantities of charcoal were collected and preserved for future radiocarbon dating and ethnobotanical analysis. Several bone fragments were also collected from the firepit.

Finally, a large depression north of the ruin was trenched to test for the presence of subsurface features (Fig. 4). Nothing was found to indicate that the depression might have been created by human activity.

Architectural Summary

In view of the advanced state of disintegration existing in parts of the site and of the incompleteness of the excavation, observations

about the site are necessarily tentative.

It appears that LA 12143 consisted of at least three rooms approximately equal in size. South of the three rooms, another whole or partial tier may exist, an opinion based on fragmentary evidence. Since no excavation took place north of rooms 1, 2, and 3, it is not known whether other rooms are present in that portion of the site. However, it is unlikely that the site contained more than nine or ten rooms at a maximum, since the ridge physically limited the amount of building. As a result of the topography, the occupants also had to confine themselves to a rather limited work area. They had to contend with uneven surfaces and the possible dangers of slippage and collapse which resulted from building on unstable and steeply sloping terrain. In short, the overall impression is that the site was not built for a long-term, permanent, year-round occupation, but rather for either a seasonal occupation or a short-term permanent occupation. This topic will be discussed further in the concluding section.

ARTIFACTS

Ground Stone Artifacts

Fourteen whole or fragmentary ground stone artifacts were recovered from excavated portions of the site. Eight of the artifacts were metates or metate fragments, four are mano fragments, and two may be work stones or stones which lined milling bins. The characteristics of each artifact are listed in Table 2; the location of the manos and metates can be found in Figure 4. All the artifacts are of sandstone. Many probably were acquired from the outcrops of Mesaverde sandstone above the site, although no specific quarries were observed.

With one exception, the metates are fragmentary. Most are open-ended, where it could be determined. Many of the metate fragments (Nos. 182, 346, 349, and 350) are broken along the grinding surface, and this may indicate that the artifacts were discarded after use. The metates are similar to those found in other archaeological sites in the Gallup area (Wendorf et al., 1956, p. 366; Vivian, 1965, p. 37) and

Artifact Number	Grid No.	Artifact Type	Dimensions (cms.)	Area of Wear (cms.)	Comments
182	E6/N16	trough metate	26x14.5x8	25x8x7	striae present; broken on grinding surface; open-ended.
346	E6/N14	basin metate	43x36x13	43x23.5x7	broken on grinding surface; striae present; open-ended; peck marks present.
350	E6/N14	trough metate	24x13x9	22x7.5x7.5	broken on grinding surface; striae present.
349	E6/N14	basin/trough metate	29x27x9	29x20.5x6	broken along grinding surface; striae present.
383	E8/N14	basin metate	49x39x9	49x24.5x4	artifact is whole; striae present.
311	E4/N16	slab metate	33x22x9	20x12	striae present; sandstone is layered and very friable.
195	E6/N16	slab metate	15.5x11x2	entire surface	striae present.
51	E10/N12	basin metate	18x12.5x6.5	entire surface	peck marks on grinding surface; no striae present.
191	E6/N16	mano	11x10.5x3	entire surface	striae present; slight grinding on obverse surface.
309	E4/N16	2-hand mano	19x12x2	entire surface (one side)	striae parallel to short axis; slight grinding on obverse surface; convex.
313	E4/N16	mano	10x9x3.5	entire surface (one side)	no striae; surfaces are convex/wedge-shaped; little wear.
76	E8/N18	mano	11.5x8.5x2.5	entire surface (one side)	wedge-shaped cross-section; secondary wear on obverse side.
378	E8/N14	work stone?	19.5x19x2		edges well-smoothed; surfaces slightly smoothed.
354	E6/N14	work stone?	17x13x1.5		smoothed unevenly on one surface.

Table 2. Ground Stone Artifacts

are in no way unusual.

None of the metates found during the field season were in bins. However, one milling bin was found in grid E8/N16 by Mrs. Sylvia Abeyta and Ms. Betty Kelley, members of the field school, who continued to work on the site after the field school ended. The metate is the open-ended trough type. Mealing bins were found within rooms at LA 2699 (Wendorf et al., 1956, p. 363) and within numerous sites in Chaco Canyon (Vivian and Mathews, 1965, p. 92). At Site LA 2699, northeast of Heaton Canyon, a series of milling bins was found within one of the rooms (Wendorf et al., 1956, p. 363). For this reason it is possible that the concentration of metates in grids E6/N14 and E6/N16 represents disturbed bins. If so, they provide circumstantial evidence to suggest a second tier of rooms within the site.

Four mano fragments were recovered from the excavations. Three are one-hand manos, and the fourth (No. 309) probably a two-handed type, but the small size of the fragments makes classification difficult. Striations are present on three of the manos, and two sides are smoothed on three of the four. Viewed in cross-section, the wear patterns are varied, one mano each being wedge-shaped, convex, wedge-convex, and amorphous. Convex cross-sections are derived from use in trough metates, according to Vivian and Mathews (1965, p. 92). The development of a second grinding surface on manos results from "tilting the mano and occasionally turning it end for end during use," while wedging is the result of "progressive usage or reversal of the implement" (Ibid., p. 93).

In addition to these artifacts, two other ground implements were found.

Artifact No. 354 is a sandstone slab, roughly rectangular in shape, which has been smoothed unevenly on one surface. Striations may be present.

Artifact No. 378 also is a square sandstone slab. One side has been slightly smoothed while the reverse side has been roughly smoothed. The edges of this artifact are well-rounded and smoothed, and

striations are visible on one portion of the edge. Because they were found in the vicinity of several metates, it is quite possible that these "artifacts" lined milling bins, as Vivian and Mathews suggest for similar stones found in Kin Kletso (Ibid., p. 93) which also may have been used as hatch or vent covers. On the other hand, several students suggested that they might have been work stones.

Chipped Stone Artifacts

Only 41 flakes (including whole flakes, partial flakes, and angular debitage) were collected from excavated portions of the site. Whole flakes are defined as those containing 1) a platform on the proximal end (nearest the striking surface) and a bulb of force on the ventral (bottom) surface, and 2) a feather or hinge termination on the distal (far) end. Partial flakes lack one of these two sets of attributes. Strictly speaking, pieces of angular debitage are not flakes. They are irregular pieces of stone which are the by-products of stone tool manufacture. However, they can provide information about tool making processes. Crabtree (1972) is recommended as further reading for those interested in a detailed discussion of lithic technology.

The chipped stone artifacts fall into the following categories:

Whole Flakes	20
Partial Flakes	15
Angular Debitage	<u>6</u>
TOTAL	41

The provenience of the chipped stone can be found in Figure 4. On the figure, utilized flakes are a subcategory of chipped stone artifacts. Despite the unevenness of the excavation, there seems to be a slight concentration of artifacts on the southwestern and southern sides of the site. This may be more apparent than real since a complete surface collection of artifacts was not made, but visual inspection suggests that the trash dump was located on this side of the site.

Chert (25), chalcedony (3), petrified wood (6), and quartzite (7) flakes are represented. Except for the quartzite, all the above are

unmetamorphosized silica minerals. Distinguishing between them is a method of ordering the assemblage, but it is not a definitive classification. Specific sources for these materials in Heaton Canyon are not known. Bob Weber (Personal Communication, 1978) noted that these materials are widespread in the area as concretions in the sandstone outcrops or as pebbles in the stream beds. Lithic material probably was available near LA 12143.

Five flakes contained evidence of wear. Three are partial flakes, two whole, four are chert, and the fifth petrified wood.

Wear patterns were analyzed with a 10 power hand lens. This instrument is adequate for determining gross wear patterns, but it is insufficient to analyze certain types of wear necessary in a thorough lithic analysis.

Wear marks consisted of microflake removal and/or edge rounding. Microflake removal, characteristic of scraping, occurred only along one edge on artifacts, which suggests that only limited use was made of them. Edge rounding, also indicative of scraping, occurred on two of the five tools.

The small number of tools allows only a tentative suggestion about their function. Perhaps scraping hide from animals was one use, to judge from the presence of numerous small mammal bones. Limited wear on the artifacts may indicate that material for stone tools was readily available and that such simple tools were easy to make and replace.

Cores

Cores are the pieces of raw material from which flakes are detached (Crabtree, 1972, p. 56). They are characterized as stones containing negative flake scars on one or more surfaces. Three cores were recovered from excavated portions of the site, one each was found in grids E10/N12, E10/N18, and E12/N12.

The first core is chert and contains several flake scars. Flaws and irregularities on the material are readily visible. The material apparently was not suitable for making stone tools, since one of the

larger scars shows that the flake had snapped off in a step termination. The second specimen (quartzite) contains flake scars on three of four facets, but irregularities and flaws in the surface caused the tool maker to reject it before it was completely used. The third specimen (chert) is a partly exhausted core. The cortex (the outer "rind" of stone) is absent, and flake scars are present on all facets.

Bucy (1974, p. 26) intensively analyzed a lithic quarry site in western Idaho. He noted that the majority of the cores at the site were smaller than his fist. Furthermore,

...although a number of kinds or types of cores are represented, I noticed a somewhat random or rather patternless method of utilizing them. Many reveal that only a very few small flakes had been struck from them. I interpret this as evidence of material testing in order to locate the best quality pieces of material which were then subjected to further reduction of work.

The similarity of the cores at LA 12143 to Bucy's description of the quarry site's cores seems to suggest that the flintknappers were testing the stone pebbles and cobbles to determine their suitability for tool making.

Hammerstones

One hammerstone (petrified wood) was found adjacent to the fire-pit in grid E12/N14 (Pl. 5). Battering marks are present on one edge of the artifact. One hammerstone may seem an unusually low number considering that stone working was a basic prehistoric industry. One possible explanation is that other hammerstones exist in unexcavated portions of the site. Another explanation is offered by Bucy, who noted that "the rarity of hammerstones is quite common in many archaeological sites." The reason for this, he continued, is that

A single hammerstone may be used for long periods of time and many thousands of flakes may be struck with it. It is not uncommon to use a single hammerstone for several weeks or months (Ibid., p. 27).

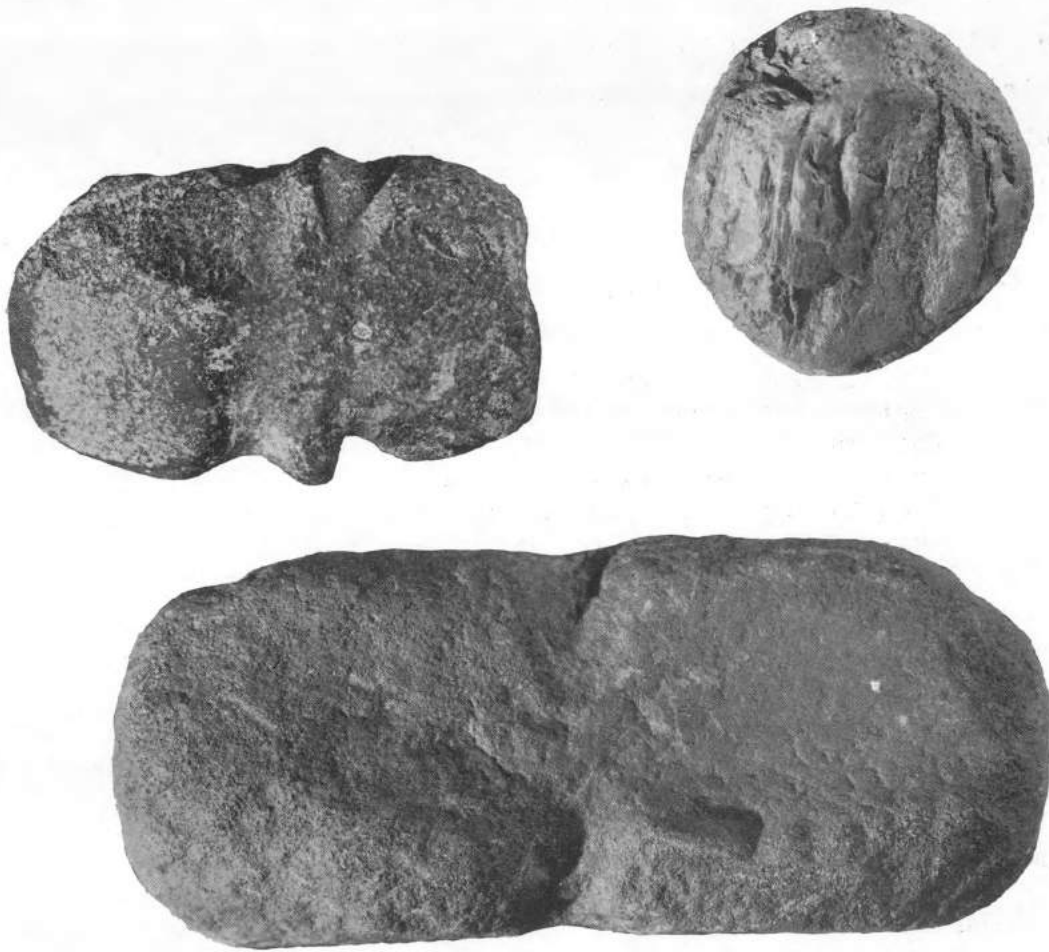


PLATE 5: MISCELLANEOUS ARTIFACTS

UPPER LEFT- HAFTED AXE

UPPER RIGHT- HAMMERSTONE

BOTTOM- LOOM ANCHOR (?)

LENGTH OF AXE: 10.5 Cm.



PLATE 6: MISCELLANEOUS ARTIFACTS

LEFT- SANDSTONE BEAD

RIGHT- JET BUTTON OR PENDANT

Miscellaneous Stone Artifacts

Several additional stone artifacts were recovered from excavated portions of the site, including a stone axe, a possible loom anchor, a pendant (or button), and a bead (Pls. 5 and 6).

The stone axe found in E10/N18 (Room 3) measures 10.5 x 6.5 x 3 cms., is made of fine-grained basalt, and exhibits a double-groove. Both faces of the axe 'blade' have been worn smooth. According to O'Bryan (1949), stone axes did not come into general use in the Southwest until about A.D. 600. Their appearance signified a major change in the tree-felling techniques employed by prehistoric people from burning to chopping. Prior to A.D. 600, dated tree-rings show evidence of insect attacks, a condition which indicates that the trees were dead, well-seasoned, and hard when they were felled. After ca. A.D. 600 preserved specimens contain large chopping scars. O'Bryan postulates that prehistoric woodworkers perceived the advantages of working with live wood, which is softer and easier to work, despite the fact that felling timber with an axe is a more difficult, time-consuming process (Ibid., p. 155). The presence of the axe implies that live wood was cut and used by the residents of LA 12143, probably for a variety of purposes. Wood cutting may have led to the decimation of the small forest near the site and ultimately may have contributed to the abandonment of the site.

Artifact No. 346 may have been a loom anchor. This enigmatic object, found in grid E6/N14, exhibits a smoothed surface on one face (Pl. 5), possible battering on the ends, and a groove around the middle

of the artifact. It resembles a category of artifacts which Barnett (1973, p. 66) terms "loom anchors" and describes as large (10-15 lbs.), unshaped stones, roughly oval in form. Loom anchors have a transverse, encircling groove pecked in the stone near the middle of the longitudinal axis. According to Barnett, anchors were buried below the floor level under the vertical loom. A thong or guy line was secured around the groove of the anchor, then attached to the lower bar of the loom. This artifact was found 20-30 cms. below the surface in what is hypothesized to have been a second tier of rooms. If weaving were done in this area, a ramada might have been more likely to have been the shelter than a row of rooms.

The other wear marks on this artifact are difficult to interpret. The smoothed surface is concave, but the artifact seems too small to have been used secondarily as a maul.

Two minor handicraft items also were collected (Pl. 6). The first is a sandstone bead (artifact No. 44) and the second, a jet button or pendant (artifact No. 211). Jet (or coal) is available locally in Heaton Canyon, probably the source for this material.

Other Items

Five medium-sized chunks of petrified wood were found in grid E4/N16. The largest measures 10 cms. in length, but none shows any wear marks.

Several small, unaltered azurite (?) nodules were found in grid E6/N16. One was found in the southern wall of room 2.

Several small pieces of yellow pigment (?) were found in grid E8/N16.

Pottery

This section is based on the ceramic analysis performed by Dr. Caroline Davis, laboratory director for the 1978 field school. The sherds recovered from excavation are listed below.

<u>Type</u>	<u>Number</u>	<u>Percentage</u>
Corrugated	163	52.58
Plain White	41	13.225
Plain Gray	12	3.87
Unidentified Black-on-white	23	7.419
Mancos Black-on-white	11	3.548
Gallup Black-on-white	16	5.161
Puerco/Escavada Black-on-white	34	10.967
Puerco Black-on-white	8	2.58
Red Mesa Style Black-on-white	1	.322
Modern	<u>1</u>	.322
TOTAL	310	

As Davis notes, the small sample of sherds and the incompleteness of the excavation preclude a significant ceramic analysis at the present. Nevertheless, a few comments on the collection and ceramic analysis are in order.

One of the problems in ceramic analysis on sites of this period is that there are a number of long-lasting, related pottery types made in specific areas that were traded from one place to another. To further compound the confusion, many of the original descriptions of ceramic types are subjective and do not adequately provide for the actual range in variability within types.

Red Mesa Black-on-white is considered by Gladwin (1945) to be the black-on-white pottery of the Red Mesa Phase (Pueblo II Period) in the Red Mesa locale of the San Jose River in east central Arizona. Hawley (1936, pp. 42-43) considers Gallup Black-on-white (PII to middle PIII) to have been derived from Escavada Black-on-white in the Chaco Canyon area. Puerco Black-on-white is a PII whiteware whose type locality is in east central Arizona. Mancos Black-on-white is related to both Escavada Black-on-white and other Chaco types. Mancos Black-on-white is an intrusive pottery type produced primarily in southwestern Colorado, although it also occurs in Chaco Canyon.

Exuberant Corrugated is the predominate local utility ware (Hawley, 1936, p. 33), but the difficulty in classifying many of the small sherd fragments found on LA 12143 resulted in a decision not to type corrugated sherds.

If the pottery collection from the site were complete, the absence of Wingate Black-on-red would indicate that the site was occupied no later than the middle A.D. 1000s. Davis noted that more recent sources (such as Breternitz, 1966) would suggest a somewhat later date for the occupation, perhaps ca. A.D. 1020 to 1075. In a personal communication to the author, Davis observed that ceramic dating will necessarily remain in the realm of conjecture until dateable physical evidence (such as C-14 or tree-ring dates) is obtained from LA 12143 and other single component sites in the Heaton Canyon area.

CONCLUSIONS AND SPECULATION

The final task of this report is to return briefly to the questions posed in the introduction and categorize, if possible, the general ecological and social settings of the occupation of LA 12143. To do so, a good starting point is to review the information in the preceding chapters and list the kinds of activities which probably occurred on and near the site. Some of the activities for which there is archaeological or inferential evidence are listed below.

<u>Activity</u>	<u>Evidence</u>
Tool-making and stone collecting	Geology and stone artifacts
Tree felling	Stone axe
Wall building	Architecture
Hunting	Animal bones
Wood gathering and wood burning	Firepit and ethnobotanical samples
Corn grinding	Metates and manos
Cooking meat	Burnt bone
Cooking corn	Pottery and milling bin
Repairing walls	The buttress
Cotton weaving	Loom anchor and button

In addition to these activities, for which there is some archaeological evidence, other activities may be inferred to have occurred:

Farming

Geology, soils, and climatic data

If corn were grown (and until ethnobotanical samples are analyzed, this is an assertion which cannot be proved), the people may have lived in and about the site intermittently from early May to the end of September. Because of the requirements of floodwater irrigation, it is quite possible that the people were in residence full-time during the July and August rainy season. There is no definite evidence that the site was occupied on a year-round basis, but there is no clear reason why a permanent occupation would not have been technically possible. If the above list accurately reflects the number of activities which were carried out at LA 12143, then many of the essentials of daily living were within relatively easy reach: facilities for cooking, stone for tool making, and shelter were available at the site. Water was probably no more than .15 km. distant (in Heaton Canyon or in snow-fed springs), and timber and firewood were available within 50 meters of the site. Farmland was within .3 km., clay for pottery may have been available anywhere along Crownpoint Ridge west of the site, and game was probably available on Crownpoint Ridge or in the many miles of broken country north of the site. Thus, it is easy to characterize a permanent occupation of this site as technically possible.

The availability of good farmland was without doubt one of the principal reasons why people came to Heaton Canyon. This argument can be made in two ways, first, by reviewing the evidence presented in the discussion of physiography and soils, and second, by noting the large number of prehistoric sites which occur in the same specific area, i.e., on the breaks above fertile floodplains (Fig. 2).

Not only was Heaton Canyon probably used by prehistoric farmers, but other canyons in the Gallup vicinity with the same attractive combination of soil and topography probably were utilized. Figure 1 shows the existence of other broad, relatively flat canyons suitable

for agriculture, including Peretti, Cliff, and Catalupa Canyons. Farther afield, Wendorf and his associates (1956, pp. 360, 375 Fig. 245) report that sites LA 2699, 2700, and 2701 were also built overlooking a similar valley. Several small sites investigated by Roberts (1939, pp. 1-2) in eastern Arizona were in areas similar to Heaton Canyon--broad valleys, flat-bottomed washes, sandstone ridges, and soils which can produce good crops with irrigation. There can be little question that this phenomenon is important and widespread. Nor does it seem unreasonable to characterize LA 12143 as a farming village.

A much harder question to answer is how and why a particular area was settled, and what caused the people to eventually depart. The difficulty partly lies in understanding human motivation, which is something that is not reflected in the archaeological record.

One of the more obvious aspects of prehistoric life at LA 12143 is the lack of evidence for lengthy human occupation. The evidence presented so far certainly seems to support the notion that the site was built, occupied, and then abandoned in a relatively short time. There are few artifacts from the site, and the site seems to have been built in a haphazard fashion. Other archaeologists have also noted this characteristic.

Due to the fragmentary condition of the remaining walls, the building pattern of the pueblo /LA 2699/ was hard to determine. The central two rooms were probably built first and the two wings added later, but in which order could not surely be postulated... No indications of accumulated trash could be found below any of the floors. This, coupled with a significant lack of refuse associated with day to day living, would indicate a short occupation and no great length of time between the building of successive units (Wendorf et al., 1956, pp. 360-361).

When the prehistoric occupation of LA 12143 is compared with sites both earlier and later, one notes marked changes in the construction techniques over time. As time progresses from early Pueblo I structures to the multi-storied Pueblo III structures, one sees not merely change, but improvements, in the construction techniques (see Hawley

1938 for a detailed description of the changes that were made.) While these differences may be obvious to most casual observers, one must ordinarily be careful to avoid reading modern meaning into prehistoric events without first understanding something of the context in which they occurred. However, LA 12143 does not represent the fullest expression of prehistoric agricultural society in the Chaco Canyon area. What followed LA 12143 was in some senses "better," so that one can think of the events which transpired in Heaton Canyon as in some way experimental. Although most all the details of the events which took place here are unknown, we can speculate that people came to Heaton Canyon because they found it suitable for the type of agriculture they practiced. All the resources necessary for their way of life were available. The very conditions which made agriculture possible and successful for the earliest settlers may have led to an unsatisfactory state of affairs when latecomers arrived. Perhaps there were problems with the division of farmland, or a series of bad harvests took place, or perhaps the very success of the effort brought more people to the area than it could support, given changing environmental conditions. Any number of interrelated possibilities may have occurred which made still further adjustments and changes necessary.

In the final analysis, a preliminary report cannot hope to adequately discuss the complex archaeological problems of prehistoric society, especially when one site has not been fully excavated. The goal of this report has been to begin to make sense out of the information gleaned from this year's excavation, and if it serves as a starting point for further investigation in Heaton Canyon, then it will have been a worthwhile endeavor.

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COHESIVE AND DISPERSIVE CONFIGURATIONS
IN SETTLEMENT PATTERNS OF THE NORTHERN ANASAZI:
A HYPOTHESIS

HERBERT W. DICK

The concern of this paper is to relate and explain house and village settlement patterns of two areas in northern New Mexico. One is the Taos District in the north central part of the state and the other the Llaves District in the northwestern part of the state, containing the Gallina Phase. The elevation (6500-8000 feet above sea level) and ecology of the two areas are quite similar--both are in the Upper Sonoran Zone and in both a number of sites are found in a mountainous terrain.

Although the length of this paper disallows a complete comparative study of Taos archaeology with that of the Gallina, there are some fundamental aspects of the two areas in regard to settlement geography that invite comment. Sites considered in both areas encompass an almost similar time span (Taos District, A.D. 1000-1200; Llaves District, A.D. 1100-1260); both have deep pit houses and surface unit houses; both have no specialized ceremonial buildings (kivas). Most sites in both areas consist of house groups or small "villages" consisting of loose aggregates of pit houses or surface houses or combinations of both. Single pit houses and "villages" are frequently separated .25 to .5 mile or more. Few buildings are contiguous.

Examination of interior house details, ceramics, or other artifacts is not the purpose of this study. The main objective is an examination of the geographic placement of structures relative to a particular inferred socio-political system. Further interests are tracing the beginnings of inferred socio-political systems and some historic period culture comparisons.

There is little doubt that both the Gallina Culture and early phases of the Taos prehistoric Indian Culture had a social structure unlike many contemporary Pueblo Indians. It is necessary to point

out that in many areas in the time span between A.D. 700 and 1270, Indians were constructing contiguous room villages, small and large, with a distinctive ceremonial room termed protokiva or kiva, while others were not.

Two terms are here used to describe succinctly and with brevity two major forms of Anasazi culture: (1) *dispersive society*, pertaining to scattered or widely-spread habitations, and (2) *cohesive society*, to describe habitations as "sticking together tightly," as in contiguous room villages.

Examples of a dispersive society would be the Valdez Phase in the Taos District, the Gallina Phase in the Llaves District, and other examples on the upper San Juan River; the Navajo tribe offers a recent example.

Examples of a cohesive society are far more numerous; a few examples are sites of the Pot Creek Phase in the Taos District, Pueblo Bonito of Chaco Canyon, Cliff Palace of Mesa Verde, and numerous other large and small sites. Modern Pueblo examples are fairly numerous.

Wetherington (1968, pp. 79-80) recognizes attributes of the social organization in the Valdez Phase (A.D. 1000-1200), an example of a dispersive society:

Pit houses were often situated in small groups of two or four throughout the district's western plane [sic] and in the valley and hills of Rio Grande de Ranchos.

It is not until the Pot Creek Phase [A.D. 1200-1250] that kiva architecture becomes distinct, and it seems reasonable that the pit house served both as dwelling and ceremonial structure prior to this. Rather than the construction of surface rooms, it should be the size and complexity of social groupings as reflected by architecture (multi-room pueblos) which are criteria for the development of the kiva ceremonial complex. It is our opinion that such social groupings was not yet present in the Valdez Phase

Present evidence suggests that during most of the Valdez

Phase social groupings consisted of several physically separated nuclear and extended domiciles in several preferred areas in the district.

There is no evidence that they had either a common ceremonial complex or a common economic organization.

Wetherington's above description also fits the Gallina Phase in the Llaves District in which abandonment occurred by A.D. 1266 (Mackey and Holbrook, 1978, p. 31, table 1). A fundamental difference between Taos District development and the Gallina dispersive society development is that the cohesive pueblo village pattern never replaced the Gallina dispersive pattern in the Gallina Culture districts; nor was the kiva ceremonial complex developed.

Wetherington (1968, p. 81) interprets the formation of the Pot Creek Pueblo (Fig. 1), a cohesive society, as a result of a population increase, sufficient to allow consolidation into large, multi-family aggregates in surface pueblos, and he wisely suggests there are influences from the Santa Fe District. There is little doubt that Picuris Pueblo, 10 miles southwest of Pot Creek, was built by people originally from the Santa Fe District and not by a consolidation of a large number of dispersive society folk of the immediate Picuris region who would be classified in the Valdez Phase.

There is evidence that the patterns of the multi-room habitation form with special ceremonial units of the cohesive society developed early. Paralleling this throughout most of Anasazi history was the single dwelling habitation pattern of the dispersive society.

An important question concerns the historical beginning of the social dichotomy of dispersive versus cohesive societies. What are the antecedents of these configurations in both place and time? In considering the antecedents, it is expedient to trace these from the more recent and regress to a postulated beginning. The Gallina Phase of the Gallina Culture will serve well for a starting point.

The Gallina habitations and Gallina-like forms of habitation cover

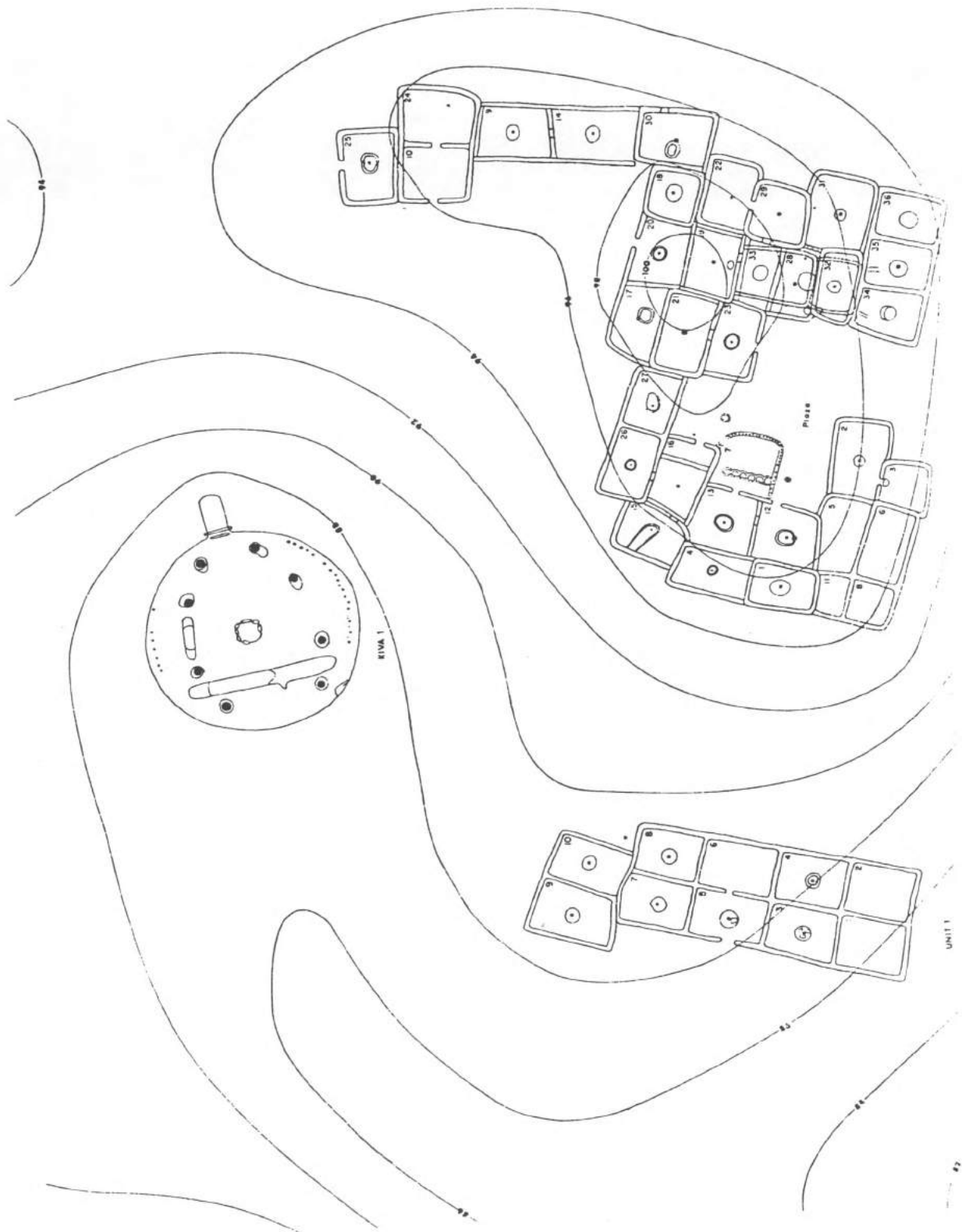


Figure 1. A portion of Pot Creek Pueblo in the Taos District. A cohesive society village pattern of the late Pueblo III period. Kivas are sparse. *Wetherington, 1968, fig. 3.*

an area of some 3,278 square miles or 2,097,920 relatively waterless acres. The end date for the Gallina in the Llaves District is about A.D. 1266. Most sites consist of single pit houses, single or double room surface houses, and pit houses and several surface houses numbering three or four. Many sites consist of a surface house and a pit house in close approximation (Figs. 2, 3). Occurring but rarely are a group of five or six surface houses with contiguous walls. Some 500 sites consisting of variations listed above have been counted. The total occupation of the Llaves District at a given time might fill a pueblo the size of Pueblo Bonito in Chaco Canyon, New Mexico. A diagnostic non-trait is the absence of special ceremonial structures such as the kiva.

The Gallina house has a number of distinctive interior features which have proved useful in tracing antecedents. The following structural features are common to both pit houses and surface houses (Dick, 1976, pp. 22-27). One of the most exacting, predictable attributes of the Gallina house is its conservative arrangement of interior features (Figs. 4, 5). The major interior features are oriented north-south. A line placed through the center of the cold air ventilator in the south wall and north through the deflector and hearth is often only a few degrees from true north. The purported antecedents of Gallina Phase houses (A.D. 800-865) in the Gobernador District northwest of Llaves are oriented east-west (Hall, 1944, figs. 12, 14).

Two interior lateral storage bins attached to the east and west wall flank the center cold air deflector with a small passage between the bins and deflector which passes into the ante-chamber in the south end of the house. The internal lateral bin configuration has its antecedent in Basket Maker III pit houses as early as A.D. 450 (Hayes and Lancaster, 1975, p. 182).

The east, north, and west walls in the main room are lined by a shelf one or two feet in width and two to three feet high, which often is hollowed in spots for storage.

Each house has four vertical roof supports. Two are placed in

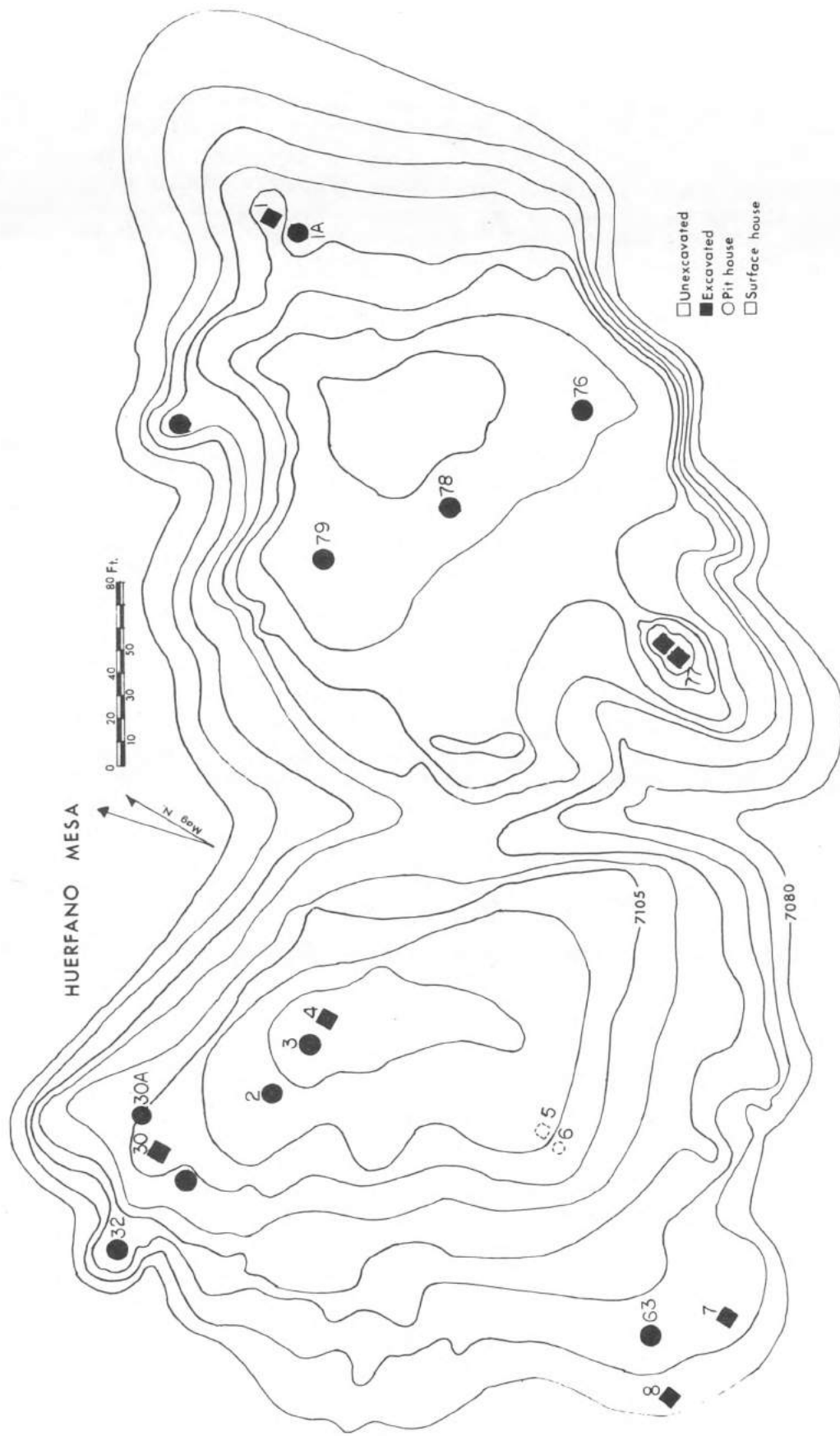
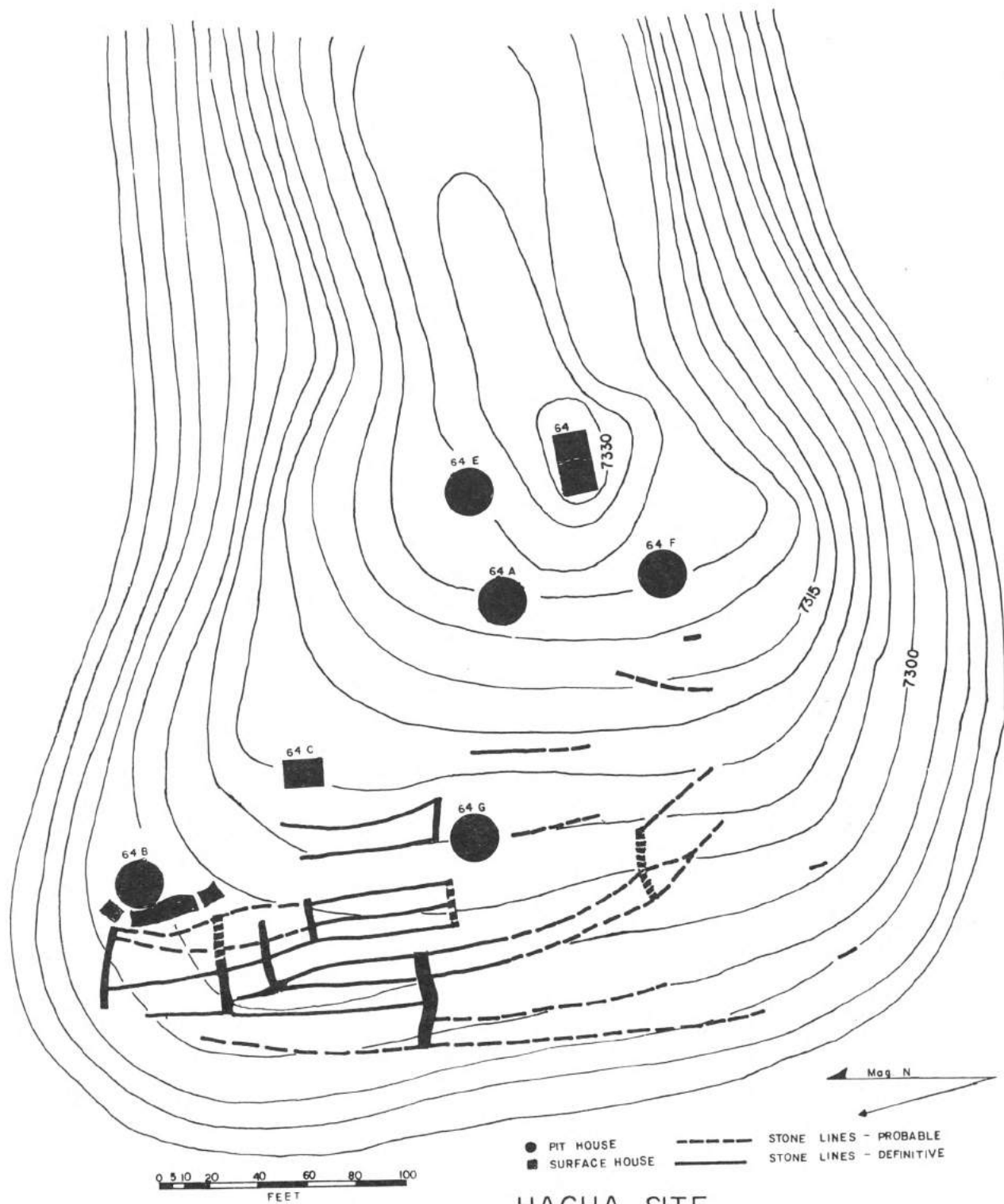


Figure 2. Distribution of pit houses and surface houses of the Gallina Phase on Huerfano Mesa, Llaves District. All date between about A.D. 1230 and 1260. An example of a dispersive society village pattern. *Dick, 1976, fig. 3.*



HACHA SITE

Figure 3. Distribution of pit houses and surface houses of the Gallina Phase on Hacha Ridge, Llaves District. All date between about A.D. 1230 and 1260 (late Pueblo III period). An example of a dispersive society village pattern. *Dick, 1978, p. 20.*

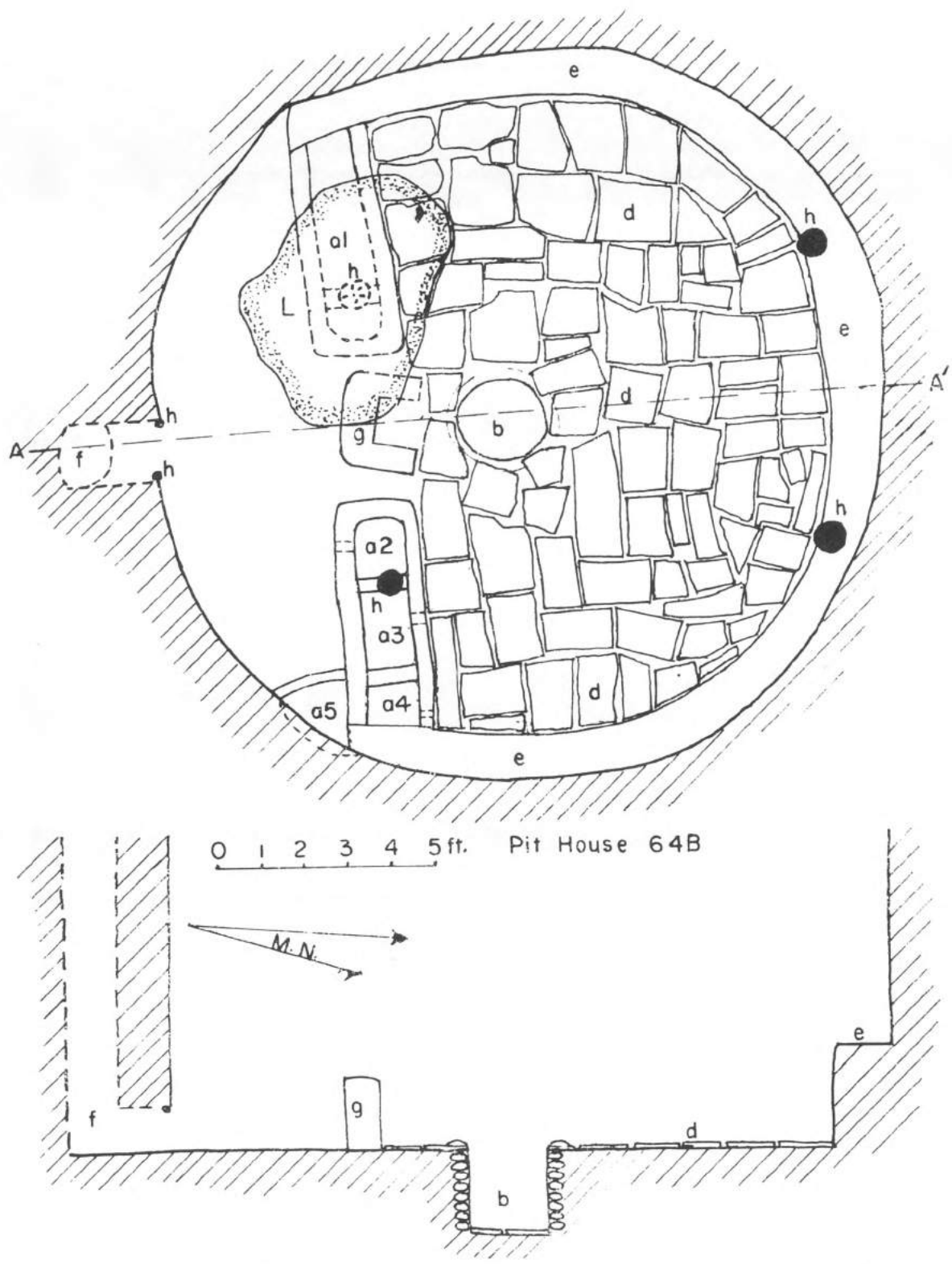


Figure 4. A typical Gallina Phase pit house of the late Pueblo III period in the Llaves District of northern New Mexico. Note the lateral bins (a) reminiscent of Basketmaker III house partitions. *Diak, 1978, fig. 9.*

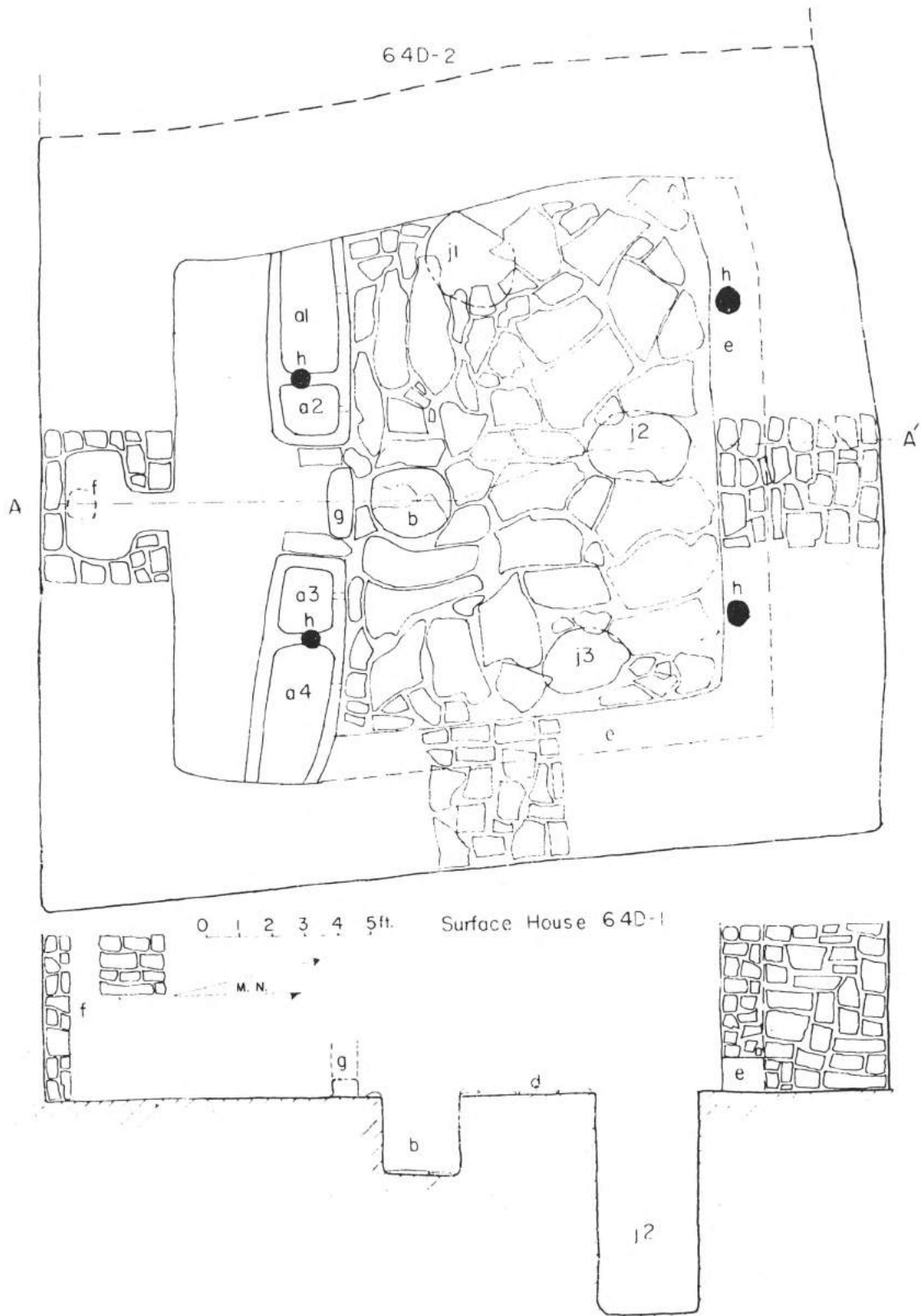


Figure 5. A typical Gallina Phase surface house of the late Pueblo III period as found in the Llaves District of northern New Mexico. Both the pit house and surface house are two components of a diversive society pattern. *Dick, 1978, fig. 6.*

the north wall shelf and two are centered in the lateral bins in the south part of the house. The deflector, usually U-shaped, is south of the deep hearth pit and midway between the lateral bins. Other features which may or may not be present are stone-paved floors, sub-floor cists, wall pegs, wall niches, wall paintings, and roof bins.

The house placement and outbuilding pattern of the Gallina Phase (A.D. 1100-1266) is an example of a dispersive society. In the same interval, the majority of the northern Anasazi sites were replete with cohesive society pueblos.

The dispersive society house arrangement can be traced to the Anasazi Los Pinos Phase (Basket Maker II Period) located on the Pine River, a northern tributary of the upper San Juan River 53 miles northwest of the Llaves District (Fig. 6). On the Pine River, there is a series of isolated surface dwellings and agglomerate dwellings forming a minimum "village" pattern--with houses widely dispersed (Eddy, 1961, fig. 5). It can be conjectured that possibly only half of the 11 houses were occupied at any given time and perhaps only seasonally. The Los Pinos Phase correlates with Basket Maker II and may be older than A.D. 400 (Ibid., p. 12). In the Navajo District, the dispersive society continues through the Rosa-Piedra Phases (A.D. 700-1000) in which single-unit sites are the most common, comprising 72.1 percent of sites recorded. An agglomeration of six or more houses comprises a village (Dittert, et al., 1961, pp. 221-223).

A common house form of the Los Pinos Phase is a figure eight outline consisting of a main room and a small antechamber with a short passage between the two. Eddy (Ibid., p. 104) sees this house form extending into the Basket Maker III and Pueblo periods. There is a gradual deepening of the house from near the surface in the Los Pinos Phase, through partly recessed during the Basket Maker III Period, to the very deep pit houses of Pueblo I through Pueblo III Periods. The major interior features common to a number of houses of later periods, which developed out of the antechamber/main room form of Basket Maker II, are the lateral room dividers found in Basket Maker III houses which

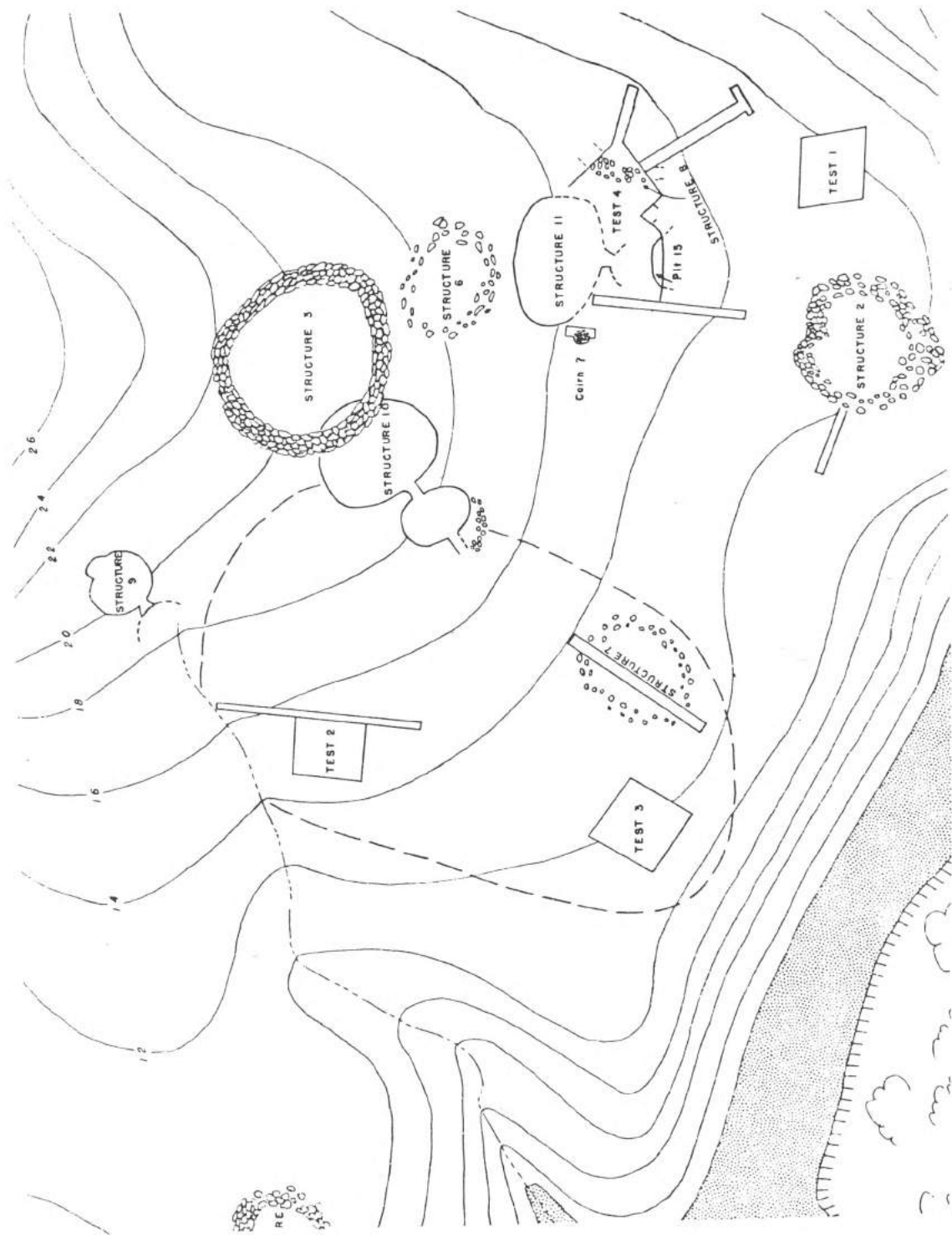


Figure 6. Valentine Village, a part of a dispersive society village pattern of the Basketmaker II period, Los Pinos Phase, on the Pine River of northwestern New Mexico. Eddy, 1967, fig. 5.

culminated in the formal lateral bin arrangement of Gallina houses.

The lack of recognizable special ceremonial structures in the dispersive society and the presence of such structures in the cohesive society emphasize the socio-political differences of the two societies.

The seeds of the cohesive society appear in the Basket Maker III Period, well exemplified by a well known site, Shabik'eschee Village (Fig. 7), located in Chaco Canyon, New Mexico (Roberts, 1929). The site dates in the 6th century. The village consists of a number of widely-dispersed pit houses with accompanying stone-lined storage pits. Near the center of the site was a very large, shallow pit structure unlike any common living site. It can be argued that this large "kiva" was in reality a council chamber for the meeting of the male citizens of the village, perhaps not too unlike the Papago Indian meeting house, used occasionally for special ceremonies but more frequently for village meetings. Roberts (Ibid., p. 74) recognized that certain features which have been held essential to a kiva are missing.

Logic warrants the consideration of the difficulty for people placing circular structures in a contiguous room structure to form a multi-room pueblo (Fig. 8C). Geometrically, only rectangular structures are practical for this purpose. Is the change to a rectangular room shape a portent for the full expression of the cohesive society? There is of course the necessary presence of a special structure, the kiva, used for ceremonial purposes and which is present in most all villages classified here as cohesive societies.

The major development of the Anasazi cohesive society is evident in the contiguous room house forms of the Pueblo I Period which evolve uniformly through the Pueblo II and III Periods (Figs. 8, 9). The early evidence is from well-reported areas such as Alkali Ridge, southeastern Utah (Brew, 1946); both the La Plata and Mancos Rivers in northwestern New Mexico and southwestern Colorado (Morris, 1939); and the Mesa Verde National Park, Colorado (Hayes and Lancaster, 1975). This development took place between A.D. 700 and 850. Farther east in the upper San Juan River drainage and in tributaries extending southward, the

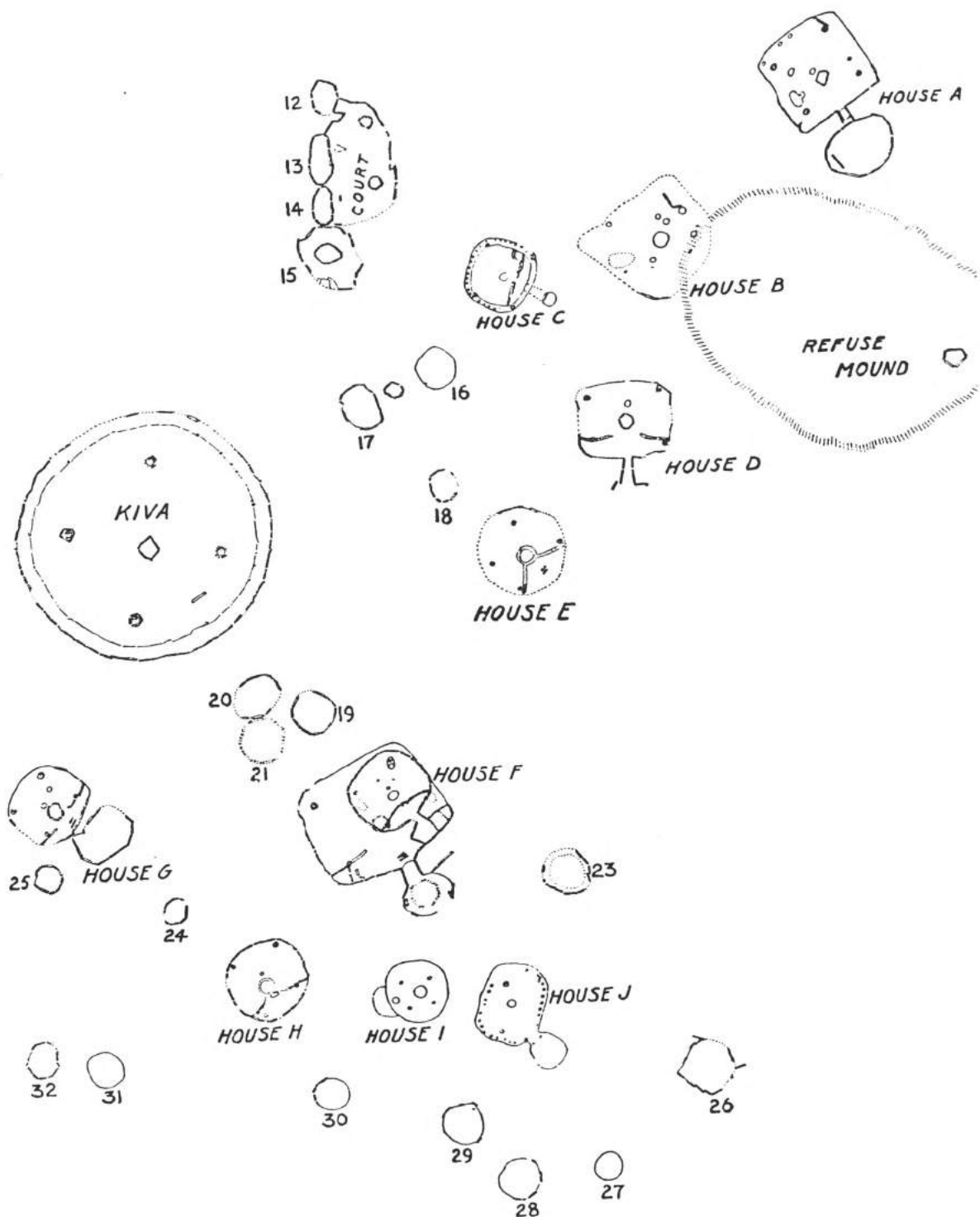


Figure 7. A portion of Shabik'eschee Village, a Basketmaker III period dispersive village in Chaco Canyon, New Mexico. The "kiva" structure is probably a council house rather than a kiva. *Roberts, 1929, pl. 1.*

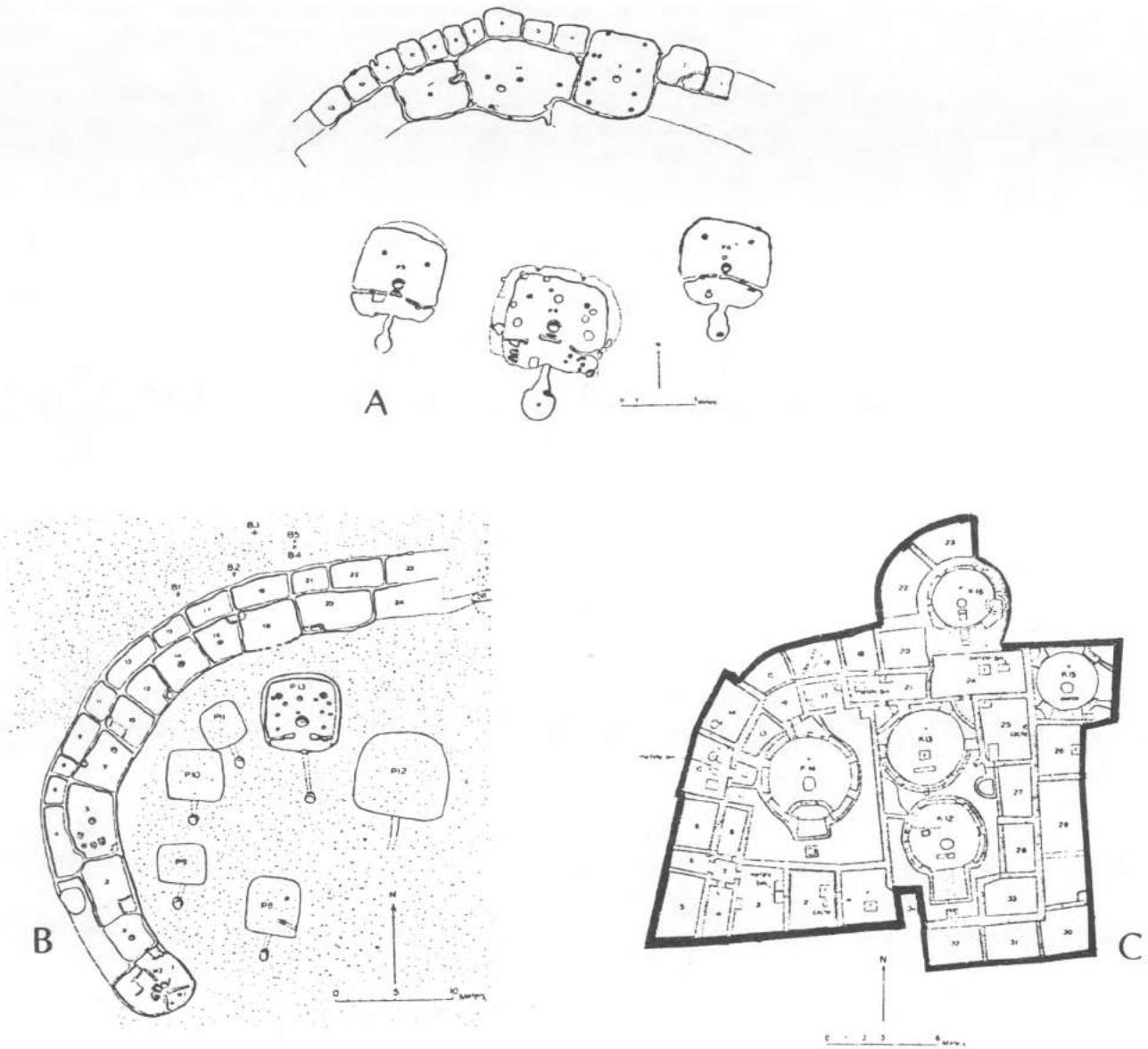


Figure 8. (A) An example of the beginning of the cohesive Pueblo society village of the Pueblo I period on the La Plata River in southwestern Colorado. *Morris, 1939, p. 67.*
 (B) Same as (A), but near Johnson Canyon, a tributary of the Mancos River near the southern boundary of Mesa Verde National Park. *Morris, 1939, p. 78.*
 (C) An example of a highly cohesive Pueblo society village of the Pueblo III period on the middle La Plata River in northwestern New Mexico. *Morris, 1939, p. 107.*

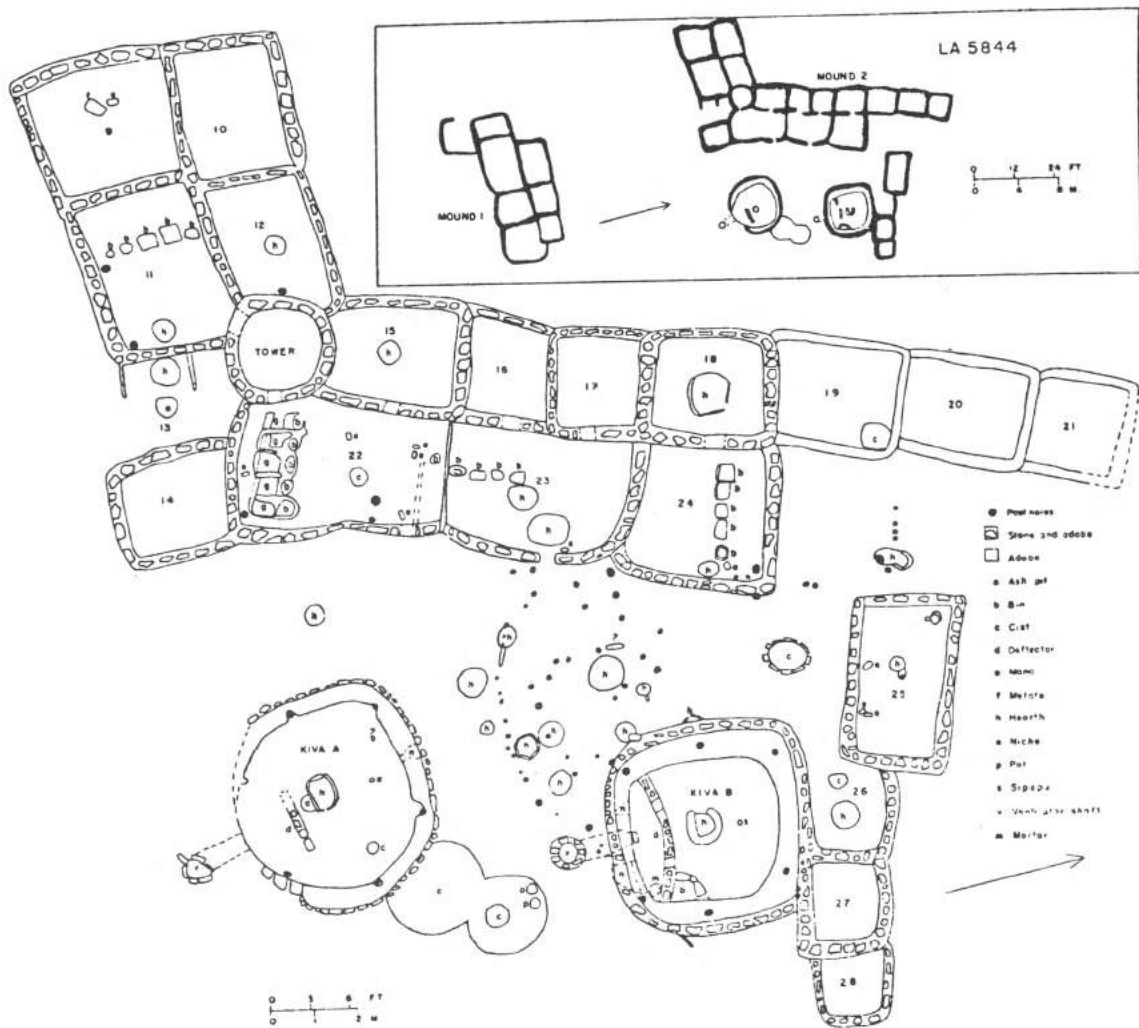


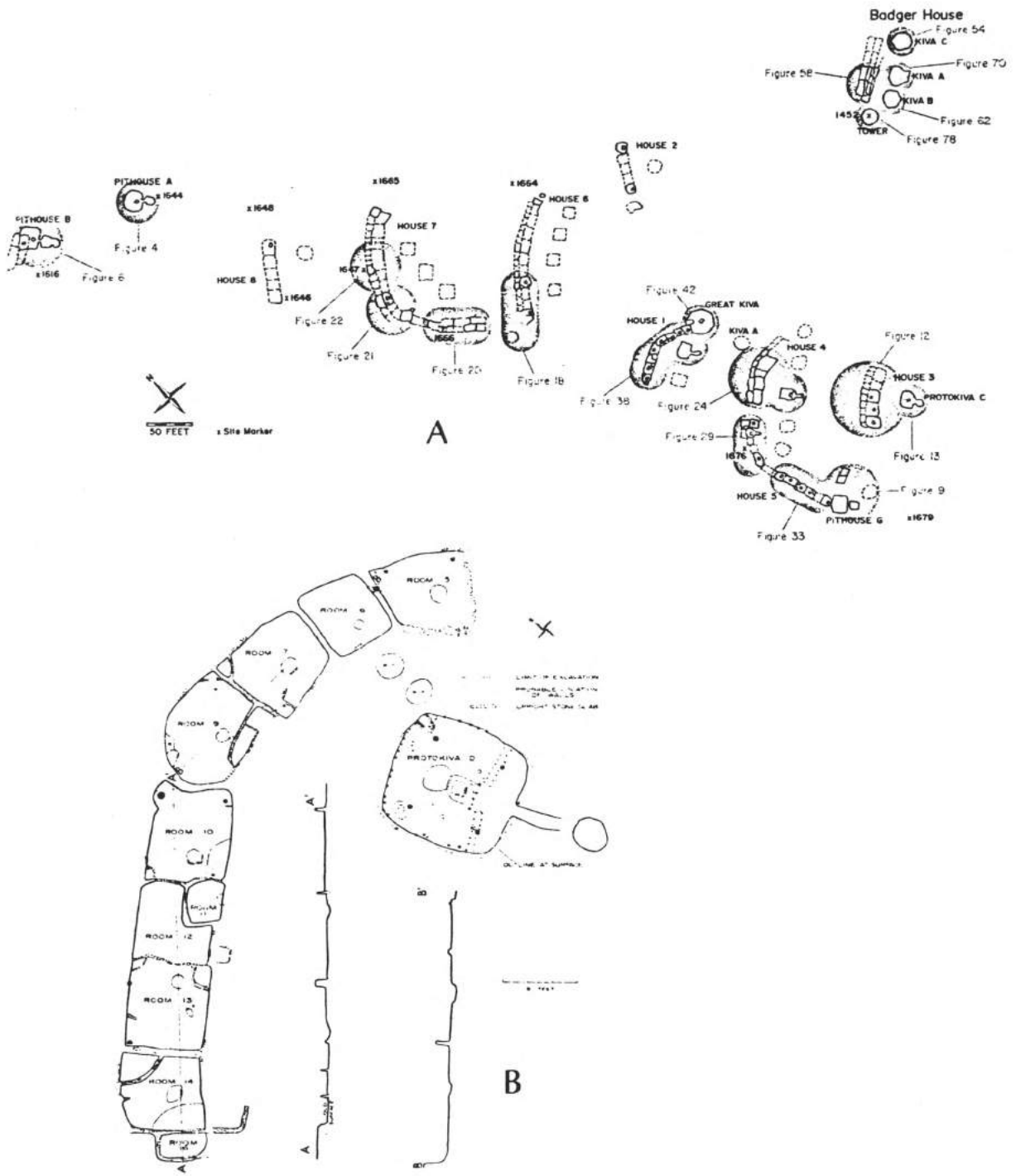
Figure 9. An example of a cohesive society village of the Pueblo II period on the Chaco River in northwestern New Mexico. *Sciscenti and Greminger, 1962, fig. 58.*

dispersive society habitation pattern continued until almost the end of the Pueblo III Period in the Llaves District, in the Gallina and Chama drainages, and in the Taos District.

The new cohesive society house form of Pueblo I (Figs. 10, 11) consisted of contiguous rooms of adobe and jacal on top of the ground and the conversion of the Basket Maker III pit house to a religious structure. The surface rooms were apartments consisting of large living rooms fronting two or three smaller storage rooms arranged in rows or arcs behind the pit structures. Hayes and Lancaster (1975, p. 183) estimate there was one protokiva to an average of five families. The routine religious functions in Basket Maker III times had been the affair of a nuclear family and were performed in the subterranean home; the new arrangement is certainly indicative of social change. Whether the five families sharing a protokiva in Pueblo I times were an extended family or the beginnings of a clan is difficult to ascertain (Ibid., p. 183).

Alkali Ridge Site 13 in southeastern Utah is an example of the size of the cohesive society pueblo (Fig. 12) developed by A.D. 770 (Brew, 1946, fig. 27, pp. 90, 153). The village contained some 130 above-ground storage rooms and about 65 living rooms built in a crescentic shape around four plazas containing pit houses with Basket Maker III interior features, some of which might have served as protokivas. Allowing four people per house unit, the population might have been as high as 260 people living in a daily face-to-face relationship, somewhat as at Shabik'eschee, except the people in Shabik'eschee may have been in residence only at intervals (Roberts, 1929, p. 77).

At present, it appears that the dispersive form of the Basket Maker II society spread from the Pine and upper San Juan Rivers, to the southeast up the Gobernador Wash and other tributaries to the Continental Divide and into the western tributaries of the Rio Grande late in Anasazi history. House forms changed gradually over a long period, but the dispersed community plan did not, and kivas never appeared.



House 1 and Protokiva D.

Figure 10. (A) Buildings forming the Badger House community of the Pueblo I period, Mesa Verde National Park. An example of a coalescing cohesive society. (B) Details of House 1 in the community. *Hayes and Lancaster, 1975, p. 52 and fig. 2.*

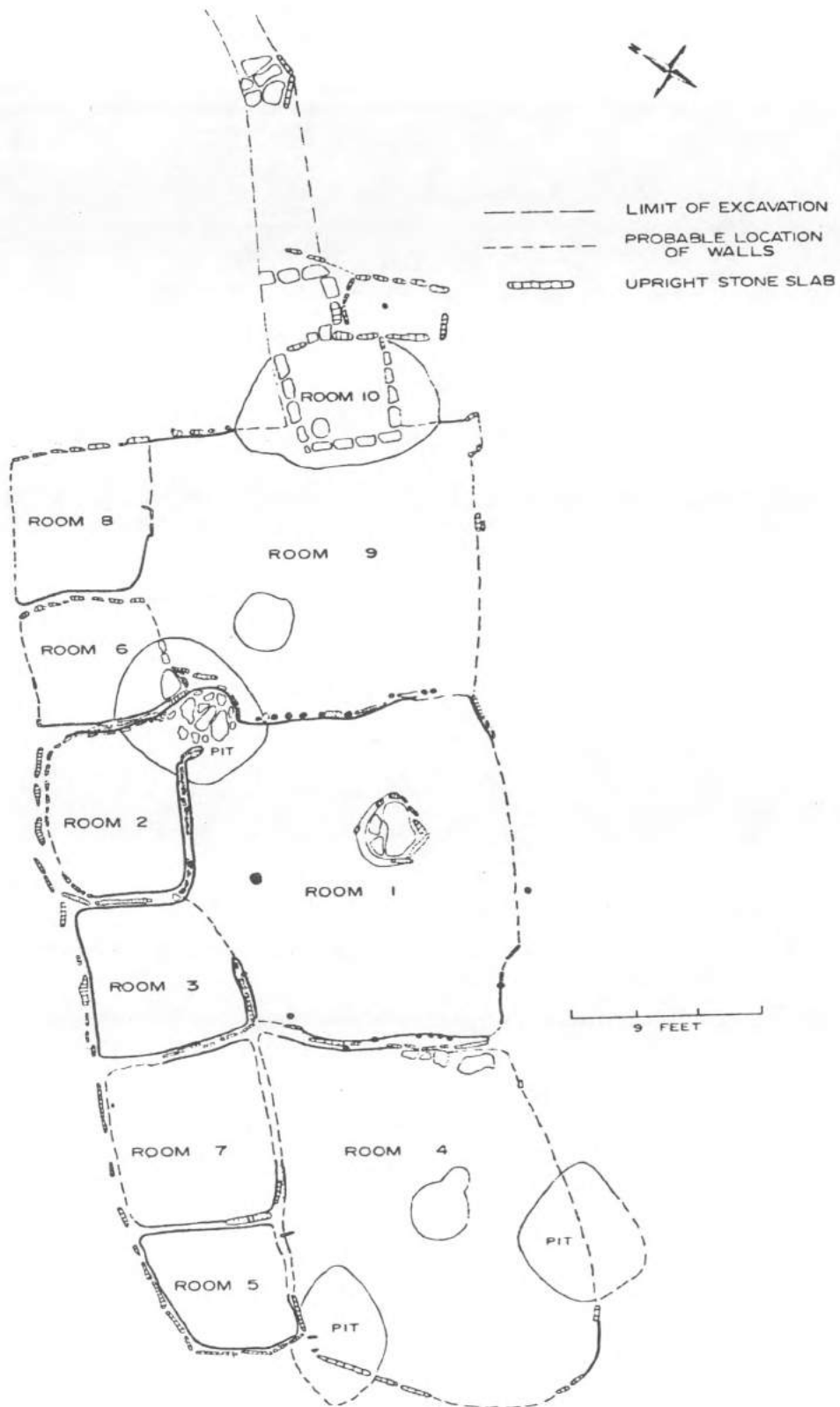


Figure 11. Details of a Pueblo I period cohesive society building in the Badger House community, Mesa Verde National Park. *Hayes and Lancaster, 1975, fig. 12.*

The southeast extension of the dispersive society can be found in the vicinity of Gobernador, New Mexico where Hall (1944) excavated a widely-dispersed pattern of pit houses. The pit houses have interior lateral partitions fitted with incipient storage bins. The partitions separate the main room from the antechamber and a partial bench is present around the main room wall. A wooden palisade often surrounds the house and storage out-buildings (Fig. 13). These late Pueblo I houses, antecedents of the Gallina Phase houses, date from A.D. 800 to 865 (Hall, 1944, p. 83). The informational gap of 235 years between the settlement pattern of the Gobernador District and that of the Llaves District Gallina Phase is due to a lack of detailed and programmed research between or within the two areas.

There are two historic period societies occupying the northern Anasazi region which offer illustrations of the dispersive and cohesive socio-political patterns. The Navajos offer an example of the dispersive mode, and the Hopi and Zuni Indians illustrate the cohesive mode.

The major difference between the two religious patterns is readily evident as indicated by Dutton (1975, p. 26):

Among the Pueblo peoples, weather control--placing emphasis on rain making--is fundamental in religious organization and ceremonial enactments under the control of priests. In contrast, Navaho religion centers on curing ceremonies directed by shamans following a system of imitative and sympathetic magic.

Further, the dispersive Navajo society is based to the greatest degree upon the 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 hogan 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

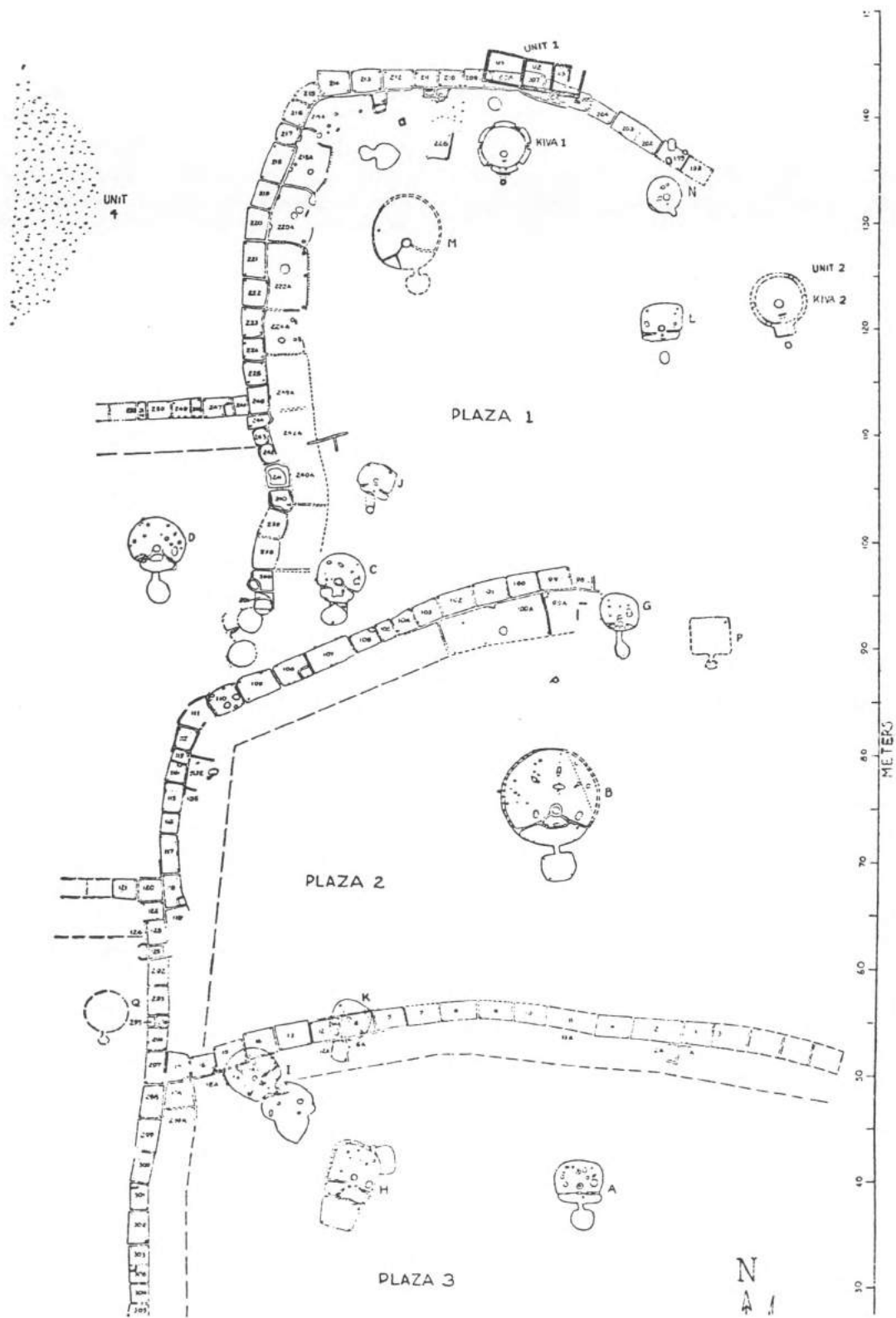


Figure 12. Portions of a late Pueblo I cohesive society village, Site 13, Alkali Ridge, southeastern Utah. Brew, 1946, fig. 27.

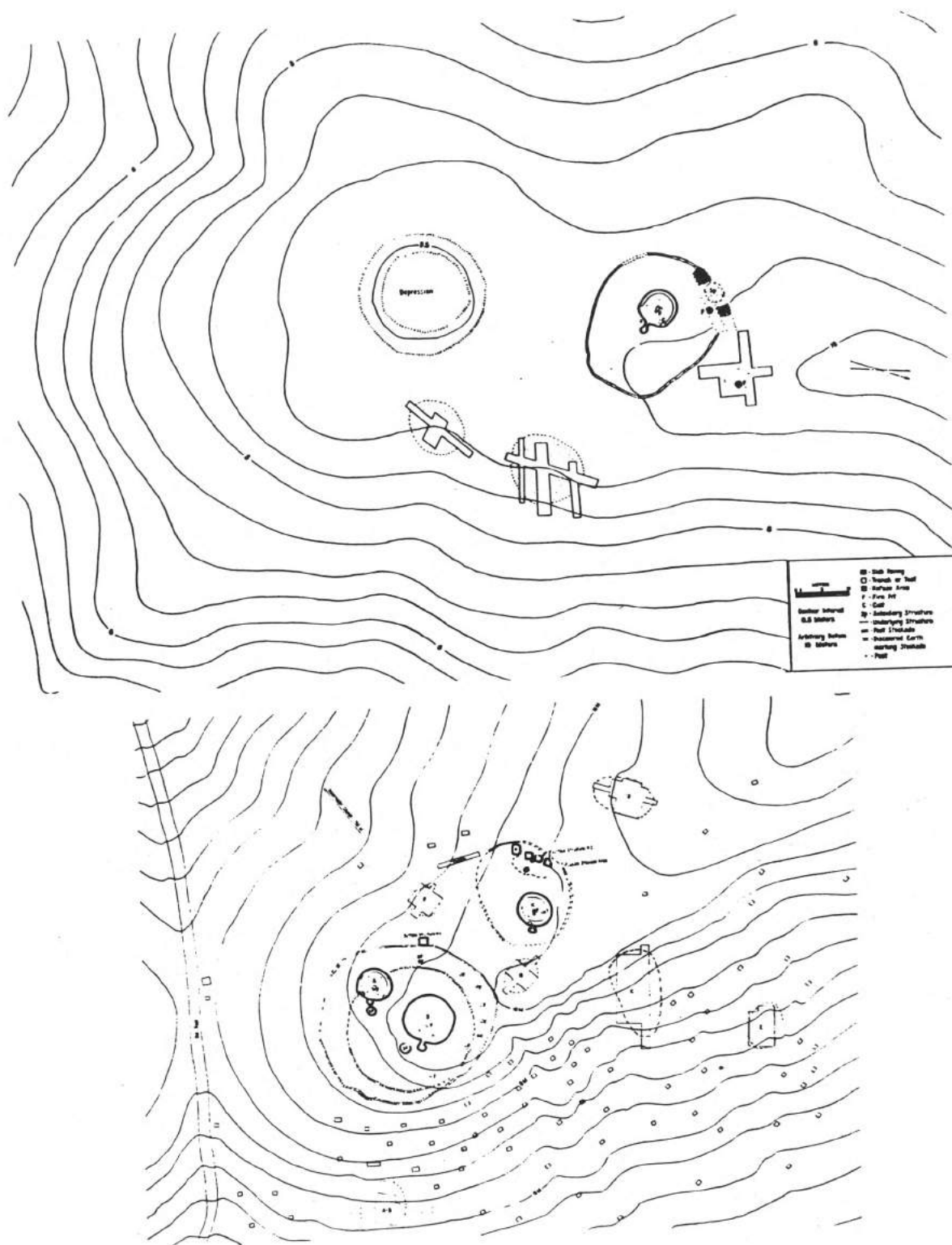


Figure 13. Dispersive community pattern on the Gobernador Wash, a southeastern tributary of the San Juan River. The sites belong to the Pueblo I period and are thought to be antecedents of the Gallina Phase. Hall, 1944, figs. 2 and 9.

same general locality and constitute a functioning group of relatives which cooperate in agriculture, house building, and other tasks. The "outfit" is a wider circle of relatives of two or more extended families which cooperate. A male head of a prominent family is considered leader of the "outfit," which may have a membership of 50 to 200 persons (Spencer, Jennings, et al., 1965, pp. 327-329).

The Navajos have clans in which members feel a strong sentimental bond with one another. There are only traces of political and religious functions among the clans. The local groups today, as probably in the past, should in no sense be thought of as "towns" or "villages" since Navajos do not live in compact communities, but rather in sprawling settlements of hogans scattered over a considerable area (Ibid., p. 330). It is obvious that social control of a scattered community would be much less than that of a Pueblo society with daily face-to-face relations.

Navajos place great stress upon the welfare of the individual. The prime emphasis in religion is on curing sickness, and chants are believed to restore health to the individual. Religion revolves around numerous shamans with their curing specialties. Witchcraft is a menacing and persistent belief.

The cohesive society reaches its epitome with the compact pueblo of multi-storied apartment houses and formal ceremonial chambers. The religion is functionally integrated with governmental, kinship, and household institutions. The religion consists often of a group of cults lead by priests; a principal one is the katchina cult, a cult of the ancestors, in which everyone participates. The secret rituals are practiced in special rooms or buildings (kivas) set aside for that purpose; these are often easily identified archaeologically. The ceremonies take place in the calendric ritual cycle and often the entire society from economics to government is ordered by the ceremonial calendar. The clan, to a degree, becomes subordinated to the religious and governmental aspects of the society. The secret societies, as among the Hopis of Oraibi, cut across the various clans.

Perhaps most important in the socio-political organization of a

pueblo is that individualistic qualities are subordinated for the benefit of the group. All the complex ritual is designed to bring rain, health, and fertility to the pueblo as a whole (Spencer, Jennings, et al., 1965, p. 318).

It becomes obvious that the Anasazi dispersive societies could not command either the membership or the continual interaction of a calendrical society with the kiva and complex ceremony in which the majority of the males are involved, as found in compact villages of the Zunis and Hopis.

In summary, there grew a social pattern dichotomy in early Pueblo I times: part of the northern Anasazi population, perhaps the majority, evolved into the cohesive society preserving their ancient house form as a kiva. The dispersive society, having the same Basket Maker III roots, became an anachronism as mirrored by the Pueblo III Valdez Phase in the Taos District and late Pueblo III Gallina Phase in the Llaves and related districts. The successful dispersive society without the kiva ceremonialism persisted for at least five centuries.

One of the major archaeological problems lies not so much with the cohesive Pueblo societies, which show a steady development from the Pueblo I Period and persist even today, but with the dispersive societies. A common idea is that the dispersive societies of the Four Corners region suddenly developed into a cohesive society, occupying (or building) multi-room pueblos with a fully-developed kiva ceremonial complex. More interesting, if true, the interest and subsequent expertise of the abovediscussed dispersive societies in building pueblos developed late in prehistoric times. It is thought by some that the Gallina Culture people migrated south from the San Juan to establish or occupy large pueblos in the Jemez District. If the Gallina people did move south, they did not at first integrate with the cohesive Pueblos but continued their dispersed habitation practice in the Llaves District. The lack of knowledge of such information is probably due to the lack of archaeological studies. On the other hand, when the Gallina people left the Llaves District, perhaps in miniscule numbers, they were

absorbed by the established cohesive pueblos to the south.

The same problems and answers apply to the prehistory of the Taos District when the people of the Valdez Phase, a dispersed society, became a cohesive society in the Pot Creek Phase (A.D. 1200-1250).

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COLLECTION AND ANALYSIS OF SURFACE MATERIAL ON A VALDEZ PHASE SITE IN THE ARROYO HONDO VALLEY

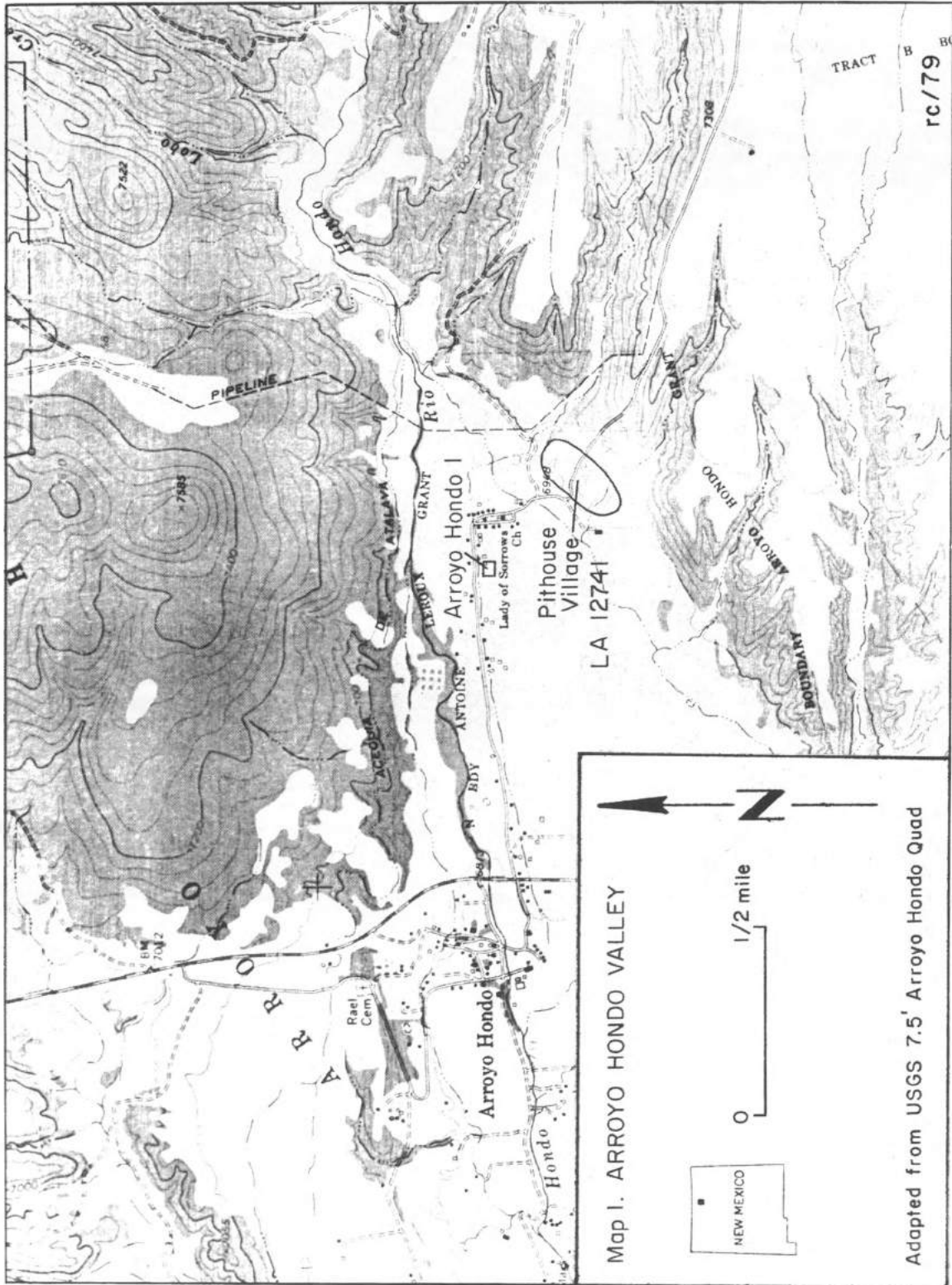
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INTRODUCTION

The Bureau of Outdoor Recreation is developing several recreational facilities in Taos County, New Mexico. Since these projects are federally funded and federal laws and regulations require that archaeological resources be properly treated, State Historic Preservation Officer Thomas W. Merlan recommended that an archaeological clearance survey be conducted in advance of construction. The survey was performed by Polly Schaafsma, and her report, submitted on July 12, 1977, recommended that collection and analysis of archaeological materials be made at the project site in Arroyo Hondo.

Mr. Merlan requested the writer to perform the collection and analysis of surface archaeological materials at the Arroyo Hondo site. The project was funded by the County of Taos in cooperation with the Bureau of Outdoor Recreation, and a report on the site and material collected was provided for the county of Taos. The field work was accomplished on August 3 and 5, 1977. The lithic analysis was conducted by Jane Whitmore and Michele Binder at the School of American Research in Santa Fe. Key punching of computer cards was done by Project Scheduling Inc. of Santa Fe. Computer programming was done by Mr. Lynn Jorde with the data processing facilities at the University of New Mexico.

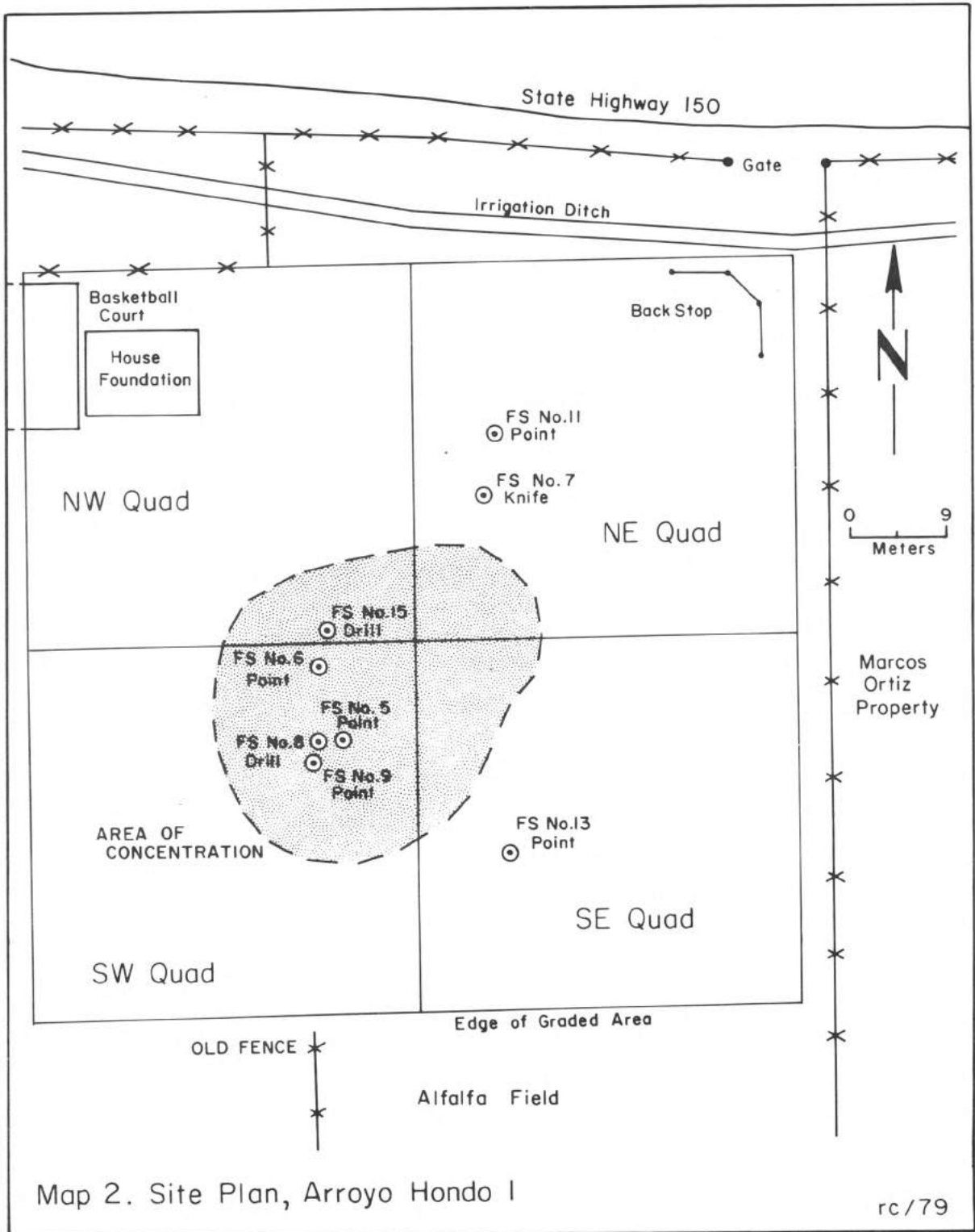
In the writer's opinion the surface materials at the site now have been adequately recovered and analyzed, and no further work is appropriate given the present state of land use. However, it is clear that additional materials are present and that a subsurface structure(s) is very likely present. Any subsequent federally funded activities which disturb the ground should be preceded by an archaeological research program which tests for and adequately analyzes the inferred subsurface remains.



Map 1. ARROYO HONDO VALLEY

Adapted from USGS 7.5' Arroyo Hondo Quad

TRACT B
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Map 2. Site Plan, Arroyo Hondo I

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ENVIRONMENT

Location and Present Condition

The site is located in the Arroyo Hondo Valley, approximately eleven miles north of Taos, in Taos County, New Mexico. It is in unsurveyed land on the Arroyo Hondo Grant (Map 1). Projecting in the section pattern from adjacent areas would place the site in the NE 1/4 of the NW 1/4, Section 34, Township 27 North, Range 12 East. The elevation is 6920 feet. The site is owned by the Arroyo Hondo Recreation Community Center Inc.; the land was recently donated by Mr. Harvey Mudd.

The land has been an agricultural field for over a hundred years and has been plowed many times. It is inferred that plowing has disturbed the surface to a depth of at least one foot. In the course of developing the location as a baseball field, the area of quadrants shown on Map 2 had been graded prior to the time of surface collection. The combination of plowing and grading thoroughly disturbed the intrasite pattern of surface artifact distribution before the collection could be made; many items formerly present on the surface were piled in the berms on the perimeter of the field. Additionally, the back-stop had been completed prior to the archaeological collection and the field was already being used. Part of the collection on August 3, 1977 was made during a baseball game.

Geology and Physiography

The Arroyo Hondo Valley lies in the western margin of the foothills and alluvial fans of the Sangre de Cristo Mountains. The Rio Hondo is a permanent stream which originates in the high peaks of the Taos Range, including Wheeler Peak (13,151 feet), and flows westward to its junction with the Rio Grande. The Sangre de Cristo Mountains to the east (Taos Range) are a massive uplift of Precambrian rocks including granite, shist, and quartzite with intrusions of Tertiary igneous rocks (John Empsall, personal communication). The present mountains were formed during the late Tertiary (Pliocene?) in conjunction with

the formation of the Rio Grande depression or graben which occurred in Pliocene and Pleistocene times (Church and Hack, 1939, p. 614). Subsequent to the formation of the Sangre de Cristos and the Rio Grande depression, there was a period of intense volcanism in the Rio Grande depression which resulted in the formation of several small volcanic cones such as Antonito and Pot Mountains and massive formations of basalt lava which filled the depression forming the present Taos Plateau. Following the volcanism of the earlier Pleistocene, a period of extensive erosion of the uplifted Sangre de Cristo Mountains took place during the later Pleistocene. The extensive alluvial fans on the western margin of the mountains between Taos and Arroyo Hondo, formed at that time, overlie the older basalt flows to the north and west of the Arroyo Hondo Valley.

The valley itself was formed by the Rio Hondo as it maintained a passage between the alluvial fans to the south and the basalt-flow hills on the north. The eastern edge of the valley is defined by a narrow canyon where the Rio Hondo carved its way through the basalt. The western edge of the valley marks the steep descent into the Rio Grande canyon where the Rio Hondo again cuts through the basalt. The Hondo Valley is approximately one mile wide, where State Highway 3 cuts across it, and is less than three miles long from east to west. The valley floor is fairly level with an even gradient from 6960 feet on the east to 6680 on the west. The stream provides water year round, and there are numerous permanent springs in the lower part of the western valley.

Soil

The soil of the valley is largely derived from weathered material from the alluvial fans to the east and south, largely composed of granites and metamorphic rocks eroded from the Sangre de Cristos. The soil is thus similar to that found in the Rio Grande de Ranchos drainage, which Herold (1968, p. 17) noted shows "strong parent rock character." The soils of the area, described by the New Mexico State University Agricultural Experiment Station as "Ustorthents-Haplargids-Haplustalfs,"

is apparently the variety described as "Aracid Haplustalfs."

These soils occupy the more stable and less sloping landscapes that are intermingled with the steep and hilly Typic Ustorthents. They usually have a brown, noncalcareous loam surface layer over a thick clayey subsoil. This grades at a depth of three or four feet to a light reddish-brown cobbly light sandy clay loam. There is typically an increase in coarse fragments with depth in these soils, and they usually become very gravelly and coarse-textured within a depth of five feet (Maker et al., 1974, p. 113).

The site is near the northern margin of the alluvial terrace on the south side of the valley. The soil here is fairly thin, probably not over three feet in depth, and overlies the sand and gravel of the alluvial terrace which appears in ditches, road cuts, and on the terrace margin just north of the road.

Climate

Climatological summaries of the Taos area are to be found in the study of the climate of New Mexico by the State Planning Office (Tuan et al., 1969), the survey of the Rio Grande de Ranchos Valley by Herold (1968, pp. 15-17), and the archaeological report by Wetherington (1968, pp. 13-14). The average annual precipitation at Taos is 12.7 inches (Tuan et al., 1969, fig. 2) and comes in variable amounts over the year, with a notable rainy season in July, August, and September (Ibid., fig. 3). As elsewhere in New Mexico, over the years precipitation fluctuates widely about the average (Ibid., p. 50, table 4) which means that droughts and wet years are the norm rather than a steady approximation of the average. Winters are cold, with January temperatures averaging about 25 degrees Fahrenheit, and the summers are warm, averaging in the upper 60s in July (Herold, 1968, p. 16). However, the crucial variable for human occupation of the area is the length of the growing season. Herold reports that the average frost free season at Taos is 137 days, measured over a ten year period, but notes that it

varied from 154 days in 1963 to a minimum of 116 days in 1962 (Ibid., p. 17). The growing season, while short, is sufficient for the practice of agriculture as well attested by the existence of agricultural settlements.

Flora

The Arroyo Hondo Valley lies in the Upper Sonoran life zone. The hills to the north and the terrace slopes to the south are covered with dense, low woods of mixed pinyon and juniper. In the open areas and on the terrace tops big sagebrush, rabbit brush, and grasses dominate. In the cooler canyons draining the terrace, there are substantial stands of ponderosa pine mixed with Rocky Mountain juniper. These cooler canyons are the lower expressions of the Transition zone which is generally present at the base of the mountains to the east. Along the Rio Hondo and in the side canyons there are riparian vegetation stands dominated by narrow-leaf cottonwoods, willows, and Rocky Mountain junipers.

Fauna

Prior to the dislocations by European settlement, the fauna of the Taos Valley was varied and extensive. The original faunal populations must generally be inferred from the refracted populations which exist today. In some measure they can also be evaluated from faunal remains in archaeological sites. Mule deer, antelope (especially west of the Rio Grande), elk, black and grizzly bears, and mountain sheep were components of the original fauna. Mountain lion, coyote, wildcat, and small carnivores also were present. Smaller mammals included prairie dogs, ground squirrels, jack rabbits, and cotton-tail rabbits.

PREVIOUS ARCHAEOLOGY

There have been no archaeological excavations nor systematic surveys in the immediate Arroyo Hondo Valley. The archaeology of the Hondo drainage is primarily based upon the surveys and excavations conducted by the Taos Archaeological Society under the direction of

Helen Blumenschein in the 1950s (Blumenschein, 1956; 1958). The surveys documented the presence of many pit house sites in the drainage. One large pit house village (LA 12741) lies on the second terrace margin less than a mile to the south and southeast (Map 1). LA 12741 is probably the site which Blumenschein described as "the second largest pueblo ruin in the area" (1958, p. 107). Five pit houses in the valley several miles to the east were excavated by Blumenschein (1956; 1958). The earlier work has been augmented by unpublished excavations by the University of New Mexico field school and a pit house excavation near Arroyo Seco by the Fort Burgwin Research Center (Wolfman, Wolfman, and Dick, 1965). The majority of the sites in the Hondo drainage are attributed to the Valdez Phase ca. A. D. 1000-1200 (Wetherington, 1968, p. 78).

SITE DESCRIPTION

The site area today is a flat field that has been recently graded to develop the baseball field (Fig. 1). As can be seen in the photograph, a basketball court exists in the northwest corner. Within the graded area (Map 2), lithics and ceramics were found to be scattered with a concentration in the approximate middle. There were no indications of structures, hearths, or trash areas. Any original relief that may have existed to define a structure had been removed by plowing and/or finally eliminated by the recent grading.

COLLECTION METHODOLOGY

Generally, archaeological surface collections are made with a grid system that is maximally three by three meters per grid, with one meter grids being used in the vicinity of features and structures (Schaafsma, 1977). This is done to determine whether artifact distribution patterns within the site vary and represent different activity locales. At this site it was obvious that any intra-site patterns had been obliterated and the use of such control methods would be meaningless. The only intra-site provenience control that seemed useful was a gross division into quadrants (Map 2) which would allow some vague



Figure 1. Overview of site area which is behind the basketball court in foreground. View is to southeast, showing high alluvial terraces on the south side of the Hondo valley.

sort of area control commensurate with the disturbed nature of the site. This method of control was used for lithics and ceramics. On the other hand, prepared artifacts (projectile points, etc.) were plotted on the site sketch map.

Collection was done by consecutive sweeps, back-and-forth over each quadrant, that were one meter wide. Control in the sweeps was made with flagged nails that were measured and set on the margins of each quadrant being collected. The collection was confined to the graded area with some pickup in the berms. All artifactual remains were collected. It is anticipated that additional items will appear as the area is worn from use, rainfall, and wind action.

Items recovered from the site include lithics, ceramics, prepared artifacts, and fire-cracked rocks.

ARTIFACTS

Lithics

Archaeologists generally limit the term "lithics" to tools and workshop debris fashioned from fine-grained, conchoidally fracturing rocks. We have learned that a great deal of the information about the economic activities at a site lies latent in these items. The lithic analysis followed methods previously developed by the writer at Abiquiu Reservoir (Ibid., 1977). The interested reader is referred to the Abiquiu Reservoir report for an extended discussion of this methodology as well as definitions of the characteristics discussed below. The approach herein will be a preliminary discussion, and it is understood that much more could be done with these data. Copies of the data set (in the form of computer cards) could be supplied to anyone wishing to use it for more in-depth analyses. The artifacts are curated at the Museum of New Mexico.

While all lithics were collected, it was possible to formally analyze only a sample. A total of 453 lithics were selected for analysis (Fig. 2). The largest collection (201), from the southwest quad, was analyzed completely. The remaining three quad collections were divided

in two parts by a grab sample consisting of spreading the whole bag on a table, dividing them evenly, and selecting one half for analysis. There probably is as little bias in this method as in many others that could be devised, and it is considerably quicker. In this manner, the following totals per quad were obtained: northeast quad - 136; northwest quad - 68; southeast quad - 48. An approximate overall total of the lithics collected is obtained by doubling the halved quad collections and summing. This gives an approximate total of 705 lithics in the total collection.

Material: In the lithic analysis at Abiquiu Reservoir, it was found that material type is a sensitive discriminator of different cultures. Simply put, the material types on the sites of different cultures are different. It is assumed that this reflects differential access to quarries, participation in different trade networks, and culturally regulated patterns of material type preferences. As discussed below, it appears that all material at this site derives from one culture.

Figure 2. Material

Category	Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
		1400.	13	2.9	2.9	2.9
		3500.	18	4.0	4.0	6.8
		3530.	1	0.2	0.2	7.1
		3700.	421	92.9	92.9	100.0
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		TOTAL	453	100.0	100.0	

The material type code numbers used at Abiquiu were applied in this analysis. On Figure 2, code 1400 refers to chert, 3500 to obsidian, 3530 to obsidian from Polvadera Peak in the Jemez Mountains, and 3700 to fine-grained basalt. Some of the chert is from Polvadera Peak near Abiquiu, the provenience of the rest is presently unknown. Some of the undifferentiated obsidian is from Polvadera Peak, some is from obsidian ridge in the Jemez Mountains, and some appears to be from near Tres

Piedras, New Mexico. In all cases, the obsidian has been brought into the Hondo Valley. Much of the fine-grained basalt appears to have come from a quarry of this material at the junction of Gallina Creek and the Rio Hondo several miles to the east. This quarry is close to Blumenschein's Site 95. The majority of chipped artifacts from that structure also were made from fine-grained basalt (Blumenschein, 1956, p. 55).

By far the dominant material type is the local fine-grained basalt which makes up 92.9% of the total sample as compared to obsidian and chert. It is obvious that the inhabitants of the site were satisfied with the local basalt for most of their tasks. On the other hand, certain circumstances required the import of obsidian into the valley from as far as Bandelier National Monument, approximately 60 miles to the southwest.

Stage of Manufacture: The relative proportions of different stages of manufacture provide information on tool making and use activities at a site. To begin with, it should be noted that there are no pressure or trimming flakes from the site (Fig. 3), which are commonly found on sites in this region (Ibid., 1977). This suggests that this was a

Figure 3. Stage of Manufacture

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
Primary Core	1.	43	9.5	9.5	9.5
Flake	3.	216	47.7	47.7	57.2
Shatter	4.	192	42.4	42.4	99.6
Biface:Complete	5.	2	0.4	0.4	100.0
TOTAL		453	100.0	100.0	

seasonally occupied campsite, and that tool working involving the removal of trimming and pressure flakes to produce projectile points etc. took place elsewhere, probably in a nearby winter village. In addition, there are a large number of primary cores (43), indicating that tools, probably simple flake tools, were struck and probably used at this

location. Flakes are the most common stage of manufacture present (47.7%) and undoubtedly represent items used for cutting and scraping tasks. Shatter consists of material broken from cores that often is the unintentional result of working cores to obtain flakes. Many of these items are unused and are best thought of as workshop debris. However, it has been amply demonstrated (Ibid., 1977) that if useable edges were present, shatter was employed like the more useful primary flakes. The two bifaces recovered are small prepared tools that were used and discarded at this site but probably made elsewhere.

Cortex: The location of cortex (exterior, weathered rind) and the relative amounts of cortex are shown in Figures 4 and 5. In both charts, codes 0 and 999 indicate the absence of cortex. It is obvious that most of these items (91.6%) lack cortex. Most of the cortex that is present occurs on the dorsal (exterior) surface of flakes. Nevertheless, even this small proportion does not have cortex over most of the dorsal surface but is only a partial coverage.

Figure 4. Cortex Location

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
Not Present	0.	1	0.2	2.6	2.6
Dorsal Surface	1.	27	6.0	69.2	71.8
Striking Platform	2.	8	1.8	20.5	92.3
Both Dors. Strik.	3.	3.	0.7	7.7	100.0
	999.	414	91.4	Missing	100.0
	TOTAL	453	100.0	100.0	

Figure 5. Cortex Amount

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	0.	1	0.2	2.6	2.6
Most of Surface	1.	3	0.7	7.9	10.5
Partial Coverage	2.	33	7.3	86.8	97.4
Trace	3.	1	0.2	2.6	100.0
	999.	415	91.6	Missing	100.00
	TOTAL	453	100.0	100.0	

The lack of cortex on these items demonstrates several things. One is the fact that the site is not a quarry, the nearest of which is several miles away. Another is the nature of the rock at the basalt quarry. This material does not occur as small nodules, but as a thick vein which generally yields pieces of rock without cortex. Finally, the material must have been roughed out at the quarry with the rough and undesirable cortex removed and left at the quarry rather than carried several miles to this location.

Measurements: Measurement in millimeters of the length, width, and thickness of each of the 453 lithics was made. These descriptive data are presented in Figures 6 (length), 7 (width), and 8 (thickness). This information will not be systematically addressed here. It is sufficient to note that overall the lithics at this site are large relative to those found at Abiquiu Reservoir where the average (mean length of 16,331 lithics was 16.76 mm. (Ibid., 1977, fig. 101) compared with the mean length of 24.35 mm. in the present sample (Fig. 6). In part, this reflects the absence of pressure and trimming flakes at this site, but there are many other variables operative as well.

Figure 6. Length

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
6-10 mm.	1.	19	4.2	4.2	4.2
11-15 mm.	2.	83	18.3	18.3	22.5
16-20 mm.	3.	89	19.6	19.6	42.2
21-25 mm.	4.	92	20.3	20.3	62.5
26-30 mm.	5.	56	12.4	12.4	74.8
31-35 mm.	6.	48	10.6	10.6	85.4
36-40 mm.	7.	31	6.8	6.8	92.3
41-45 mm.	8.	18	4.0	4.0	96.2
46-50 mm.	9.	4	0.9	0.9	97.1
51-55 mm.	10.	5	1.1	1.1	98.2
56-60 mm.	11.	6	1.3	1.3	99.6
>60 mm.	12.	2	0.4	0.4	100.0
TOTAL		453	100.0	100.0	

Figure 7. Width

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
1-5 mm.	0.	4	0.9	0.9	0.9
6-10 mm.	1.	72	15.9	15.9	16.8
11-15 mm.	2.	104	23.0	23.0	39.7
16-20 mm.	3.	99	21.9	21.9	61.6
21-25 mm.	4.	68	15.0	15.0	76.6
26-30 mm.	5.	39	8.6	8.6	85.2
31-35 mm.	6.	21	4.6	4.6	89.8
36-40 mm.	7.	21	4.6	4.6	94.5
41-45 mm.	8.	14	3.1	3.1	97.6
46-50 mm.	9.	9	2.0	2.0	99.6
51-55 mm.	10.	1	0.2	0.2	99.8
> 60 mm.	12.	1	0.2	0.2	100.0
TOTAL		453	100.0	100.0	

Figure 8. Thickness

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
1-5 mm.	0.	220	48.6	48.6	48.6
6-10 mm.	1.	137	30.2	30.2	78.8
11-15 mm.	2.	55	12.1	12.1	90.9
16-20 mm.	3.	30	6.6	6.6	97.6
21-25 mm.	4.	8	1.8	1.8	99.3
26-30 mm.	5.	2	0.4	0.4	99.8
46-50 mm.	9.	1	0.2	0.2	100.0
TOTAL		453	100.00	100.00	100.00

Utilized Portion: Where a flake or other lithic was utilized, the edge angle and type of wear pattern help to define the function of the original tool (Ibid., 1977). The different parts of flakes, in particular, have different shapes and angles that are the result of the mechanics of flake production. The summary of where the primary wear patterns were observed in the present collection is presented in Figure 9. This summation also shows the relative proportion of utilized tools to unutilized (code 999).

Figure 9. Utilized Portion

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
Ut. Orig. Surf.	0.	1	0.2	0.3	0.3
Prox. End Flake	1.	4	0.9	1.3	1.6
Dist. End Flake	2.	13	2.9	4.2	5.8
Int. End Flake	3.	9	2.0	2.9	8.8
Left Lat. Edge	4.	77	17.0	25.0	33.8
Right Lat. Edge	5.	58	12.4	18.2	51.9
Perimeter	6.	33	7.3	10.7	62.7
Convenient Edge	7.	93	20.5	30.2	92.9
Notch	8.	4	0.9	1.3	94.2
Projection	9.	18	4.0	5.8	100.0
	999.	145	32.0	Missing	100.0
	TOTAL	453	100.0	100.0	

Compared with many of the sites in Abiquiu Reservoir (Ibid., 1977), a high proportion of these lithics (68.0%) were utilized for some task. While some allowance must be made for the visibility of edge damage on different material types, this comparison seems valid. This high incidence of utilization possibly reflects the distance from the quarry, with the correlative need to use all the material carried in as well as other indications that this was a tool-using rather than a tool-making site.

The greatest proportion of primary wear (43.2%) is found on the lateral edges of flakes. The naturally low angles of flake edges are

ideally suited for cutting tasks, and the utilized flake edges undoubtedly correlate with the large amount of light knife wear or bifacial light attrition (see below and Schaafsma, 1977). The distal ends of flakes are similarly suited for cutting tasks. The proximal ends of flakes, on the other hand, generally have high edge angles and are more suited for scraping and adze type jobs. However, only four proximal flake ends in this collection were utilized, and most of the scraper and adze wear in this collection (see below) are on the rough edges of shatter ("convenient edge"). It would be interesting to know if the avoidance of proximal flake ends is a consistent pattern in this lithic technology. The use of notches was generally reserved for scraping round objects such as wooden shafts; the wear pattern in utilized notches generally is adze or scraper wear. Projections were used for engraving and gouging tasks.

Wear Pattern: The recognition and proper interpretation of wear patterns is one of the most significant aspects of lithic analysis. Wear patterns in combination with the other lithic characteristics tell us a great deal about what kinds of activities were being carried out at a site.

Figure 10. Wear Pattern

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
Light Uni. Step	0.	51	11.3	16.6	16.6
Heavy Uni. Step	1.	6	1.3	1.9	18.5
Uni. Light Chip	2.	57	12.6	18.5	37.0
Bif. Light Attr.	3.	170	37.5	55.2	92.2
Bif. Heavy Attr.	4.	1	0.2	0.3	92.5
Bif. Percussion	5.	4	0.9	1.3	93.8
Rotary Light Chip	7.	1	0.2	0.3	94.2
Attr. on Proj.	9.	17	3.8	5.5	99.7
Polish	10.	1	0.2	0.3	100.0
	999.	145	32.0	Missing	100.0
	TOTAL	453	100.0	100.0	

The two types of unifacial step fracture wear (Fig. 10, codes 0 and 1) reflect heavy scraping or adze tasks such as scraping hard wood, bone, and antler (Ibid., 1977). These wear patterns are always correlated with high edge angles. At Abiquiu, the averages were 78.69 degrees for the light activity, and 83.14 degrees for the heavy variety. As noted above, these wear patterns are commonly found on the proximal ends of flakes but in this collection are largely on pieces of shatter or small cores. While only 57 tools (18.5%) have unifacial step fracture wear patterns, this is a relatively high proportion and indicates that scraping hard wood, bones, and antler must have been a regularly occurring and significant task at this site. Two adze tools with this kind of wear pattern are illustrated in Figure 11.

Unifacial light chipping wear (code 2) is the result of scraping medium-hard materials such as soft wood or a minimal amount of scraping hard materials. It is definitely the result of scraping tasks of various kinds. At Abiquiu, this wear pattern was consistently found with medium edge angles. It should be noted that this wear pattern accounts for the same proportion of the total wear pattern (18.5%) as do the combined step fracture wear patterns. Together, the three types of scraper/adze wear patterns account for 37.0% of all the wear patterns observed, which is relatively very high compared with the Abiquiu sites. These tasks were a common feature of the activities pursued at the site.

The two types of bifacial attrition (light and heavy; codes 3 and 4), reflecting cutting tasks, are quite distinct, with the light variety for softer materials such as meat, hide, soft plant fibers, etc. and the heavy for harder products such as grooving wood, bone, etc. It is obvious that most of the cutting tasks at this site were of the light form as shown by the 170 (55.29%) lithics with light attrition. Two flake knives with this kind of wear pattern are illustrated in Figure 11. The relative lack of heavy bifacial attrition may be a distinctive feature of this assemblage.

Bifacial percussion wear (code 5) is found on tools usually called "choppers." There are four of these tools that were probably used to

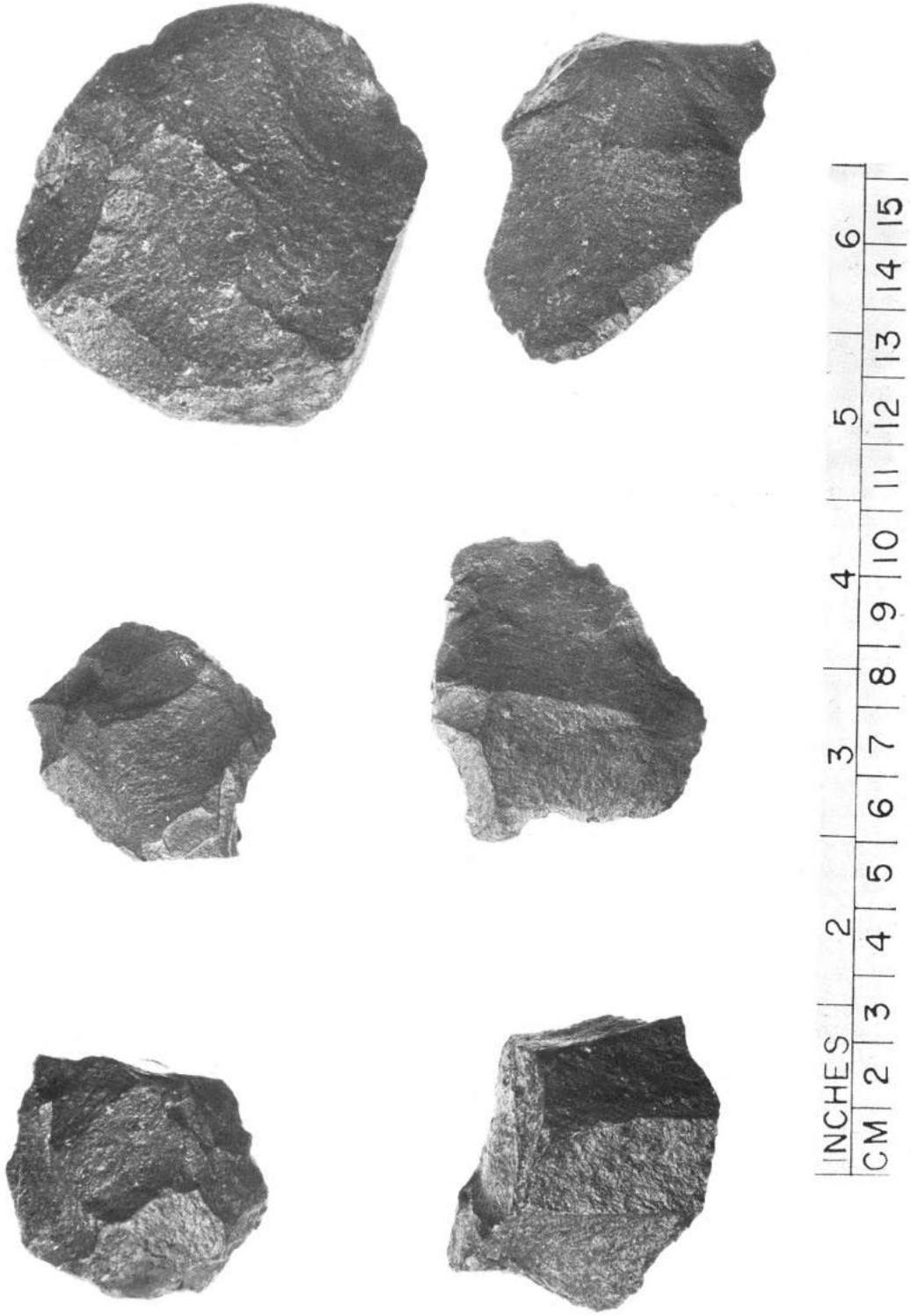


Figure 11. Lithic tools: upper left, two adzes; upper right, chopper; lower left, core; lower right, two flake knives.

separate plant fibers, pound animal fibers, and so forth. A tool with this kind of wear is illustrated in Figure 11.

Rotary light chipping wear is found on drills, only one of the two of which was analyzed (Map 2 and Fig. 11).

Attrition on the projection (code 9) is found on the graters and gouges as mentioned below. The 17 lithics with this wear pattern account for 5.5% of the utilized lithics, which is relatively high. At Abiquiu, this wear accounted for only 0.4% of the total (Ibid., 1977).

Polish is a rare kind of wear in Southwestern lithic assemblages. It generally results from dressing hides or processing plants with a scraping motion.

Utilized Edge Angles: Numerous lithic studies, including the work at Abiquiu Reservoir, have demonstrated that the angle of the working edge of a lithic tool is a significant variable and that the different kinds of wear are correlated with different ranges of edge angles. All edges of the utilized lithics in the present collection were measured (Fig. 12). The 145 lithics with code 999 are the unutilized lithics mentioned above. Of the utilized lithics, 77.0% are between 31 and 50 degrees. This undoubtedly reflects the large number of tools with light, bifacial attrition wear (Fig. 10) which have edge angles in this range. The unifacial step fracture wear should be in the range above 45 degrees.

Figure 12. Edge Angle

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
11-20 deg.	2.	1	0.2	0.3	0.3
21-30 deg.	3.	19	4.2	6.2	6.5
31-40 deg.	4.	149	32.9	48.4	54.9
41-50 deg.	5.	88	19.4	28.6	83.4
51-60 deg.	6.	40	8.8	13.0	96.4
61-70 deg.	7.	6	1.3	1.9	98.4
71-80 deg.	8.	5	1.1	1.6	100.0
	999.	145	32.0	Missing	100.0
	TOTAL	453	100.0	100.0	

Marginal Retouch: Many lithics received shaping or edge trimming by pressure retouch (Fig. 13), usually done with an antler tine. This is common on prepared tools such as projectile points but also occurs on simple flake knives and scrapers as well. Often it is done to blunt an edge or make a steeper angle more suitable for scraping. Codes 0 (labeled "unretouched") and 999 are both unretouched. These 431 lithics make up 95.1% of the total, showing that marginal retouch is uncommon, as it was at Abiquiu (Ibid., 1977). The most common kind of retouch occurs on the dorsal side of flakes. This and the other two varieties of unifacial retouch are generally associated with unifacial wear patterns and reflect the blunting and steepening of an edge to make a more effective scraper or adze.

Figure 13. Marginal Retouch

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
Unretouched	0.	1	0.2	4.3	4.3
Unifacial Ventral	1.	3	0.7	13.0	17.4
Unifacial Dorsal	2.	13	2.9	56.5	73.9
Bifacial	3.	2	0.4	8.7	82.6
Unifacial Other	4.	4	0.9	17.4	100.0
	999.	430	94.9	Missing	100.0
	TOTAL	453	100.0	100.0	

Multiple Usage: Many lithics are used in more than one place and for more than one task (Ibid., 1977). This information was recorded and summarized in the same manner as was done at Abiquiu. It will not be formally addressed here, but the data are presented in a series of figures (14-21).

Lithic Summary: The lithics used on the site are mainly fine-grained basalt quarried in the local Hondo Valley. The material had been trimmed of cortex and roughed out, probably at the quarry, prior

Figure 14. Secondary Utilized Portion

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
Ut. Orig. Surf.	0.	1	0.2	1.8	1.6
Prox. End Flake	1.	3	0.7	4.7	6.3
Dist. End Flake	2.	8	1.8	12.5	18.8
Int. End Flake	3.	3	0.7	4.7	23.4
Left Lat. Edge	4.	11	2.4	17.2	40.6
Right Lat. Edge	5.	16	3.5	25.0	65.8
Convenient Edge	7.	9	2.0	14.1	79.7
Notch	8.	2	0.4	3.1	82.8
Projection	9.	11	2.4	17.2	100.0
	999.	<u>389</u>	<u>85.9</u>	Missing	100.0
	TOTAL	453	100.0	100.0	

Figure 15. Secondary Wear Pattern

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
Light Uni. Step	0.	14	3.1	22.2	22.2
Heavy Uni. Step.	1.	1	0.2	1.8	23.8
Uni. Light Chip	2.	6	1.3	9.5	33.3
Bif. Light Attr.	3.	32	7.1	50.8	84.1
Attr. On Proj.	9.	10	2.2	15.9	100.0
	999.	<u>390</u>	<u>86.1</u>	Missing	100.0
	TOTAL	453	100.0	100.0	

Figure 16. Secondary Edge Angle

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
11-20 Deg.	2.	1	0.2	1.6	1.6
21-30 Deg.	3.	1	0.2	1.6	3.2
31-40 Deg.	4.	22	4.9	34.9	38.1
41-50 Deg.	5.	28	6.2	44.4	82.5
51-60 Deg.	6.	5	1.1	7.9	90.5
61-70 Deg.	7.	5	1.1	7.9	98.4
(Error)	50.	1	0.2	1.6	100.0
	999.	<u>390</u>	<u>86.1</u>	Missing	100.0
	TOTAL	453	100.0	100.0	

Figure 17. Secondary Marginal Retouch

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
Unifacial Dorsal	2.	2	0.4	66.7	66.7
Bifacial	3.	1	0.2	33.3	100.0
	999.	<u>450</u>	<u>99.3</u>	Missing	100.0
	TOTAL	453	100.0	100.0	

Figure 18. Tertiary Utilized Portion

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
Dist. End Flake	2.	1	0.2	11.1	11.1
Left Lat. Edge	4.	2	0.4	22.2	33.3
Convenient Edge	7.	3	0.7	33.3	66.7
Projection	9.	3	0.7	33.3	100.0
	999.	<u>444</u>	<u>98.0</u>	Missing	100.0
	TOTAL	453	100.0	100.0	

Figure 19 Tertiary Wear Pattern

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
Light Uni. Step	0.	1	0.2	11.1	11.1
Heavy Uni. Step	1.	1	0.2	11.1	22.2
Bif. Light Attr.	3.	4	0.9	44.4	66.7
Rotary Step	8.	1	0.2	11.1	77.8
Attr. on Proj	9.	2	0.4	22.2	100.0
	999.	<u>444</u>	<u>98.0</u>	Missing	100.0
	TOTAL	453	100.0	100.0	

Figure 20. Tertiary Marginal Retouch

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
Unifacial Dorsal	2.	1	0.2	50.0	50.0
Unifacial Other	4.	1	0.2	50.0	100.0
	999.	451	99.6	Missing	100.0
TOTAL		453	100.0	100.0	

Figure 21. Tertiary Edge Angle

Category Label	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
31-40 Deg.	4.	1	0.2	11.1	11.1
41-50 Deg.	5.	4	0.9	44.4	55.6
51-60 Deg.	6.	3	0.7	33.3	88.9
61-70 Deg.	7.	1	0.2	11.1	100.0
	999.	444	98.0	Missing	100.0
TOTAL		453	100.0	100.0	

to being brought to the site. It appears that tools were not made here except for simple flakes that were struck from cores (Fig. 11) and used directly without secondary trimming. This lack of tool-making evidence suggests that this was a seasonal camp and that prepared tools were made elsewhere, probably in a winter village. The main activities undertaken here were adze type scraping, light scraping, and light cutting.

These are all tasks that would take place in a summer shelter or seasonal camp. The large amount of primary wear, as well as the relatively high number of tools with multiple useage, indicate that the lithics brought to the site were well used. This, along with the generally large size of the lithics, strongly suggest that this was a tool-using rather than a tool-making site.

Prepared Lithic Artifacts

In contrast to the utilized flakes, scrapers, adzes, and so forth, discussed above, are the lithic artifacts that were carefully trimmed and shaped by percussion and pressure retouch such as projectile points, drills, and bifacial knives. A comparison with other studies (e.g., Wetherington, 1968) will show that this kind of artifact is what archaeologists have paid most attention to in the past. There are nine artifacts of this kind. It should be obvious that if we concerned ourselves only with prepared artifacts, and ignored the other lithics, there would be little information to obtain from sites such as this. Moreover, the site today is in the middle of a heavily settled area, and point collectors have been walking over the site for many years, carrying away most of the prepared tools.

Projectile Points: The six projectile points, illustrated in Figure 22, are readily divisible into two main types. The four small, corner-notched points (Fig. 22, top row) are a type generally found on Basketmaker III and Pueblo I sites (A.D. 600 to 900). As discussed below, the ceramic evidence indicates that this site dates between A.D. 1000 and 1200, which would suggest that this point style is out of temporal order. Points from Pot Creek Pueblo (Wetherington, 1968,



Figure 22. Projectile points and drills.



Figure 23. Representative ceramics from Arroyo Hondo - 1. Top row, Taos Black-on-white; middle rows, Taos Incised and Taos Punctate; bottom row, Taos Plain. Note the jar lug handle.

fig. 53) exhibit the more characteristic triangular, side-notched type found on sites from this ceramic period. However, Wetherington notes that corner notched points are more frequent during the Valdez Phase (A.D. 1000-1200). Either the earlier point style may have persisted later in the Taos District than it generally did elsewhere in the Southwest or this site was used over a longer period of time.

The second point type is the larger, corner-notched points in the second row of Figure 22. These points generally are found on Basketmaker II sites and would date closer to A.D. 400 or earlier. On the other hand, Wetherington again notes that points of this general style are present during the Valdez Phase at Pot Creek (Ibid., p. 66). Until more is known about the projectile point types of the Taos District, it will have to be assumed that all of these points were present during the Valdez Phase.

Drills: Two small well made drills were found (Fig. 22, bottom row). The bases are complete on both of them, and the tip is broken on one. Similar drills were found on the floor of a pit house in the Rio Grande de Ranchos Valley (Luebhen, 1968, fig. 4E). Both of these tools were made from basalt. While their form indicates that they were drills or perforators, they do not have rotary wear patterns that would prove that they were drills. It is possible that they represent a specialized point form.

Bifacial Knife: The upper blade of a well made bifacial knife was found. It is thin and triangular in shape and is made from basalt. The larger size indicates that it was a knife, but similar large bifaces are illustrated by Wetherington (1968, figs. 53 and 54) who suggested they were projectile points.

CERAMICS

Ceramics were common on the site (Fig. 23), 192 sherds in all. As can be seen in the summary chart (Fig. 24), they were unevenly distributed over the site, with the majority coming from the southwest quadrangle, which was the area of greatest lithic concentration. The majority of

the sherds came from the area of concentration noted on Map 2.

Figure 24. Arroyo Hondo - 1, Ceramic Summary.

TYPE	PROVENIENCE				TYPE TOTAL
	SW QUAD	SE QUAD	NW QUAD	NE QUAD	
Taos Black-on-white	7	2			9
Taos Plain	48	42	3	45	138
Taos Incised	19	10	4	9	42
Taos Punctate	1			1	2
Peñasco Micaceous				1	1
Provenience Total	75	54	7	56	192

All of the sherds conform closely with previously described types from the Taos District (Wetherington, 1968; Peckham, 1963), specifically Taos Black-on-white, Taos Plain, Taos Incised, Taos Punctate, and Peñasco Micaceous (Figs. 23 and 24). The presence of the first four types and the lack of Taos Corrugated and Santa Fe Black-on-white clearly show that the site dates from the early Valdez Phase (Wetherington, 1974, p. 47 and fig. 25; Herold 1968, fig. 7). If the site were early in the phase, a date of ca. A.D. 1000 to 1100 would be appropriate. On the other hand, the lack of indented corrugated pottery may reflect a local pattern, and the site could span the whole Valdez Phase. It is unlikely that it dates after A.D. 1200. The single sherd of Peñasco Micaceous is undoubtedly a historic period bean pot and has nothing to do with the main occupation.

A comparison with the sherds from Pot Creek Pueblo (Wetherington, 1968, fig. 28) will show that the designs on the Taos Black-on-white sherds are typical of those elsewhere in the Taos District. Taos Incised and Taos Punctate sherds compare well with the types from Pot Creek Pueblo (Wetherington, 1968, fig. 39) and the sites excavated by Peckham (1963, fig. 11) as do the Taos Plain sherds.

SUMMARY

A lithic and sherd area on the first terrace edge in the Arroyo Hondo Valley has been collected and analyzed. The detailed analysis of lithics indicates that this was a seasonally occupied location and that the residents probably wintered elsewhere in a pit house village, such as the large village on the second terrace less than one-half mile to the south and southeast (Map 1). The quantity of lithics and ceramics indicates that this was a well-used location. Previous archaeological work in the Taos District has shown that small, seasonally occupied surface structures were made during the Valdez Phase (Peckham, 1963, pp. 2-4; Luebben, 1968; Wetherington, 1968, p. 79). The implication of most investigations to date is that these small sites were seasonal camps, perhaps related to tending fields some distance from the larger pit house villages at which they would have wintered.

The collection performed in this study only removed the surface material. It seems highly likely that there is a buried structure somewhere in the area of concentration noted on Map 2. While initially one would anticipate a shallow, surface structure such as have been found in the Rio Grande de Ranchos Valley, it is possible that there is a pit house here.

Future research should incorporate this site and others like it in the vicinity into a full reconstruction of the subsistence settlement system which probably centered on the pit house village to the south (LA 12471). There is some indication in the ceramics of the village that it persisted later than this satellite camp site. If so, it may be possible to work out changes in the system over a several hundred year period. Regardless of the nature of future research, this component of the system has been salvaged and is available for future research.

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EL PASO PHASE ROOM AT ORO GRANDE

VERNON RALPH BROOK

INTRODUCTION

While reconnoitering surface sites near Oro Grande, New Mexico in 1964, a prehistoric structure was found, the walls of which had been exposed by recent rains in the area. After lengthy consideration, it was decided to excavate the room in hopes that it might yield evidence to substantiate information that was being obtained at the Hot Well site near Newman, Texas. At the time of excavation no previous work had been reported from the area. The closest documented site was at Escondida, some 20 miles northeast, and information on three rooms excavated there was scanty at best (Strain, 1967). At the time of discovery the only known archaeological work in the area was being done by a few members of the El Paso Archaeological Society, and only Donald Lehmer's report on the Jornada Branch was available for reference.

THE SITE

The room is about two miles southwest of Oro Grande (Fig. 1), and at the time of excavation unstabilized sand dunes were encroaching on the area while runoff water had begun to form at least two severe gullies. Banks of the gullies were covered with artifacts such as metate fragments, manos, varied lithic tools, pottery sherds, and three exposed fire hearths. Drainage was northeast to southwest. Evidence of surface hunting by unknown parties was to be seen in the occurrence of tire tracks and foot prints covering the entire area.

Elevation of the area is 4175 feet, and while exact map coordinates are known they are not being reported herein because of the large amount of vandalism that is presently occurring in local prehistoric sites. Legitimate investigators may contact the author for precise location.

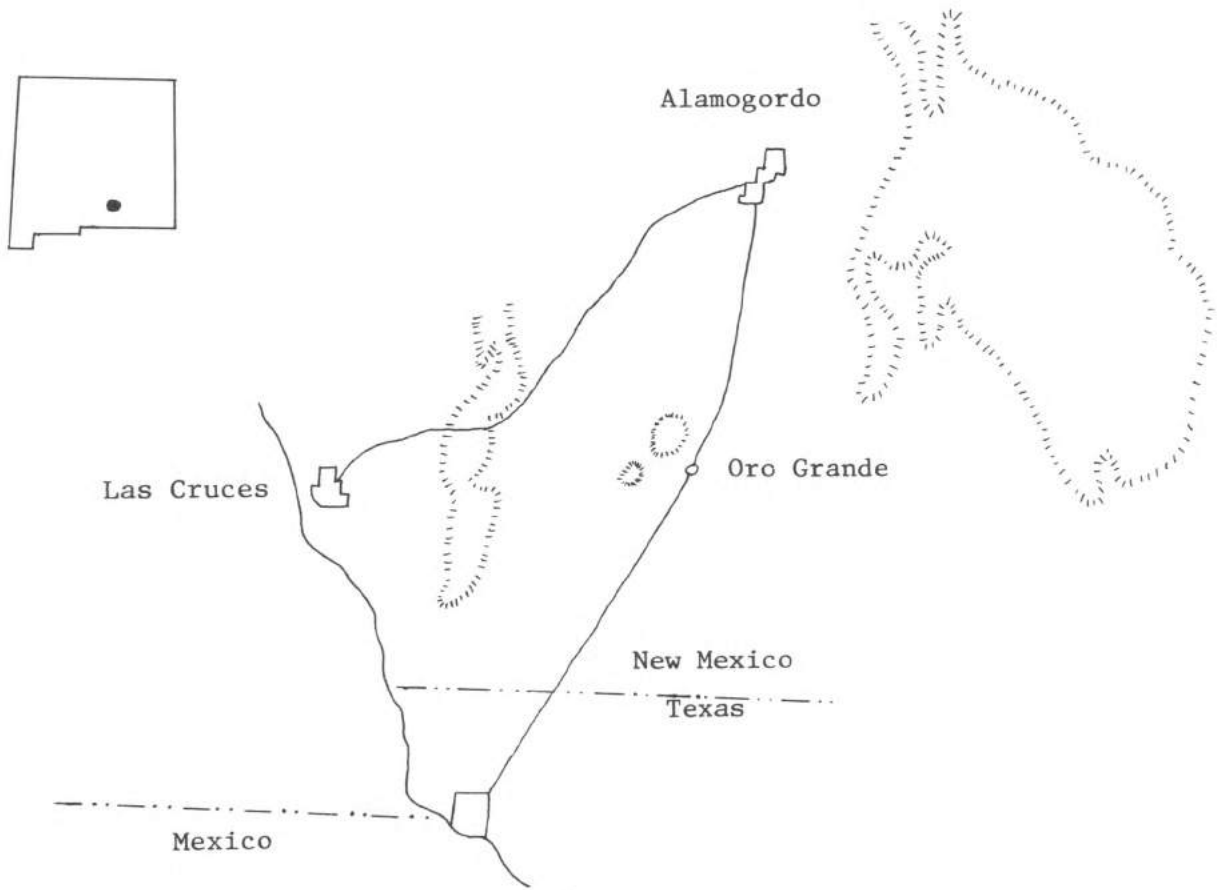


Figure 1. Location of the Oro Grande site.

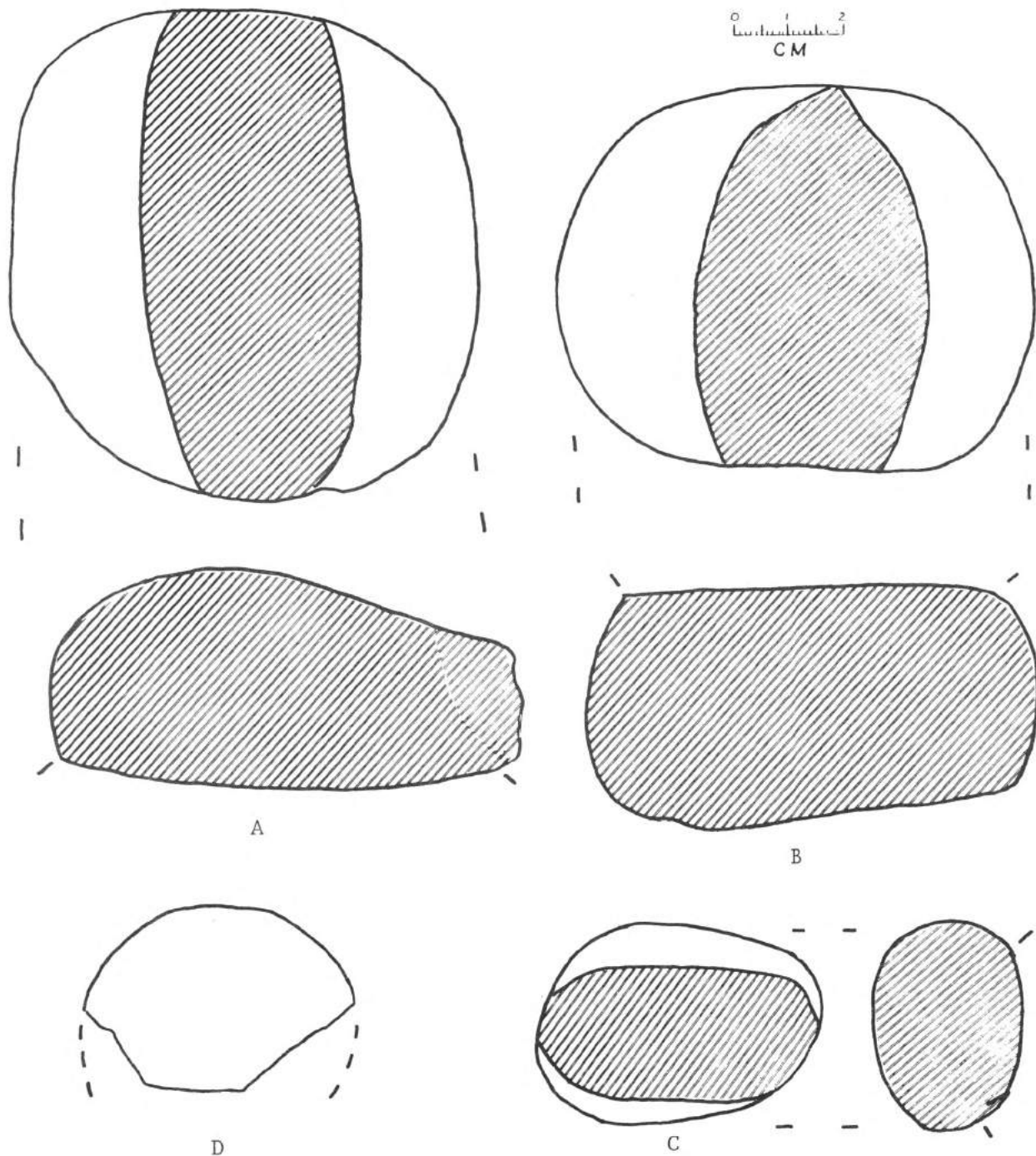


Figure 2. Three manos (A-C) and a rock ball fragment recovered from the surface at Oro Grande.

Vegetation surrounding the site can best be classified as Lower Sonoran.

Area of surface debris covered about 100 square meters as evidenced by disc beads, scrapers, knives, metate and mano fragments, a rock ball fragment (Fig. 2), several eating or food preparation locations where bones of unidentified species were strewn, and some ten different types of pottery. The surface pottery included 93 sherds of El Paso Polychrome, 4 of El Paso Brown, 24 Chupadero Black-on-white, 1 Three Rivers Red-on-terracotta, 1 Playas Red Incised, 1 San Andres Red-on-terracotta, 2 Casa Colorado Black-on-white, 1 St. Johns Polychrome, 1 Black Smudged Corrugated, and 2 Alma Corrugated.

THE EXCAVATION

The Oro Grande room also was called the Pronto Site because of the effort to excavate it as quickly as possible. This report is restricted to the excavation of the structure (Figs. 3-4). All walls had been exposed but there was no evidence of previous digging in the room. All surface material was collected and kept separate from that in the fill and that on the floor. Walls were outlined by sweeping with a broom, the fill was removed to within 8 cm. of the floor, and the remainder was troweled into buckets, every fifth bucket being screened through one-eighth inch mesh. After the floor was completely troweled, it was swept, measured, and photographed. Then the floor features were excavated and subfloor tests were made. Sherds and lithic material from each level were analyzed. Approximately one half of the fill was wind blown sand (averaging 33 cm. from the surface); the lower fill was a gray colored adobe (from the room and part of the walls).

Outside wall lengths measured as follows: south - 4.6 m., west - 4.96 m., north - 4.68 m., and east - 4.85. Thickness of the southeast wall was 51 cm., the southwest wall - 47 cm., the northwest wall - 51 cm., and the northeast wall - 44 cm. The top of the wall in the north corner was 64 cm. above the floor and from the top of the wall

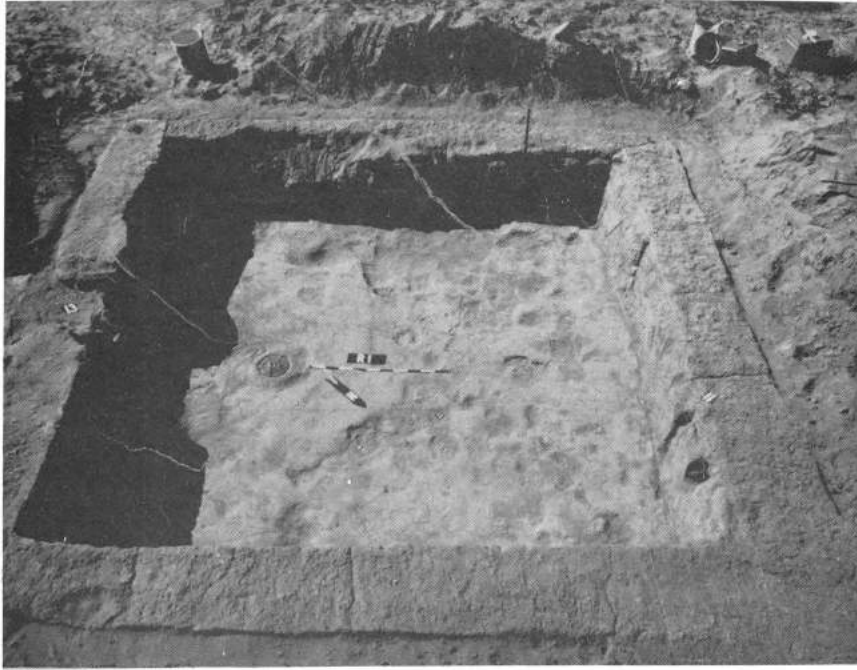


Figure 3. The Oro Grande room, looking southwest.

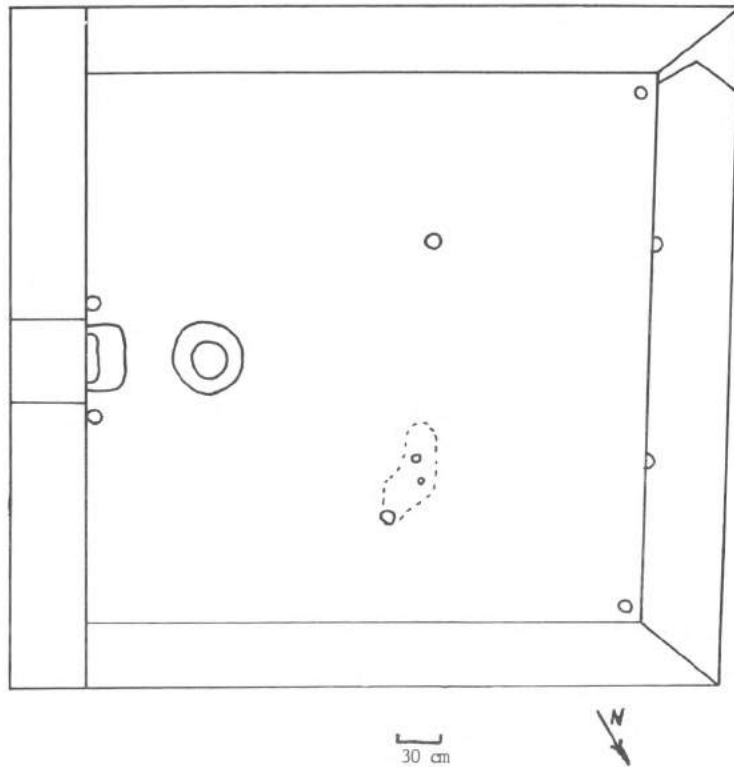


Figure 4. Plan of the Oro Grande room.

in the south corner to the floor was 57 cm. Walls exhibited vertical and horizontal cracks, but no evidence of plastering was found.

The southeast wall had been built first, as the adjoining walls abutted it. Construction of the northwest wall must have begun at the same time the terminus of the two adjoining walls were laid down because the corners of these two walls joined the northwest wall at 45 degree angles.

Of the eight post holes in the floor, two (23 cm. dia.) near the center of the room were believed to have held the major roof support posts. Another two (9 cm. dia.) were set into the northwest wall. The bottom half of the west hole had been filled with adobe to 34 cm. above the floor (Fig. 3). Two other holes (21 cm. dia.) occurred in the north and west corners of the room. On either side of the doorway two others were spaced 65 cm. apart. Depths of all holes ranged from 15 cm. to 39 cm., but none of them had a stone support slab at the bottom.

Around the two major post holes were other post imprints suggesting stabilization was necessary after the roof was added. The floor of adobe, but of an uneven level, particularly near the post holes, was laid directly on undisturbed soil.

No roof material of any kind was found other than chunks of adobe in the fill.

A raised, circular, clay-lined fire hearth located in the front of the doorway, 84 cm. from the southeast wall, had an inside diameter of 23 cm. with a maximum outside diameter of 56 cm. The top of the firepit stood 5.5 cm. above the floor. Depth of the flat-bottomed firepit was 5.5 cm. A small, circular depression, 3 cm. in diameter, extended 2 cm. below the base of the pit. This depression contained bone fragments. On the south side, outside the firepit, were more bone fragments mixed with ashes.

Three other pits were irregularly spaced along the east wall.

A door sill, 52 cm. wide, placed midway along the southeast wall, sloped inward to 10 cm. below the outside plastered patio floor. Below

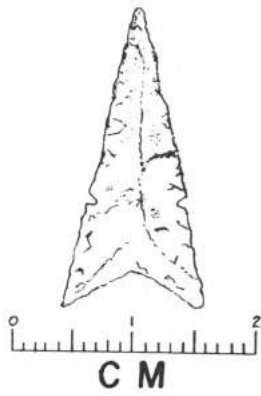


Figure 5. Projectile point found on the room floor.

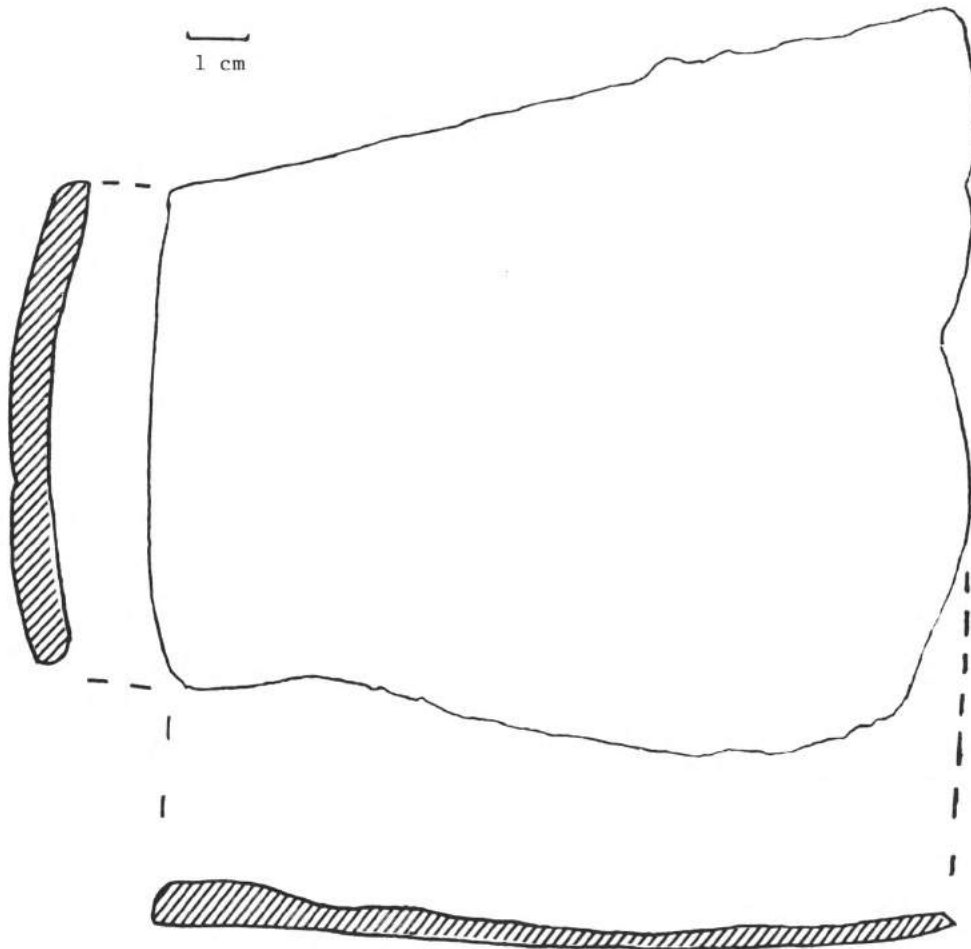


Figure 6. Pottery "plate" from the Oro Grande room.

the sill, inside the room, an adobe step (39 cm. long, 27 cm. wide, and 22 cm. high) abutted the wall. Above this, another adobe slab (34 cm. long, 9 cm. wide, and 11 cm. thick) of lesser width could have been a second step or fallen wall or roof material. The door sill was 12 cm. below the top of the remaining wall.

Of 18 sherds recovered from the fill and floor, the four on the floor were El Paso Polychrome. Those in the fill were El Paso Polychrome (9), Chupadero Black-on-white (2), El Paso Brown (2), and one piece of a black, polished, incised ware (Ramos Black Incised?). In addition, there was one El Paso Polychrome "plate" on the floor that had been made from a bowl fragment (Fig. 6). The end opposite the rim had been smoothed but the other two edges were unworked.

Ten lithic artifacts on the floor included a triangular side-notched projectile point of the Harrell type (Fig. 5) and a disc bead in the north corner. Six scrapers scattered irregularly throughout the room exhibited percussion and pressure flaking (Fig. 7). A hammerstone was in the south corner and a knife in the east corner.

After photographing the room it was backfilled. In the spring of 1968, the fire hearth was uncovered so that samples could be taken for archaeomagnetic dating by the Earth Science Laboratory in Norman, Oklahoma. Dates of A.D. 1200 for the first firing and A.D. 1230 for the last firing were subsequently reported (Brook, 1975, p. 18).

DISCUSSION

When Lehmer defined the Jornada Branch he placed the El Paso as beginning sometime between A.D. 1150 and 1250 (Lehmer, 1948, p. 88) with El Paso Polychrome as the dominant ware. The archaeomagnetic dates for Oro Grande and the floor pottery strengthen his hypothesis. Other El Paso Phase sites have been archaeomagnetically dated near the end of the 14th century (Brook, 1975, p. 21). The date for Oro Grande may be considered to be indicative of the formative stage of this phase and characterized by wide walled structures with deep floors; lateral entryways with an inside step; patios with well made floors abutting the rooms; orientation of the entry toward the south;

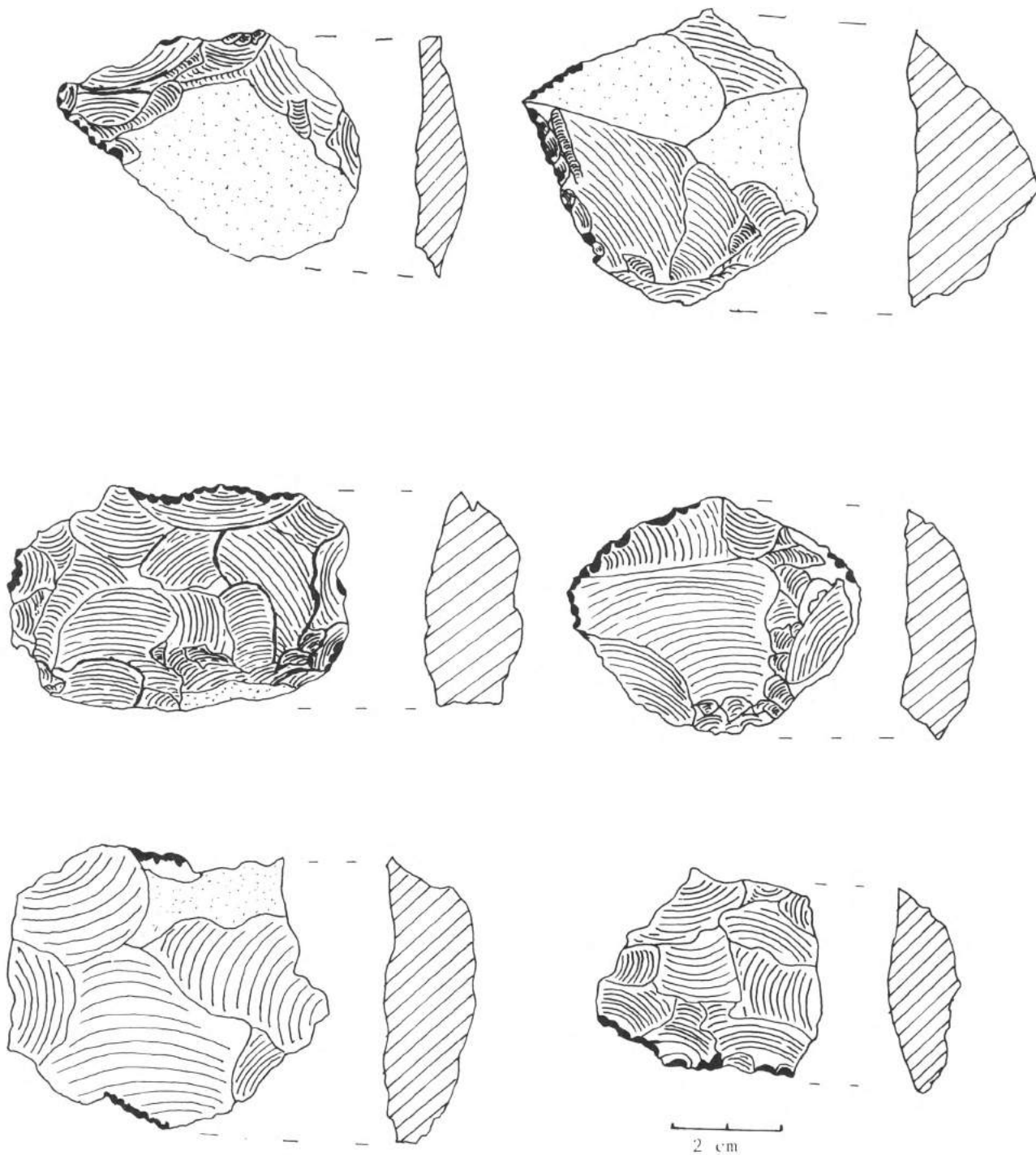


Figure 7. Scrapers from the Oro Grande site.

utilization of broken ceramics for other uses such as plates; small triangular, side-notched points; a variety of wood and leather working tools; and the use of rock balls, etc.

Collaborating data for the aforementioned traits has been reported for the Hot Well site, some 35 miles to the south (Brook, 1970, pp. 1-16).

CONCLUSION

The one excavated room at Oro Grande is important because it dates at the beginning of the El Paso Phase. During this time (about A.D. 1200) building techniques were different from those employed later.

El Paso, Texas

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LA 10607: THE MANZANARES SITE

CHARLIE R. STEEN

Approximately three km. northeast of the Lamy, New Mexico railroad depot and on the right bank of Galisteo Creek is a large pre-Columbian Indian ruin, LA 10607. The site, at the lower end of a low ridge which extends from the mesa on the north side of the valley to the creek, apparently was built to the creek bank, but construction of the AT & SF Railway in 1881 cut into the southern edge of the ruin.

It is estimated that the site has some 250 ground floor rooms and many of them, perhaps most, once stood two stories high. The ruins have been known for many years, and an early survey of the Galisteo Basin by the Laboratory of Anthropology located a site in this vicinity, LA 1104. The recorded location and description are so indefinite that when the recent excavations began, a new number was allotted. Also, for several years I referred to the ruin as the Lamy Site and then learned that it had once been called the Manzanares Site so I changed my term to that earlier designation. "Manzanares" is a more fitting name because the railroad construction camp of that name was located on the broad flat just south of the ruin. Nothing now remains of the railroad camp.

THE RUIN

Two low mounds comprise the site. The larger one is that to the south, near the creek and railroad track (Fig. 1). This portion of the ruin was mostly two stories high and six or eight rooms deep around a plaza. The rooms which faced on the plaza were only one story high. Rooms of the northern mound appear (from surface indications only) to have been one story high.

Some early digging is evident in a midden on the southwest side of the ruin. One opinion expressed was that it had been done by N. C. Nelson (1914), but since the site is not located on Nelson's map of the Galisteo Basin, it is unlikely that he did work here. The digging must be

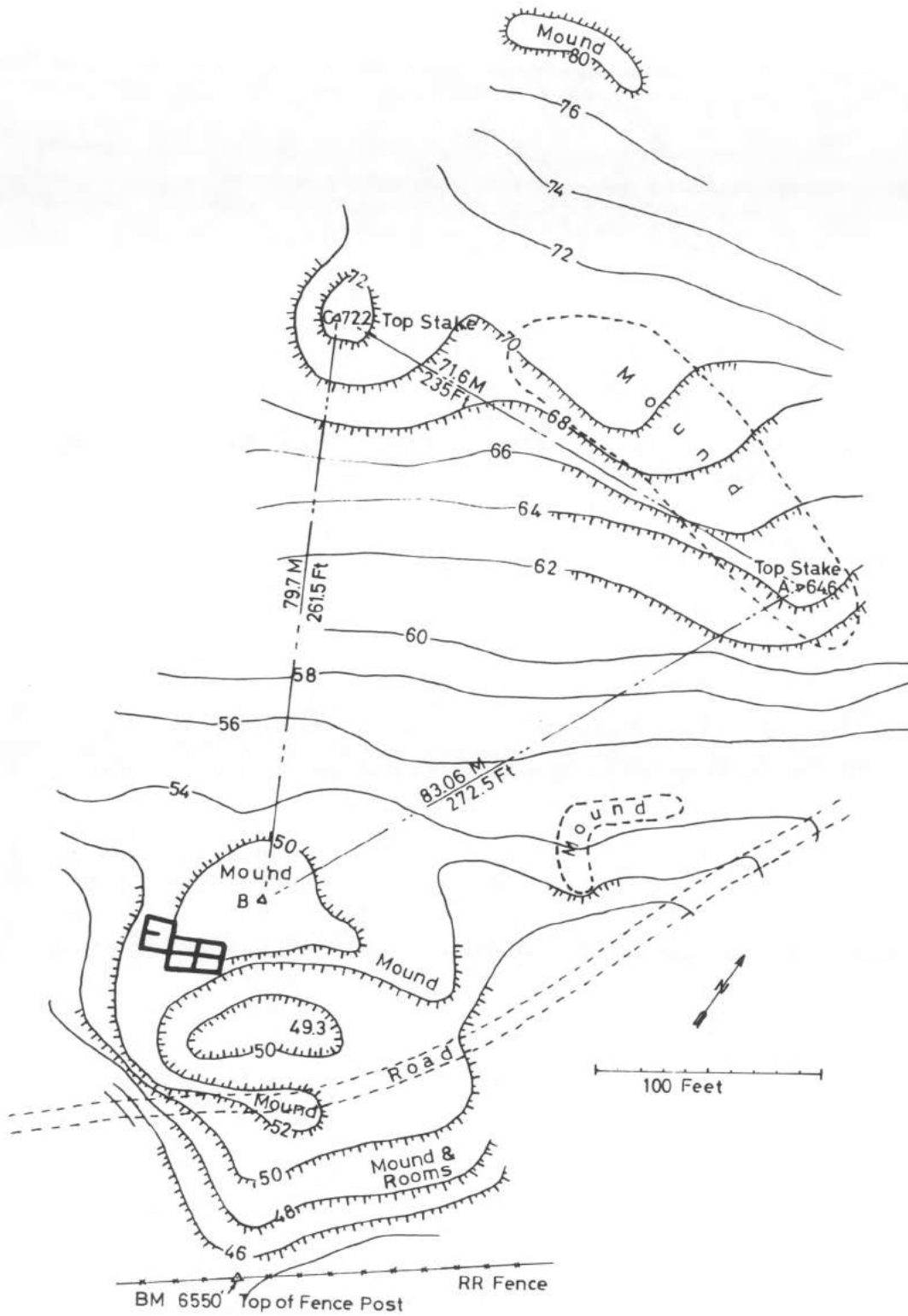


Figure 1. LA 10697 ground plan. Rooms 1-6 are located in the rectangular blocks shown near the south end of the site. (Plan drawn by William S. Turney, Santa Fe)

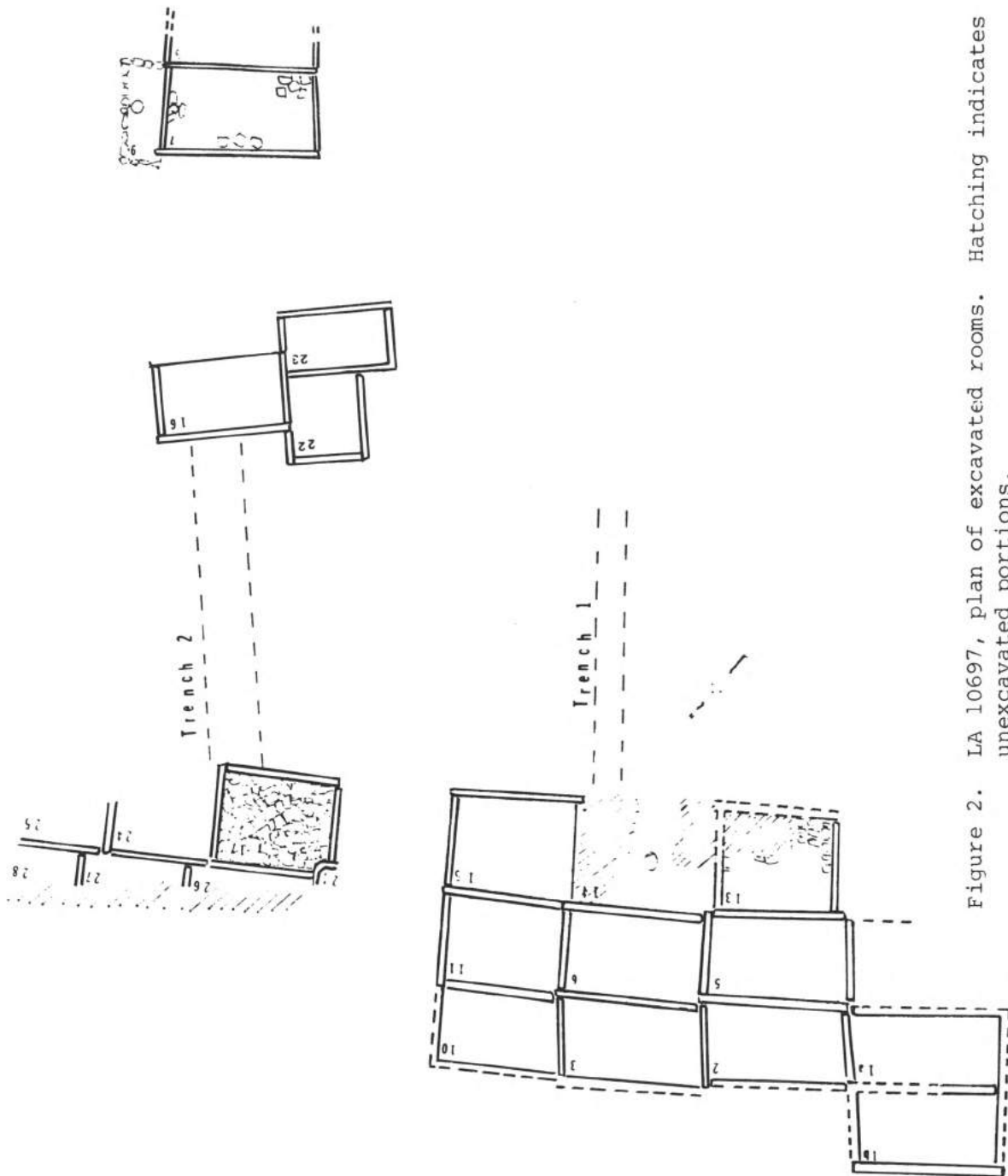


Figure 2. LA 10697, plan of excavated rooms. Hatching indicates unexcavated portions.

ascribed to "person or persons unknown."

THE EXCAVATIONS

In the summer of 1971, the Amrep Corporation, then owners of the land, planned to subdivide the property in this part of the valley and, as an attraction, intended to create a small park around the ruin and wanted a small portion of it excavated; the exposed rooms were to be roofed. Mr. James Colgrove, of the company, asked if I would be willing to oversee the work if the company furnished tools and supplies, and I agreed. The newly established Santa Fe Chapter of the Archaeological Institute of America served as sponsor for the work and during that summer we dug for two sessions of ten days each with volunteer workers. In 1972, we had one similar session, and also a class in Methods in Archaeology from the College of Santa Fe met and dug there. During the summers of 1973-1977, only the college class worked at the site. In the latter year it was decided to end the dig. By the end of 1977, we had worked in 27 rooms, all but six of which were excavated completely (Fig. 2).

THE ROOMS

With a single exception, which will be described later, all the excavated walls of the pueblo were of a form of *terre pise*, or rammed earth. The walls measure about 20 cm. in thickness and are built up in courses which average a little less than 0.5 m. Both interior and exterior surfaces of the walls are smoothly plastered with adobe. Floors, even those of storage rooms, are of hard packed adobe.

Fire pits in ground floor rooms are round, less than 0.5 m. in diameter and 7 to 9 cm. deep. Generally, a slight adobe rim projects no more than 1 or 2 cm. above the floor line. In the fill of rooms which were two stories high we found fire pits from both the second floor and roof. These remains, of round or oval slabs of sandstone and burned clay, contained wood ash.

Throughout the excavated rooms we recovered many thin slabs of sandstone of irregular shape, measuring less than 2 cm. thick and

10 to 20 cm. long. The purpose of the slabs is not known for certain, but the position of a number of them in relation to large sections of fallen wall leads me to believe that they were laid on wall tops as capstones to retard erosion.

Few doorways were found. Two rectangular doors or openings, one in the southeast and the other in the east wall of room 1, were blocked with adobe. The tread of one of the doors was 0.65 m. above the floor and the other was 0.5 m. above the floor. Room 13, one story high and facing the plaza, had a large rectangular doorway with the tread at floor/ground level. A single storied room (16) on the opposite side of the plaza also had a large doorway at floor level, and room 7 had an opening high in the wall (Fig. 3).

The second story fill of room 1 contained small pieces of plaster painted red, white, and black, but none of the pieces is large enough to give a hint of design or subject matter.

Another painted wall was indicated in a second story room on the southeast side of the plaza. At the south end of trench 2 and in the fill of rooms 16 and 22, rather large chunks of plastered wall painted with a geometric design were recovered. One piece, measuring 20 x 35 cm. is reproduced in Figure 4. The adobe plastered wall first was painted white, then the red, yellow, and black applied.

No kiva was found during the excavation even though two trenches across the plaza were dug in attempts to locate one. When work began, one grid was laid out at the extreme southeast end of the ruin where we saw the only concentration of building stone at the site.

This grid covered rooms 7, 8, and 9. Room 8 was mostly destroyed by railroad construction and nothing was learned from it. The other two were interesting and puzzling. Room 7, 3 x 4 m., was the largest room excavated. It had no features other than three large remnants of a flagstone floor (Fig. 2). Room 9, long and narrow, had crudely laid walls of masonry and a poorly preserved floor. In the floor a large round firepit, slightly more than 0.4 m. deep, was filled with wood ash and sealed with clay similar to the manner in which fire pits of aban-



Figure 3. Room 7. Door-like opening high in the north wall.

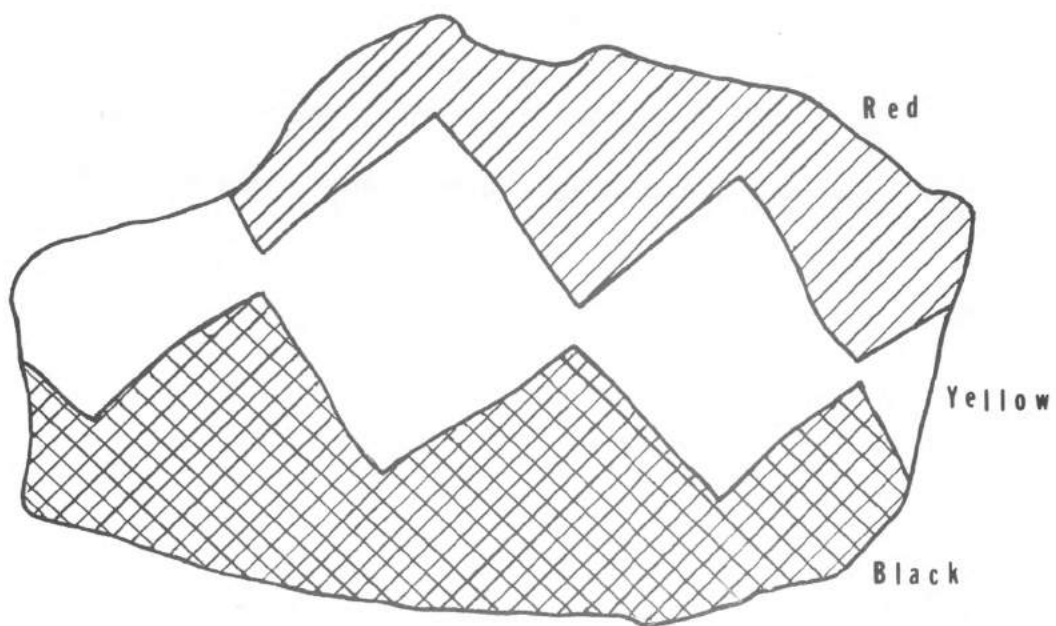


Figure 4. Fragment (20x35 cm.) of a painted wall from a second story room.

doned rooms were treated on the Pajarito Plateau.

Room 17, small and square with an exceptionally well laid flagstone floor, contained no other features (Fig. 5). Whether rooms 7, 9, and 17 were for ceremonial use might be a debatable question, but they were more than dwellings or storage rooms.

DENDROCHRONOLOGY

Charred ceiling timbers were found in four rooms: 13, 16, 22, and 23. These specimens were sent to the Laboratory of Tree-Ring Research of the University of Arizona. Under the Laboratory's accession number of A-437, April 13, 1978, these all were classified as Pinyon Pine with a single specimen of Ponderosa Pine from room 22. The dates submitted by the Laboratory are:

	SPECIES	DATING	
		INSIDE	OUTSIDE
Room 13	Pinyon	1121p	1276 + vv
Room 16	Pinyon	1242p	1303r
Room 22	Ponderosa	1071	1270 ++ vv
	Pinyon	1204p	1296 + r
	Pinyon	1231p	1296 + r
	Pinyon	1235p	1296 + r
	Pinyon	1244p	1302r
	Pinyon	1252p	1302c
	Pinyon	1219p	1304vv
Room 23	Pinyon	1233p	1269r
	Pinyon	1224p	1276vv
	Pinyon	1210p	1277 + vv
	Pinyon	1236p	1296r
	Pinyon	1270p	1304vv
	Pinyon	1257p	1307vv

Room 13 might have been built in the later part of the 13th century, but only a single specimen was recovered from that room. All other wood recovered suggests building activity early in the 14th century.



Figure 5. The flagstone floor of Room 17.

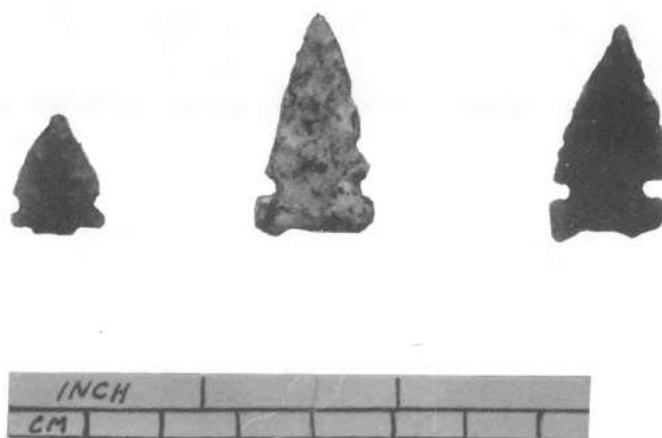


Figure 6. Projectile points. Center specimen of Pedernal chert, others of obsidian.

POTTERY

Not all the pottery recovered from the site has been cleaned and classified; about one-half the sherds remain uncleaned in sacks. Painted ware sherds which have been counted tally:

Galisteo Black-on-white	477
Santa Fe Black-on-white (This includes 2 basket impressed sherds.)	434
Chupadero Black-on-white	6
St. Johns Polychrome	4
Abiquiu Black-on-gray	1
Los Padillas Black-on-red	1
Gila Polychrome	1

One sherd of Reserve Fillet Rim also was recovered from the ruin.

A single poorly executed Galisteo Black-on-white bowl was found in the fill of room 24 (it fell from the second story floor) and a small corrugated cooking olla came from the fill of room 16 (it fell from the roof of that one story structure).

One other pottery artifact should be mentioned. From the fill of room 23 came a disc-shaped specimen from the base of a large olla. Striations on the lower, convex surface of the disc indicate that it was once used as what potters term a "slow wheel"--a platform on which a vessel in the making can be rested while its walls are built up.

Two worked sherds, both Santa Fe Black-on-white and both apparently used as scrapers, were found during the work.

STONE

Ground and Polished Stone

Four metates found are of the slab type, designed for use with a two-hand mano. A number of broken grinding slabs also were found. Several small grinding slabs were deeply stained with ochre.

One ground basalt, full-grooved axe was recovered as well as a maul, also of basalt. Two arrow shaft straighteners are of sandstone.

Three fragments of ground turquoise came from the ruin but not one

is a complete artifact. Beads made of selenite, chert, and fossil crinoids were recovered.

Two hematite cylinders were found.

Flakes of mica, of common occurrence in the fill of the ruin, were quite small in size and no use of this material can be determined.

Flaked and Chipped Stone

Projectile points from the ruin are all side-notched. Of those recovered, 4 are of obsidian, 2 of pedernal chert, 2 of a dense white chert, and 3 of jasper (Fig. 6).

Flaked axes are full-grooved with a single bit, one of a light blue limestone and two of granitic stone.

A variety of rough flaked chopping and scraping tools was recovered. Most of these are of quartzite, chert, and obsidian. Two particularly interesting specimens are a corner-tanged knife of quartzite and an end scraper of Alibates flint.

BONE

A large variety of pointed bone tools were made from both bird and mammal long bones. One antler tine flaker came from room 13.

SHELL

From the fill of room 14 came a pendant of abalone shell. The only other shell specimen is a small unidentifiable bead.

VEGETAL MATERIAL

Numerous charred corncobs and two cucurbit seeds were found.

In the fill of room 2 was a 4 x 5 cm. section of flooring with some poorly preserved matting, plaited in an over-under-one pattern, attached to it. The northerly end of room 23 was covered with the same sort of matting which measured 1.5 x .75 m. with some selvage attached. Here also the mat itself was poorly preserved but the fragments of reeds and the impression on the floor gave a good outline of the mat.

Santa Fe, New Mexico

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AN INSTRUMENT SURVEY OF GALLINA SITES ON RATTLESNAKE RIDGE

RICHARD A. BICE

The Gallina sites in northcentral New Mexico have been the subject of a number of studies and excavation projects during recent decades. This report presents the results of a detailed instrument survey, completed in September 1978, on a series of sites on Rattlesnake Ridge, north of Llaves, New Mexico. The survey was part of a week-long field seminar sponsored by the Archaeological Society of New Mexico, the Laboratory of Anthropology in Santa Fe, and the Ghost Ranch in Abiquiu. The program, under the field supervision of the author and the overall direction of Florence Hawley Ellis, was one of a series of seminars conducted at Ghost Ranch in recent years aimed at developing field and laboratory competence among members of the Archaeological Society and its local affiliated societies.

By agreement with the U.S. Forest Service, the survey was limited to measurements of exposed architectural features and their relationships to the local terrain. The survey did not cover the inspection or study of archaeological evidence such as surface sherds or lithic material.

A SYNOPSIS OF THE GALLINA PHASE

The Gallina Phase, also known as the Largo-Gallina Phase, is considered to be a cultural stage ancestral to that of present-day Jemez Pueblo people (Reed, 1949; Ellis, 1964, pp. 52-55). The Gallina people, thought to have descended from groups that dwelt in the upper San Juan Basin, crossed the continental divide via the Largo Canyon and occupied lands extending from north of Llaves southward to Cuba, in northcentral New Mexico. They lived here during the period from about A.D. 1050 to 1300.

Many investigators have studied the Gallina ruins during the last four decades. Throughout this period and continuing into the present,

the interpretation of the sites has evoked much debate. Mackey and Green (1979, p. 145) describe the various structures that may constitute a Gallina site:

Pithouses are distinguished by circular depressions with associated artifacts. The surface indication of a unit house is a square mound of rubble with a central depression. Storage structures are frequently located in caves or overhangs but are also found as mounds of rubble too small for habitation purposes. A combination of unit houses and storage structures in a large amorphous mound of rubble constitutes a small village. Ill-defined structures with little rubble are remains of surface structures consisting of a roof-support construction of poles and mortar without walls; these are customarily called 'ramadas' in the Largo-Gallina literature (Bahti, 1949). Infrequently, one finds agricultural terraces or grid borders. The last category of typical Largo-Gallina structures are towers, which consist of peaked, circular mounds without a central depression.

The pithouses and the unit houses (see illustrations, Dick, 1976; Green, 1964, pp. 30, 33) are typically divided into two unequal sections by means of two storage bins extending inward from opposite walls. The smaller section served as a storage area, the larger as the living space. The living area contains a firepit and a banco shelf extending around the wall to the storage bins. Access between the living and storage areas is through a gap between the inside ends of the bins. A deflector, centered in the gap, is flanked by a firepit in front and immediately behind are two holes to steady a ladder to the roof hatch. The deflector shields the firepit from drafts of air, descending through a ventilator shaft, that enters the structure via an opening in the storage area wall at floor level.

These structures obviously were used as dwellings. The purpose and use of the towers is less obvious and has caused much speculation. Somewhat smaller in floor plan than the unit houses or pithouses, the

towers had massive lower walls, and evidence indicates that they stood well above any adjacent structures. Hibben (1948, p. 36) suggests that they were built for defense. Pendleton (1952, p. 151) states that Tower 1 on Rattlesnake Ridge, designated as Bg-20 in this report, was remodeled to contain storage bins. Ellis (personal communication and unpublished manuscript, pp. 36-37) suggests that the towers may have been used for signal fires. Mackey and Green (1979), after a statistical study of many sites and their attributes, conclude that the towers of the Gallina region were defensive in nature, but that they also sometimes served a food storage function.

Holbrook and Mackey (1976) offer evidence that the climate became more arid during the latter part of the Gallina occupation and living conditions probably deteriorated, leading perhaps to rivalry and bloodshed. In any event, the high proportion of burned Gallina sites, estimated at 34% by Mackey and Green (1979, p. 145), and skeletal evidence of combat (Bahti, 1949, p. 55; Dick, 1976, p. 90) strongly indicate social unrest.

The instrument survey, while adding little new knowledge concerning the material culture of the occupants of Rattlesnake Ridge, provides an up-to-date picture of the structural remains and building sites.

THE FIELD PROGRAM

The field program was designed to develop competence among the participants of the ASNM seminar in the use of surveying instruments, with emphasis on the transit and the alidade. Rugged terrain provided a challenge to the survey teams. Rattlesnake Ridge has an abrupt, steep face of exposed rock formations on the east side and slopes to the west and south sides toward a drainage channel. The sites occur along the crest of the north-south ridge. The closest USGS benchmark is in the valley east of the ridge.

Two transit teams were organized to plot the site locations with respect to the valley benchmark. The team under John Hayden conducted a location and elevation survey of the sites on the ridge and obtained

data on all sites except Bg-20-3, 5N, and 6N. Site Bg-20-3 was surveyed by the other team, and, in a subsequent visit to the ridge, the positions of sites 5N and 6N were marked on an aerial photograph. The exact locations of all other sites also were confirmed on the same photo map. Elevations were measured from an arbitrary project datum on the ridge. Approximate elevations for 5N and 6N were subsequently established from the USGS map.

The other transit team, headed by William Perret, took on the task of tying the ridge sites to the USGS benchmark, a survey point which was located near the road in the valley east of the ridge. Site Bg-20-3 was used as the tie-point between the valley and the top of the ridge. Its azimuth and elevation coordinates having been established, this site was then measured with respect to site Bg-19, thus providing the final link between the benchmark and the remaining sites on the ridge. The Perret team also established a ground distance measurement to provide a scale for the aerial photo map.

The remainder of the participants were divided into four alidade teams with responsibilities for mapping individual sites. The alidade team under Robert Weber concentrated on mapping the complex tower site, Bg-20, and in tying this site to Bg-20-2, a water storage reservoir previously mapped by Perret in 1976. The alidade used by the Weber crew was a professional instrument on loan from the Chaco Center.

The alidades used by the other teams headed by Kenneth Ewing, Richard Renwick, and Robert Watt were homemade instruments containing a level and non-telescopic sights. The "poorman's alidade" used by these teams is an instrument system that can provide adequate accuracy in planview and elevation measurements when mapping small sites or features. The instrument can be built with limited means without access to a professional model.

The instrument system is shown in Figures 1 and 2. The alidade consists of a base to which a sighting body is hinged. The body sight-angle can be controlled by a thumb screw. The body and base elements are made of particle-board to take advantage of the flatness and stability of this material. The particle-board is waterproofed with

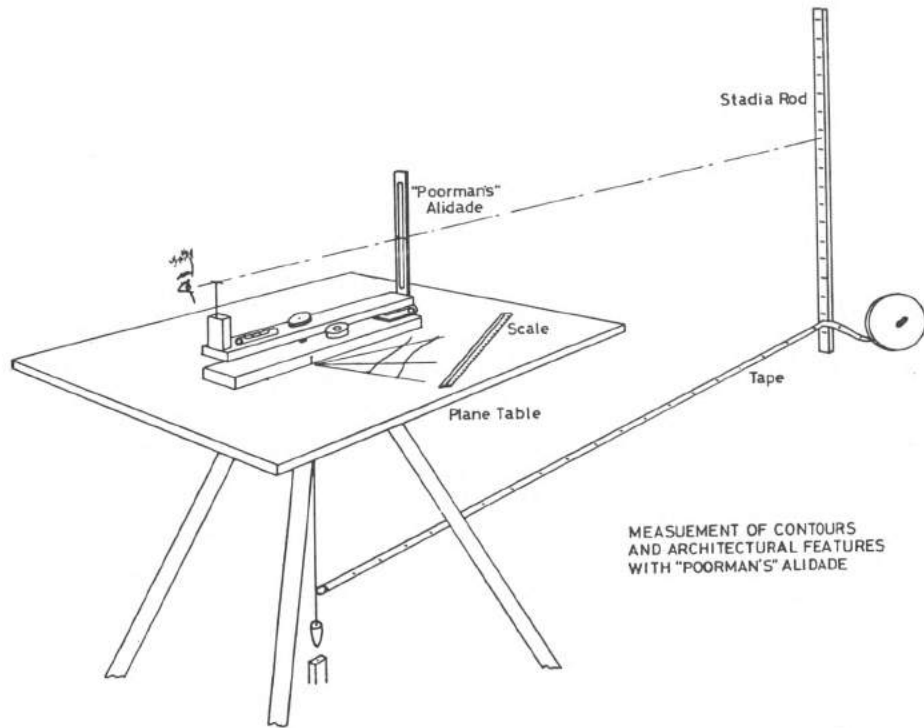


Figure 1.

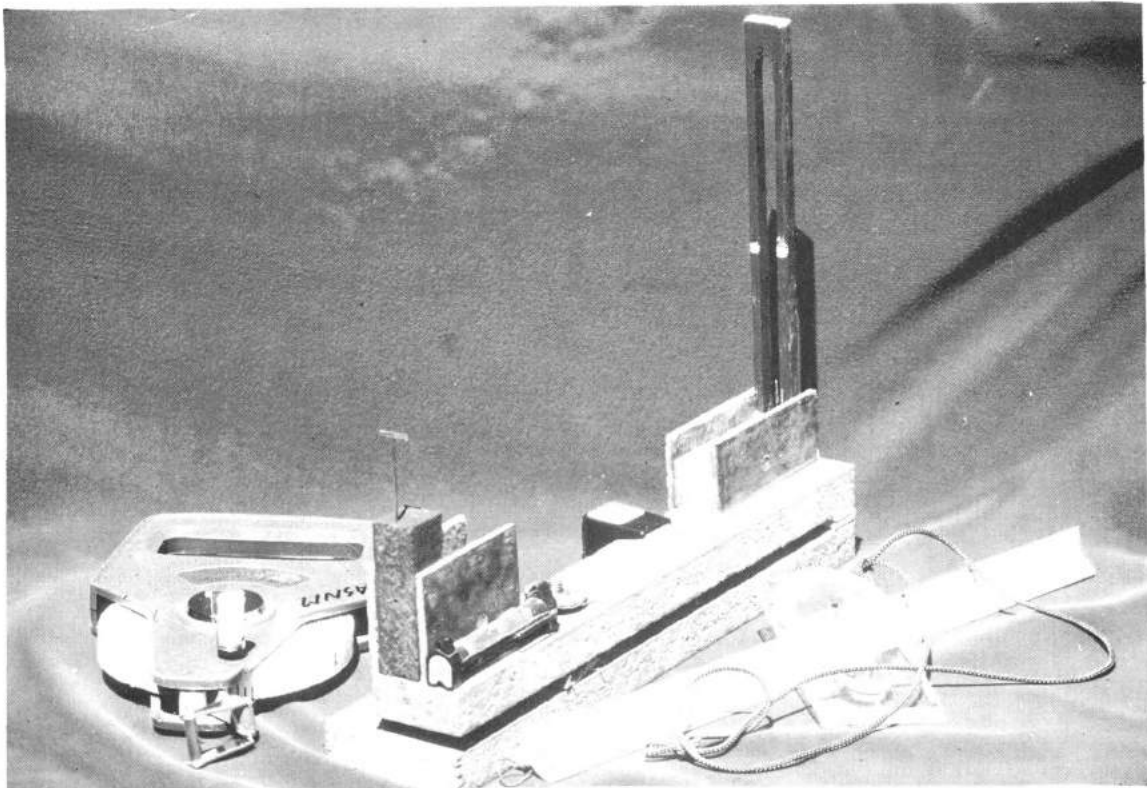


Figure 2. Photograph of instruments comprising a "poorman's" alidade system.

with an outdoor varnish. A dot-bubble is attached to the base and a line-level, or equivalent, is fastened to the sighting body. The sighting mechanism consists of a T-pin rearsight and a slit front sight calibrated to provide a line-of-sight parallel to the base of the line-level.

The alidade is used on a plane table in the manner of a regular professional instrument. The table is leveled approximately using the dot-level on the alidade base. The line-of-sight can be leveled precisely by adjusting the sighting body until the line-level bubble is centered. The alidade operator can take direction and elevation sightings while others are measuring the distance to the stadia rod with a tape.

This instrument system allows the distance from the plane table to another point to be measured with high accuracy. However, because a telescopic sight is not used, elevation and direction readings are accurate to about 1 cm. in 10 meters. Errors are likely to multiply proportionately at greater distances. For most archaeological purposes, the accuracy should be adequate for distances out to about 15 meters.

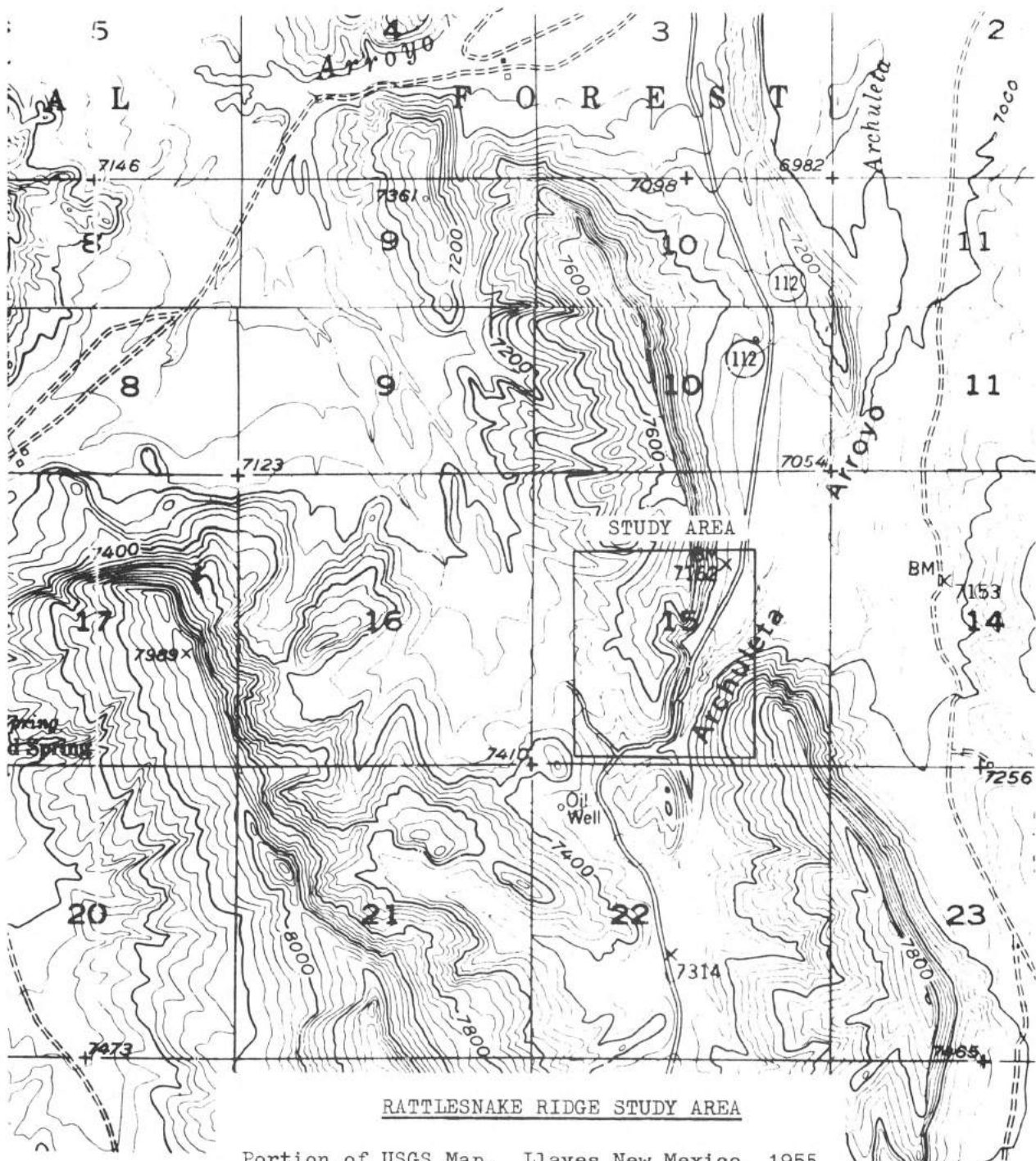
The three teams using the homemade alidades mapped sites Bg-19, Bg-20-1, Bg-20-3 through -7, 1N, 2N, and 6N. Time restrictions did not allow for the mapping of six sites, Bg-20-8 through -10 and 3N through 5N.

The metric system was used for all measurements of length. Elevations have been converted to the nearest foot.

SITE LOCATIONS

The Rattlesnake Ridge study area is shown in Figure 3. It covers the southcentral part of Section 15, R1E, T26N of the Llaves Quadrangle, USGS 1955. The area is also presented as a photographic map in Figure 4. The map is based on an enlargement of one of a pair of stereoscopic photographs identified as SF-35039-673-19, obtained from the Aerial Photography Field Office, USDA-ASGS. The photograph has an overlay containing site locations, contours (from the USGS map), and a scale.

A vertical profile of site elevations is shown in Figure 5. The horizontal distance from the southernmost site (Bg-20-10) to the northernmost site (6N) scales to 739 meters or 2457 feet. The corre-



RATTLESNAKE RIDGE STUDY AREA

Portion of USGS Map. Llaves New Mexico 1955
 N 3615 - W 10645/15
 AMS 4656 IV - Series V 781
 R1E, T26N

Figure 3.



Figure 4.

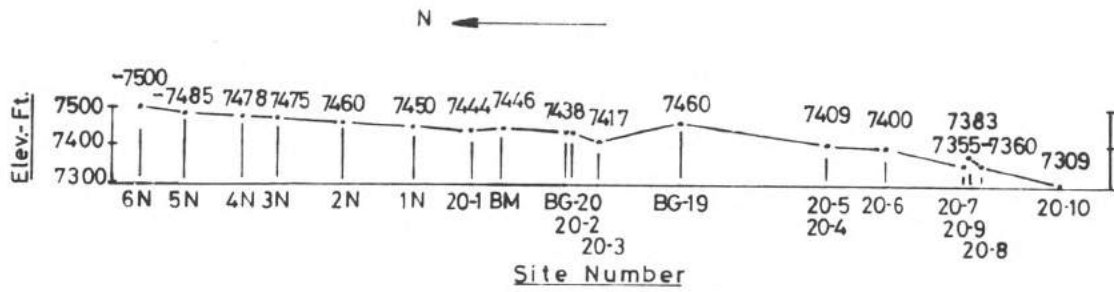


Figure 5. Altitude profile of Gallina sites on Rattlesnake Ridge.

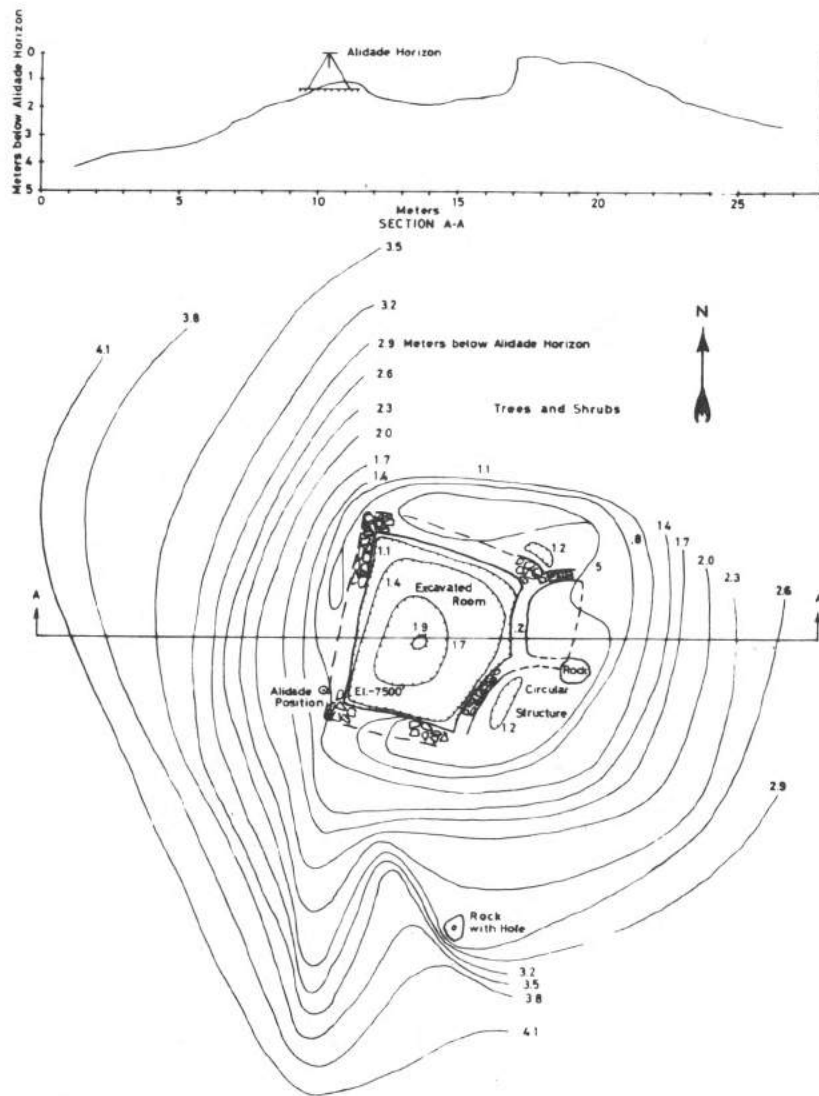


Figure 6. Site 6N, unit house, tower, and cist.

sponding elevations are 7309' and approximately 7500'. The vertical difference is 191 feet or 58 meters.

INDIVIDUAL SITE MAPS

Individual sites are discussed in order of geographic position, from north to south. Planviews and profiles are included for those sites that were mapped. The contours plotted for most of the sites are at intervals of 30 cm. or approximately 1 foot. Intervals of 50 cm. were chosen for Bg-20; 5 and 10 cm. for Bg-20-1, and 20 cm. for Bg-20-2. A short description is included for the sites that were not mapped.

Site 6N, Hermigas Site or Tower II (Fig. 6), excavated by Roger C. Green and Jack Slaton in the late 1940s (Green, pp. 142-156), contains a unit house, a possible tower, and what he calls a cist. The unit house, not backfilled, remains open with exposed masonry. The circular structure (tower) and the cist are not well defined by surface indications. The site drops off steeply on three sides.

Site 5N rests on an outcropping of rock and consists of two rooms. The south room may be deep enough for a unit house, but the north room appears to be shallow, judging by the slope of the sandstone layers on which it rests. Time did not allow this site to be included in either the survey or mapping activities.

Site 4N is just south of the fence line shown on the map of Figure 2. It rests on a small knoll and appears to be a unit house. The site was included on the survey but was not mapped.

Site 3N appears to contain a unit house located on relatively smooth terrain. It was surveyed but not mapped.

Site 2N (Fig. 7) does not appear to have been disturbed. It contains a structure of apparent rectilinear form, but the wall outline could be only approximated. It is probably a unit house. The surrounding terrain is relatively flat.

Site 1N (Fig. 8) appears to be undisturbed. The wall outline is probably rectilinear, indicating a unit house. The surrounding terrain

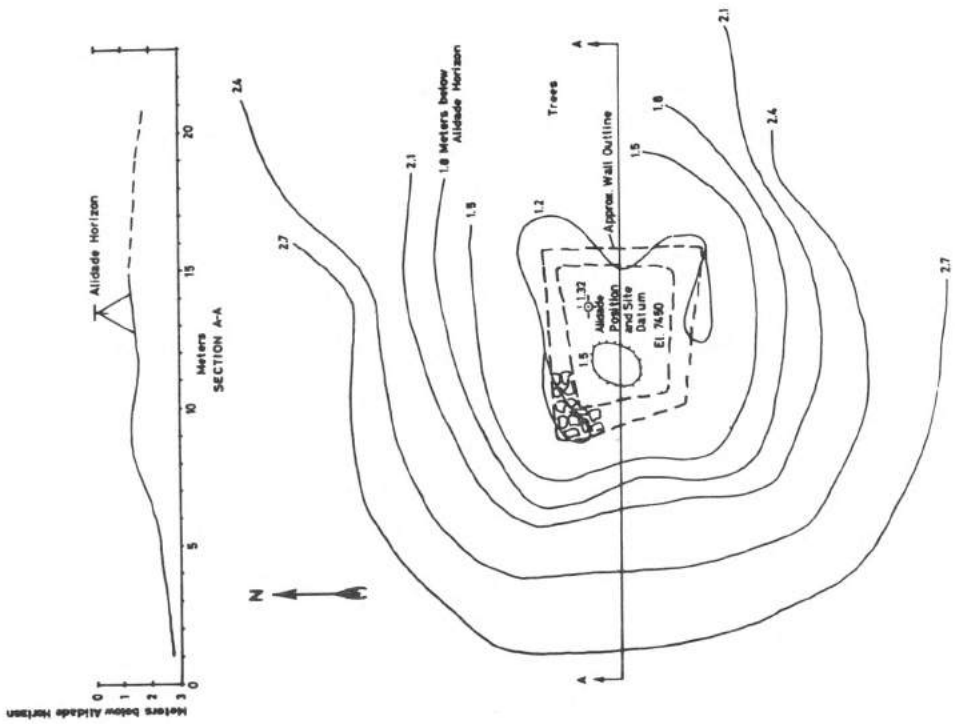


Figure 8. Site 1N, unit house.

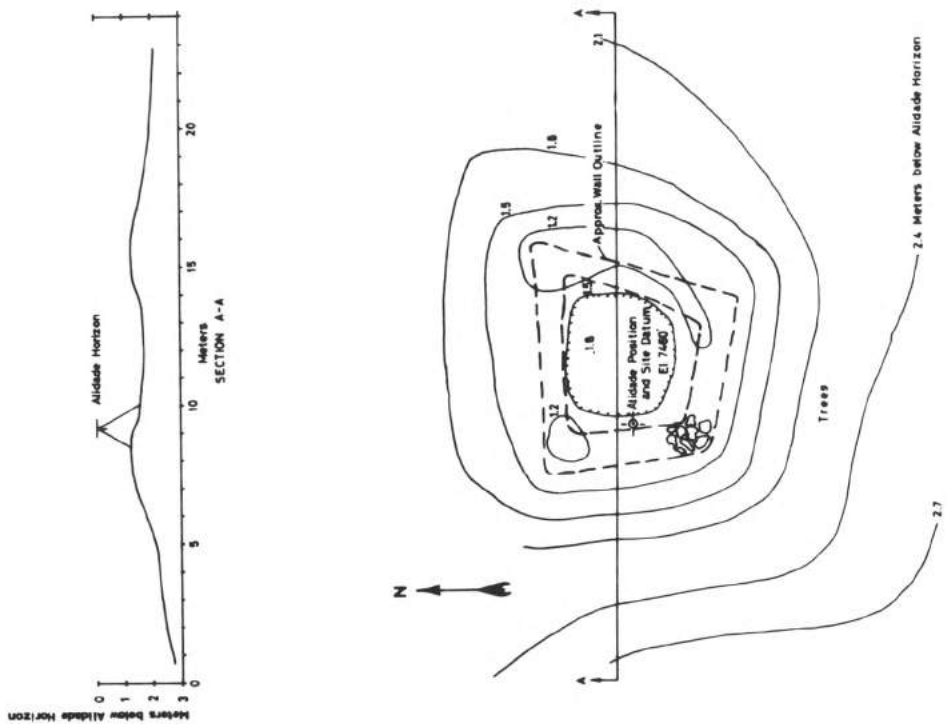


Figure 7. Site 2N, unit house.

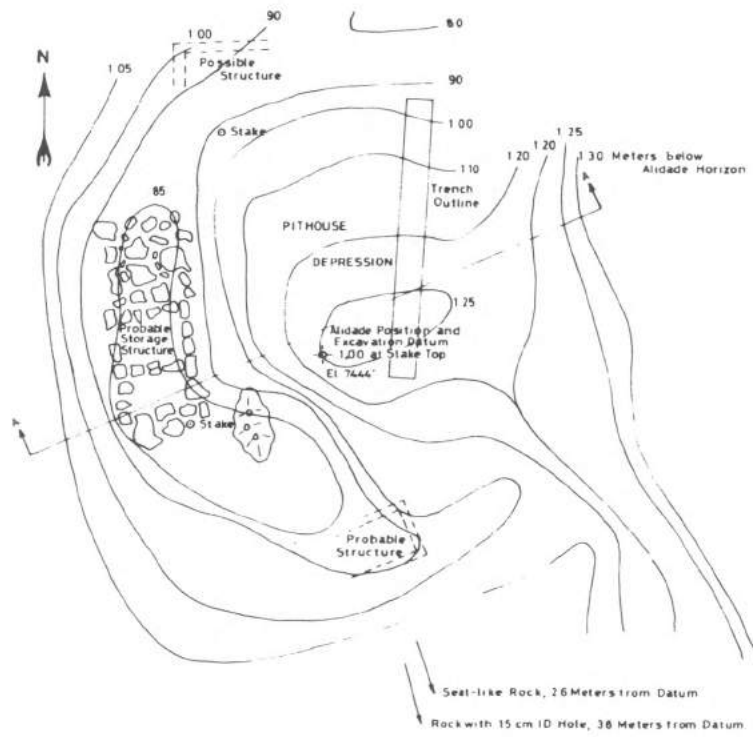
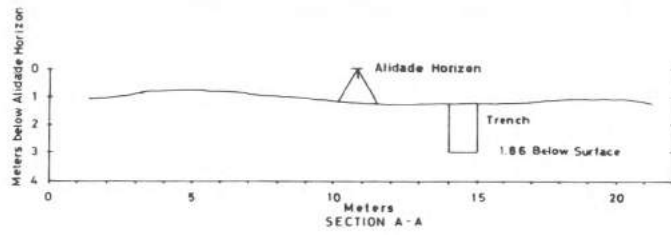


Figure 9. Site Bg-20-1, pit house.

is relatively flat, but slopes to the southeast.

Site Bg-20-1 (Fig. 9) contains a pithouse on which a test excavation was carried out under the direction of Dr. Ellis in 1976. The crew chief was Frances Kenney. A surface structure associated with the pithouse contains at least two rooms. Two other probable structures are nearby. A report is on file with Dr. Ellis.

Sites Bg-20 and Bg-20-2, Tower I and Reservoir (Figs. 10-12). Bg-20 was excavated by Frank Hibben in 1947 (1948, pp. 32-36; Bahti, 1949, pp. 52-59). It consists of a circular tower, a unit house, and at least one pithouse. Other structures, not readily apparent on the surface, may exist in the complex. The tower, with its exposed masonry, is readily identified, as is a cist. The unit house, a depression, has some exposed masonry. The pit house is a depression only.

Associated with Bg-20 is Bg-20-2, a water storage reservoir. This was mapped by Perret in 1976 under the direction of Dr. Ellis. Figure 12 is a photograph of the reservoir taken by the author during the spring of 1979. Perret's report is on file with Dr. Ellis.

Site Bg-20-3 (Fig. 13) was tested by Jim Bain in 1976 under the direction of Dr. Ellis. Mounded stones were removed from the top to expose the wall outline, and some exploratory trenching was done. The site, resting on a bench near the east edge of the ridge and overlooking the valley below, is composed of a unit house with traces of a possible associated wall on the uphill slope. A preliminary report is on file with Dr. Ellis.

Site Bg-19, Tower III (Fig. 14), contains a tower. Other associated structures, if any, are not apparent, although pithouses may exist in a flat area to the northwest. The tower rises higher than any other point in the central part of the ridge and may have played a communications role. It was dug by Frank Hibben in 1949 (Green, 1962, p. 143). Exposed walls allow a good definition of the tower's size and shape.

Site Bg-20-5 and -4 (Fig. 15) contains a two room structure, seemingly a dual unit house. The rooms were partly excavated by John Hayden

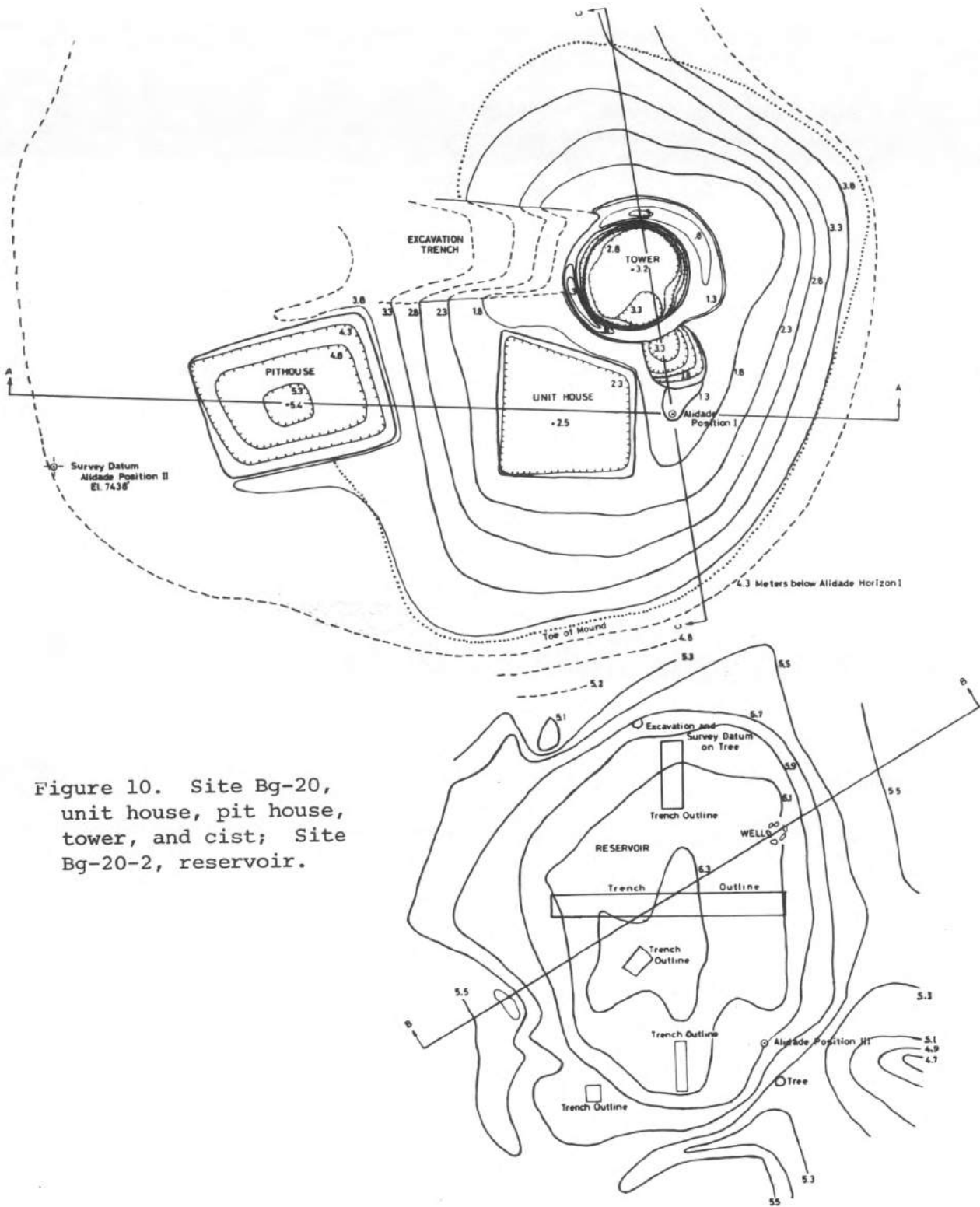


Figure 10. Site Bg-20, unit house, pit house, tower, and cist; Site Bg-20-2, reservoir.

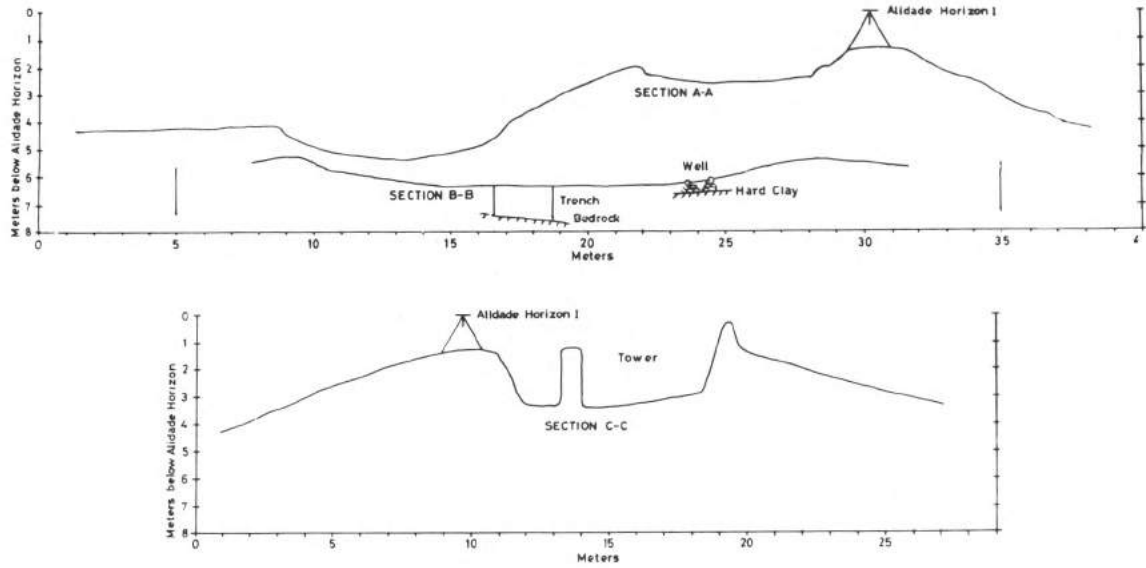


Figure 11. Profiles of sites Bg-20 and Bg-20-2.



Figure 12. Photograph of the reservoir site Bg-20-2.

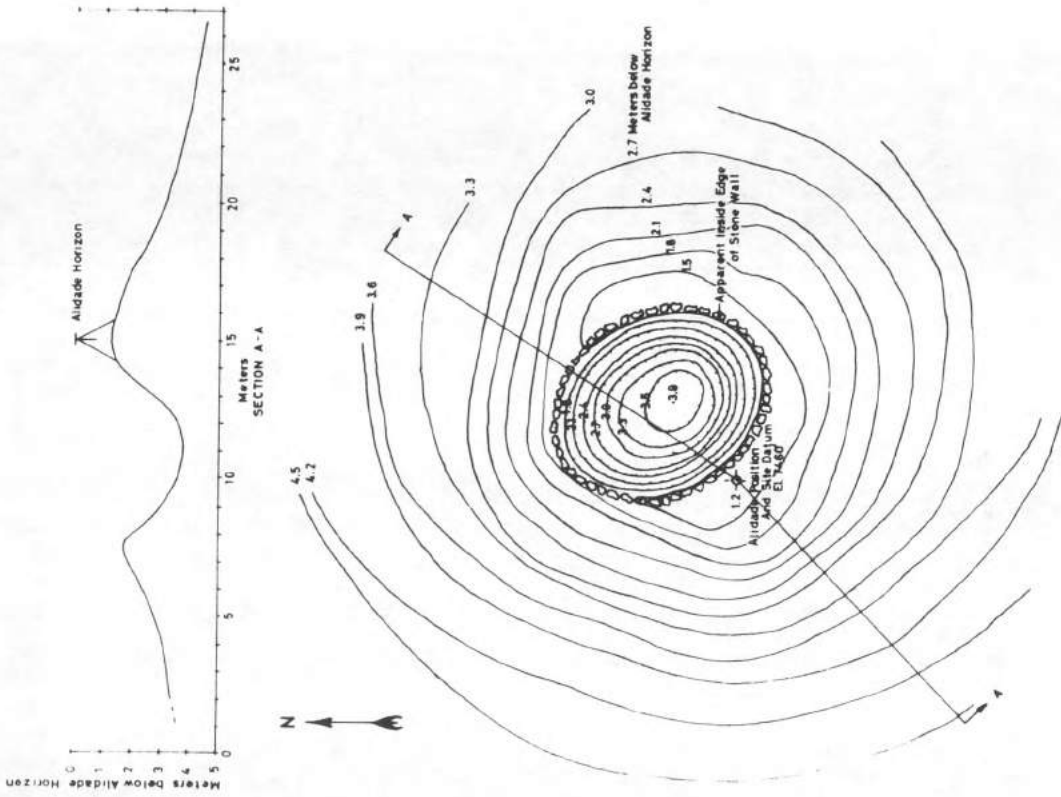


Figure 14. Site Bg-19, tower.

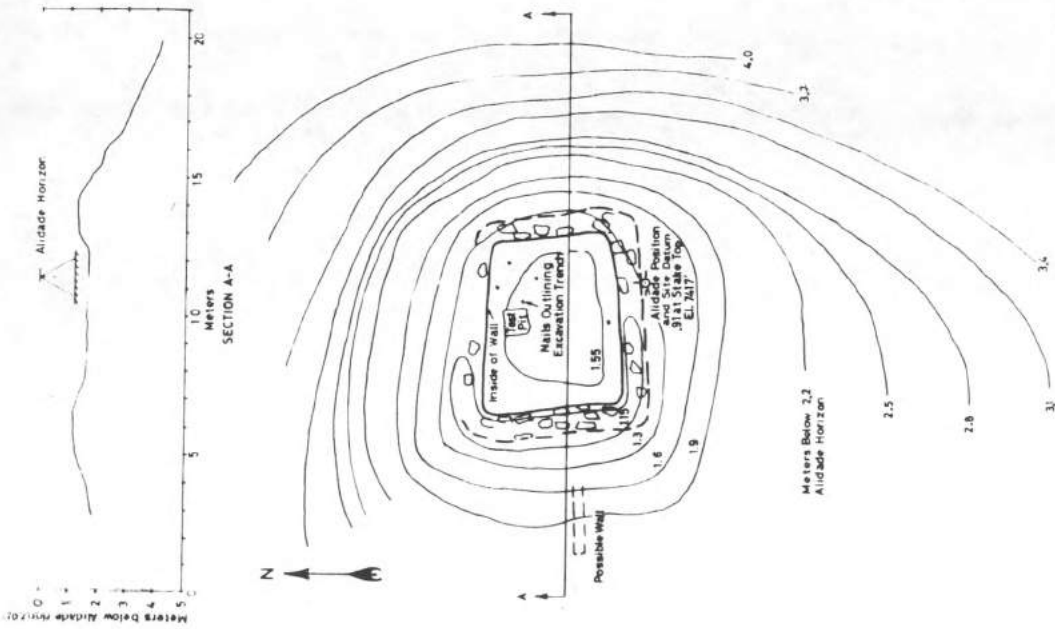


Figure 13. Site Bg-20-3, unit house.

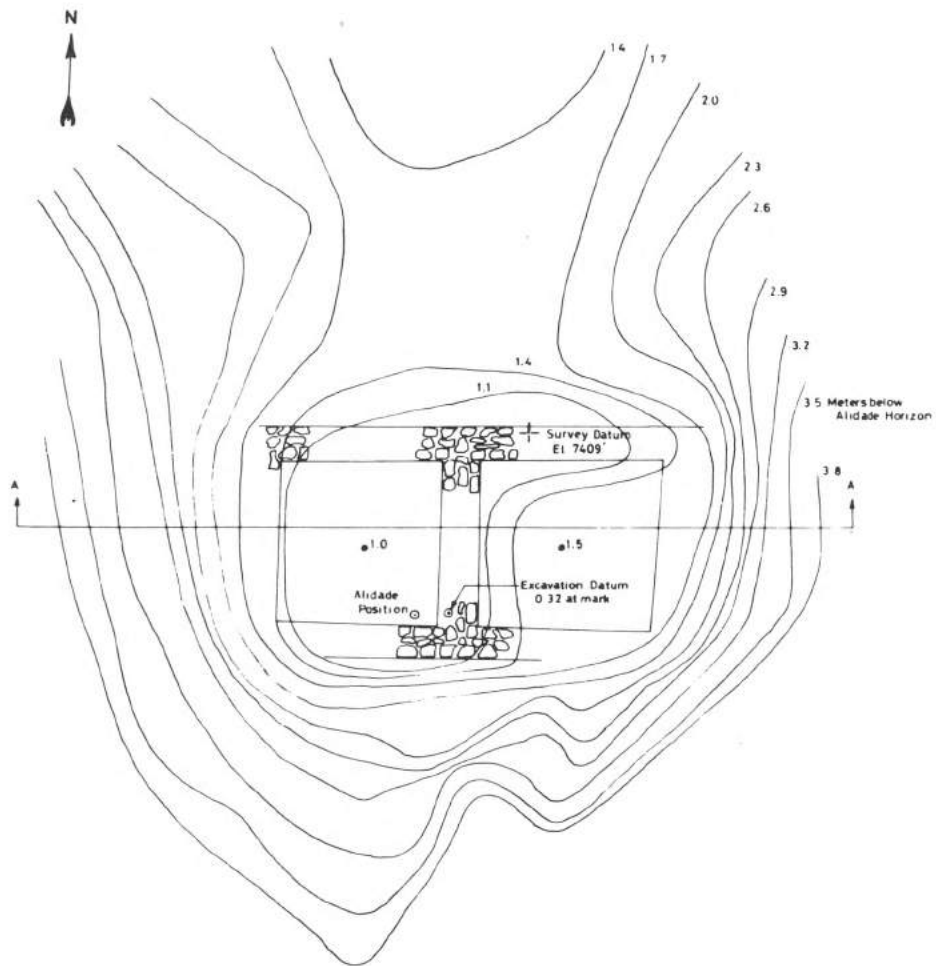
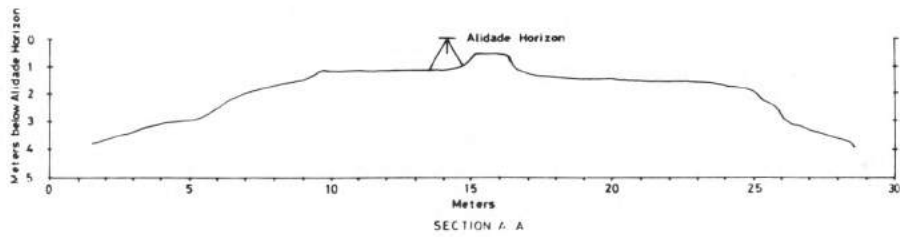


Figure 15. Sites Bg-20-5 and -4, double unit house.

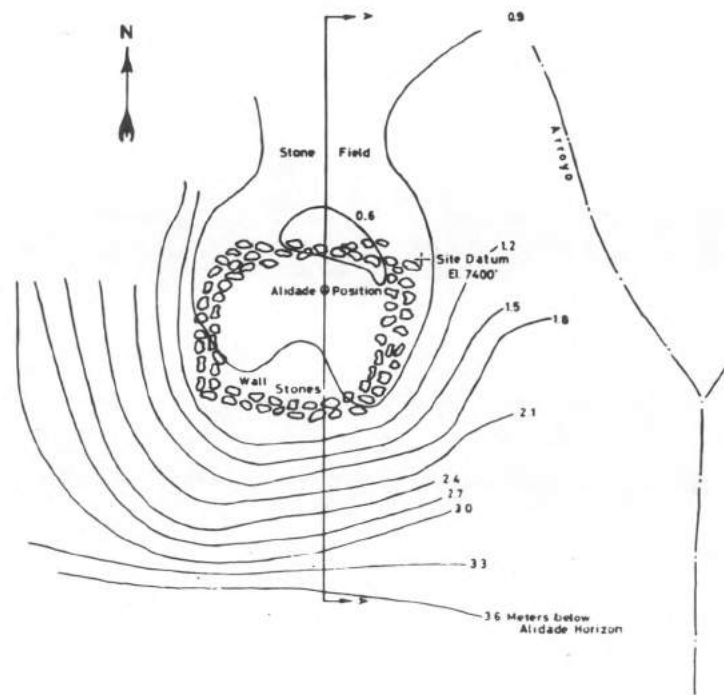
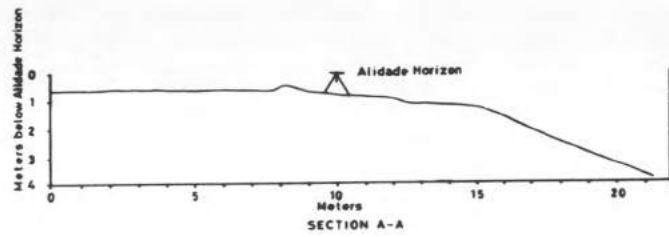


Figure 16. Site Bg-20-6, unit house.

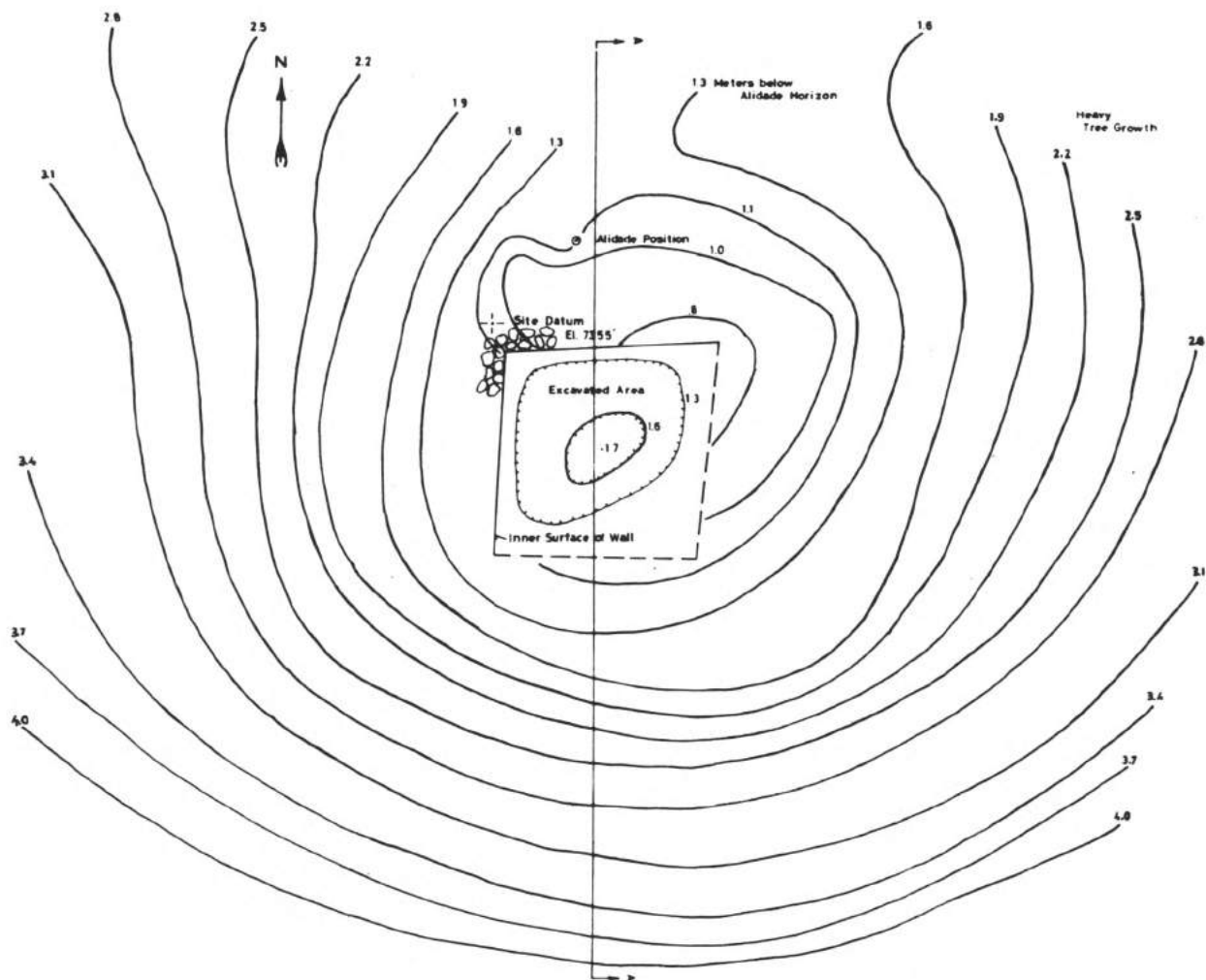
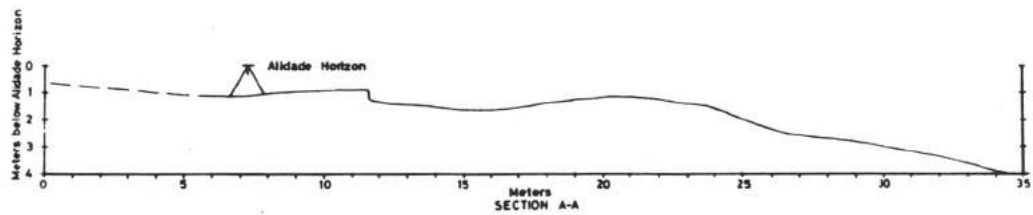


Figure 17. Site Bg-20-7, unit house.

and Darlene Shibley in 1976 under the direction of Dr. Ellis. The wall outlines are well defined. The site is on a promontory that overlooks the valley east of the ridge. A preliminary report is on file with Dr. Ellis.

Site Bg-20-6 (Fig. 16) contains a unit house resting on a small promontory that drops off steeply on three sides. It was cleared and partly excavated by Bruce Campbell under the direction of Dr. Ellis. A preliminary report is on file with Dr. Ellis.

Site Bg-20-7 (Fig. 17) rests on the end of a small ridge that drops away on three sides. It was partly excavated under the direction of Dr. Ellis by Mary Lu Moore in 1976. The inner wall outline indicates a square unit house. A preliminary report is on file with Dr. Ellis.

Site Bg-20-8 (not mapped) is probably a single unit unexcavated structure. The surrounding area is relatively flat, and the site is among some trees.

Site Bg-20-9 (not mapped) contains three rooms. It is on a promontory at the south end of Rattlesnake Ridge, overlooking the road as it enters the valley below. The site has been largely excavated by persons unknown. It appears that the excavation work was done several decades ago.

Site Bg-20-10 (not mapped) has the lowest elevation of any on the ridge. It is on a knoll at the south end of the ridge. The nature of the structure is not readily definable.

SUMMARY

Gallina Phase people lived in northcentral New Mexico from about A.D. 1050 to 1300. They dwelt in unit houses and pit houses scattered along isolated ridges and promontories or in small communities. They are believed to be ancestral to people of the present-day Jemez Pueblo.

An instrument survey was made of Gallina sites on Rattlesnake Ridge in the Santa Fe National Forest north of Llaves. The program was carried out as part of an archaeological seminar sponsored by the

Archaeological Society of New Mexico.

In this report, the locations of 18 sites are shown on a map, and their elevations are presented in a profile drawing. Site maps containing contours and profiles are also presented for twelve of the sites.

This report should be useful in precisely defining the locations of the sites and in making known their current status.

Archaeological Society of New Mexico
Albuquerque, New Mexico

ACKNOWLEDGEMENTS

The author would like to express his appreciation to the seminar participants for their cooperation and spirited work throughout the program. Their field work and subsequent data analysis have formed the backbone of the report.

The team members and leaders were Sylvia Ann Abeyta, Richard Blinzler, Phyllis Davis, Ken Ewing, John Hayden, Bob Hoss, Ruth Hoss, Jim Keller, Marcia Lamkin, Janice Palmer, Elizabeth Perret, Bill Perret, Anne Poore, Dick Renwick, Kitty Renwick, Darlene Shibley, Janet Shields, Bob Shotola, Lee Sullivan, Rosemary Talley, Bettie Terry, Fred Trusell, Pat Trusell, Bob Watt, Lore Watt, Bob Weber, Margaret Weber, Norman Werhli, Peggy Werhli, Joan Wilkes, and Ole Yearin.

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ROCK ART - ART OR ARCHAEOLOGY?

JAMES G. BAIN

For countless centuries and in every region of the earth, human beings have left evidence of their presence in the form of paintings, engravings, and sculpture. Man seems to have an innate and irresistible desire to express himself artistically and to leave a record of his beliefs, his legends, and his daily life. Probably many of his early artistic works were executed on perishable materials that have disappeared with the passage of time. But many were done on stone, and these have survived to present us with a priceless legacy of our human past. These we call by the generic term "rock art."

The word "art" is generally understood to apply to creative work that has form or beauty and is pleasing to one or more of the senses. This includes literature, music, and the dance along with other creative activities, but to most people the term implies the visual arts, i.e. painting, drawing, sculpture, and other graphics. Thus the present day art student or art historian is attracted to prehistoric rock art by its appeal to the eye and is primarily concerned with how this appeal was obtained. Cultural and temporal associations, while important, are secondary to the aesthetic values of the work.

The archaeologist, however, looks at rock art through different eyes. While not unappreciative of the artistic merit of the designs, his primary interest lies in what these works can tell him about the activities and beliefs of the people who made them. Among the important factors he must consider in order to fully understand the culture of the ancient people are the age of the engravings or paintings and the identification and function of the figures.

Study of any work of art would include consideration of harmony and balance in composition and color, techniques, style, and subject matter. The art historian, by analysis of these factors, can determine when and where a particular art work was made and in many cases even the

identity of the artist. Investigation of these same characteristics can assist the archaeologist in his search for an understanding of peoples and cultures no longer in existence.

The colors available to prehistoric people were quite limited. Pigments consisted of finely ground minerals, the accessibility of which was confined to certain areas. Red and black were the most common colors due to the almost universally obtainable red oxide of iron (hematite) and carbon (charcoal). Black could also be derived from manganese ore, white from kaolin, and blue and green from copper compounds. These last colors were, however, much less used than red and black. Analysis of pigments has shown no change in their usage from the earliest paleolithic work in Europe to modern times. Even today, primitive people in many parts of the world are using earth colors to produce paintings on stone as well as a variety of other surfaces. Study of the colors used and color harmony alone, therefore, will not reveal much of value to the archaeologist studying prehistoric art.

Overall composition and design likewise do not help much in establishing the cultural association of rock art. Although some panels seem to show a slight semblance of planned arrangement, it is impossible to determine if this was deliberate or purely accidental. In many instances a limited area, such as a smooth rock face, is covered with a melange of apparently unrelated designs many of which are superimposed on earlier figures. Since methods of dating rock art are so imprecise, it is impossible to separate designs done at a particular time from others on a crowded panel. If there was ever any effort to make a balanced composition, it is no longer apparent.

One may define technique as a method of procedure in rendering an artistic work. In other words, it encompasses the tools and materials that the artist used and the way in which he used them. For the prehistoric paintings, as we have already seen, the pigments were finely ground earth colors. The binder used is not known but could have been a vegetable sap, animal blood or fat, human urine or perhaps even plain water. The paint could be applied with a brush made from animal hair

or vegetable fiber, or with a finger or a stick. Negative handprints are quite common world-wide and were made by placing the hand against the rock surface, filling the mouth with paint, and blowing the paint against the rock with the hand forming a sort of stencil. Petroglyphs, or engravings, were made by three different techniques. The most common is the pecking method in which the artist holds a sharp stone against the rock surface, as he would a chisel, and strikes it with a hammerstone. In this case the design consists of a number of pockmarks or "dints." Control is quite positive with this method and some very precise and delicate work can be accomplished. A second technique consists of incising or scratching the design on the rock with a sharp, harder stone. This results in a solid straight or curved line and again, depending on the skill of the artist, very fine and delicate work is possible. The third technique, least common, is done by merely rubbing the rock to be decorated with a harder, flat stone. This method is used to fill in large areas and does not lend itself to delicate work.

These techniques and colors used have remained unchanged from the time of the paleolithic paintings in the caves of France and Spain to the modern "retouching" of figures by Australian aborigines. Thus an analysis of techniques, alone, is of little or no value in determining rock art dates. In some cases, a cultural association can be deduced since some groups apparently preferred one technique over others. For example, Navajo petroglyphs in Chaco Canyon are almost always incised whereas Anasazi designs were consistently pecked. Some exceptions have been noted, but generally the above distinction holds good.

Webster defines style as the manner of execution, expression, or design of an art work. There are numerous ways of depicting a human being, ranging from a simple stick figure to an elaborately costumed warrior or dancer. The same can be said for other figures such as animals, birds, and even geometric designs. These various ways of rendering a particular subject constitute styles. These styles may vary according to the preference of one individual as compared to another

or be quite similar when they are dictated by the mores of a specific group or region. In this latter case, the style is usually given a name, such as the Rio Grande Style, the Fremont Style, and so on. Styles also change with time. Things that are popular today will probably give way to other items in the future as cultures develop or change. In many cases, there seems to be a progression in art from geometric designs to naturalistic figures which in turn became stylized and eventually abstract with little resemblance to the original.

Variation or progression in styles may be used, in combination with other archaeological evidence, to determine an approximate date and cultural affiliation of rock art. Relatively large, broad-shouldered human figures with arms and legs indicated by single lines and with small, solidly pecked, featureless heads are found in the Four Corners area of New Mexico and have been definitely associated with the Rosa Phase culture dating about A.D. 700 to perhaps 950. However, one must be very cautious in attempting to correlate similar or even identical figures that are found in widely separated regions. Broad-shouldered men, almost identical to the New Mexico Rosa Phase figures, are depicted at Writing on Stone Provincial Park in Alberta, Canada firing rifles!

Subject matter of rock art is also useful in relative dating of rock pictures. Some geometric designs are considered to be quite old, with naturalistic animal and human figures being later. Figures depicted in ceremonial garb, including masks, are even more recent, reflecting a more complex religion and its accompanying rituals. Horses were not known to the prehistoric people of the Western Hemisphere before the arrival of the Europeans, so any depiction of horses must be dated no earlier than historic times. Similarly, it is reasonably well established that, in the Southwest, use of the atlatl or spear thrower was superseded by the bow and arrow about A.D. 700. A figure showing a hunter using an atlatl could probably be dated before that time. Again, though, not only caution should be observed but all other available archaeological evidence should be used to confirm or refute such estimated dates.

So far the emphasis of this discussion has been on dating. This has been deliberate since, in my opinion, the development of reasonable accurate dating methods is the most important problem in the rock art field. Although some promising research is under way to devise more accurate dating techniques, satisfactory results seem to be tenuous. For the foreseeable future, we are limited to little more than speculation, as outlined above, plus some "broad brush" systems of relative dating based on such things as patination, superimposition, and association with other artifacts.

Another facet of rock art, even more difficult to deal with, is the area commonly called interpretation. Personally I abhor this word because to my mind it implies the ability to place ourselves in the mental and physical framework of an individual who has been dead for many years and who, even when alive, belonged to a time and social environment far different from our own. We can in many cases identify a figure we find painted or engraved on stone. Occasionally we can determine the situation in which the figure finds itself or the activity in which it is engaged. But this is about as far as we can go. The specific meaning of particular designs may vary from culture to culture, from tribe to tribe, and even in the mind of a single individual depending on the context in which the design was made.

I believe the term "function" is more appropriate than interpretation when we are attempting to understand rock art. Based on ethnographic studies, it is known that some modern native cultures practice a hunting magic in which figures of game animals, shown pierced with arrows or spears, will bring success to the hunt. Designs of animals, birds, or supernatural beings, if done with appropriate ritual, might help bring the life-giving rains to insure crop fertility. Thus many rock art motifs are based on or connected with religious ceremonies or beliefs. Rock art also can perform other functions such as providing a mnemonic device for remembering ancient myths, trail markers, records of events, and individual or tribal totems. Correct determination of function is complicated by the fact that some designs

are not limited to a single function. For example, Kokopelli, the hump-backed flute player, represents a fertility deity and also is the totem of the flute clan of the Hopis. Careful evaluation of all information is necessary before an accurate determination of function can be made.

Rock art is perhaps the most plentiful and widespread art forms left by prehistoric peoples and as such must have played an important role in their lives. The beauty and complexity of the better examples are good indicators of the time and effort that was expended in their making. The cave paintings of Europe, the Fremont figures of Utah, and many others put rock art far beyond the rather disdainful appellation of "doodling." It is strange that archaeologists have paid so little attention to this ubiquitous artifact. The fact that there is so little of its dating and function that can be proved scientifically might act as a deterrent to those who are attempting to reconstruct the details of a long gone culture.

Perhaps the title of this paper should have been "Rock Art - Art and Archaeology." A multidisciplinary approach, including art specialists, could surely contribute to a more complete understanding of the thoughts and feelings as well as the material culture of the ancient peoples of the world.

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SNOWSHOES FROM TAOS PUEBLO

NANCY FOX

The use of snowshoes by Indians is often considered a trait confined to northern regions. In abundance and variety, certainly, they are most typical of the Eskimos and the Athabascans of the north. They are widespread from Labrador and the northeastern United States, westward across Canada and Alaska, and down into the Pacific Northwest. They constitute a rare trait in the American Southwest, yet a few reports attest to their occurrence in prehistoric sites, and they appear among 20th century collections from Taos Pueblo.

Devices intended for walking on snow may take several forms; they may simply be hide or vegetal bundles, wrapped over ordinary footgear, or they may be slats of wood or bark; the most technologically advanced variety is netted.

The basic elements of this type include a rim, netting on which the foot rests (involving cross-pieces for greater support), and ties to attach it to the foot. Beyond this, styles vary greatly from tribe to tribe, ranging from very simple to elaborately crafted articles, the most sophisticated made in rights and lefts. Shapes vary from rectangular to elliptical/pointed to oval or round; some have upturned toes or are flat with square fronts and trailers at the rear. Examples from Labrador include complex creations with "beaver-tail" and "swallow-tail" heels, intricately meshed and decorated with colorful tassels.

Apart from the crude snowshoes of the eastern Eskimos, the most primitive style and the one most closely resembling the eastern Asiatic variety (Mason, 1910, p. 607) is that found on the western slopes of the Rockies and across the Sierras to the Pacific (Ibid., 1896, p. 407). It is a simple hoop, crudely netted, with minimal foot rest. A good example is the circular kind with buckskin webbing worn by the Klamath Indians of California (Fig. 1).

This, essentially, is very similar to the type which comes from

Taos. And prehistoric Southwestern examples that have been identified as snowshoes, although oval and sometimes padded, are far closer to these than to more sophisticated examples collected among the Indians of Alaska, Canada, and the eastern United States. (Mason, *Ibid.*, in describing the latter type, remarks upon the long association of these tribes with French and English trappers, and suggests possible influence upon snowshoe development as a result.)

Perhaps the simplest of prehistoric Southwestern examples (Fig. 2) comes from Oak Tree House at Mesa Verde. Fewkes (1916, p. 114) describes it as follows:

The wooden framework ... has been identified as a snowshoe. It was found in one of the rooms back of Kiva D, a foot below the surface of the debris on the floor. The object appears to be of willow, but was so dry when found that it had lost all flexibility. Evidently the two extremities of the rod of which it is made was tied with leather strings, but these have disappeared. The cross-rods were bent and tied in place with thongs.

Another presumed example from the cliff dwellings of Mesa Verde is more complex. It comes from Ruin 9 and has been illustrated by Nordenskiöld (1893, pl. xlvi). It consists of two roughly oval wooden frames with a network of bent cross-rods. The rims are laid one atop the other and tied together at two points with yucca leaves, and the space between them is stuffed with a loose layer of cedar bark.

A somewhat simpler version of similar footgear (?) is reported by Morris (1919, p. 57) from Aztec Ruin. He describes a series of four objects, the framework of each consisting of an oval with the loop. Each frame is crossed by one lacing of yucca strips drawn taut and one slightly loose. Between these lacings, in two cases, are cornhusks laid flat, parallel to the long axis of the rim. The other two are filled with grass bundles which extend beyond the with loops.

Morris has identified these objects as "snowshoe-like pads." Replying to the suggestion that they were used to protect the back when burdens were being carried, he points to "the fact that the four pads constitute two distinct pairs, and the wear shown on the lower sides

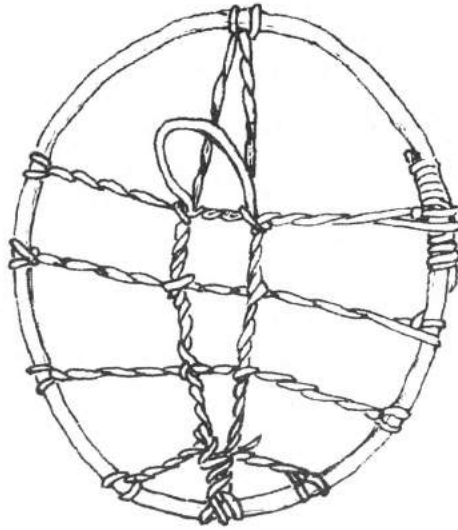


Figure 1. Primitive snowshoe collection among the Klamath Indians of California, 19th century. *Based on Mason, 1896, fig. 97.*

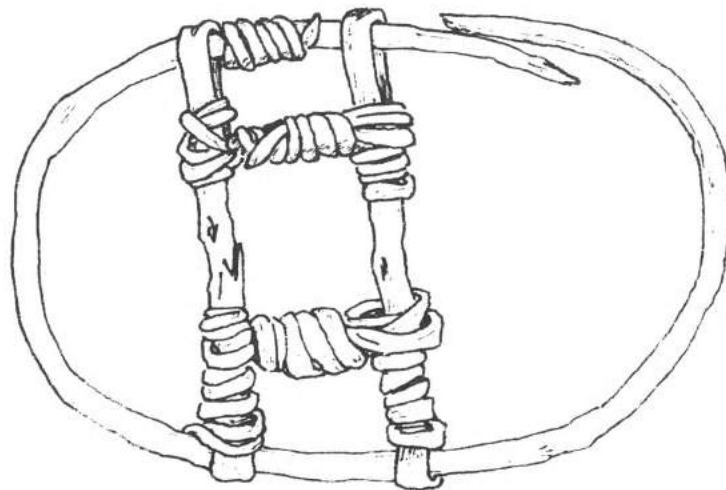


Figure 2. Snowshoe frame from Oak Tree House, Mesa Verde. *Based on Fewkes, 1916, pl. ix.*

of those of one pair, incline one to the belief that they were some sort of footgear." He adds that "if so, they were worn with the taut lacing next to the feet so that the rounding sides of the pads came in contact with snow, or earth, as the case may have been."

It is unfortunate that the perishable nature of such remains leads to disintegration in archaeological sites, except in all too few instances. In addition, such fragments as may be found do not lend themselves to ready identification. Nevertheless, the examples cited bear some striking similarities to snowshoes collected among historic Southwestern peoples.

Some of them occur among assemblages from Taos; there are three pairs from that pueblo in the collections of the Museum of New Mexico alone. All are examples from the first half of the 20th century, ranging in date of collection from 1903 to 1942. In form and manner of construction they are quite similar: hoop-shaped, with cross-pieces consisting of twisted leather thongs. The oldest pair, approximately 12" to 13" in diameter, was purchased by the museum from Gold's Old Curiosity Shop in Santa Fe. (They are accompanied by the fascinating notation that they "were made circular so an enemy could not tell whether a person was coming or going.")

Figure 3 depicts another typical pair, one which came to the museum from the estate of Taos artist Bert Phillips. They are approximately 14" to 15" in diameter, the two ends of the bent wooden frame tied together with strips of buckskin. Strips of the same material, twisted together, are laced back and forth to form netting, toe loops, and ties.

A third pair, also circular with leather strips interlaced across the center, was purchased at Taos in 1942 and is the smallest, being only 10" to 11" in diameter.

Still another pair from Taos is preserved in the collections of the Indian Arts Fund, School of American Research. They display exactly the same characteristics as the museum's examples: circular wooden frames with rawhide thong cross-pieces and fastenings; they were obtained in 1933 and are over 16" in diameter.

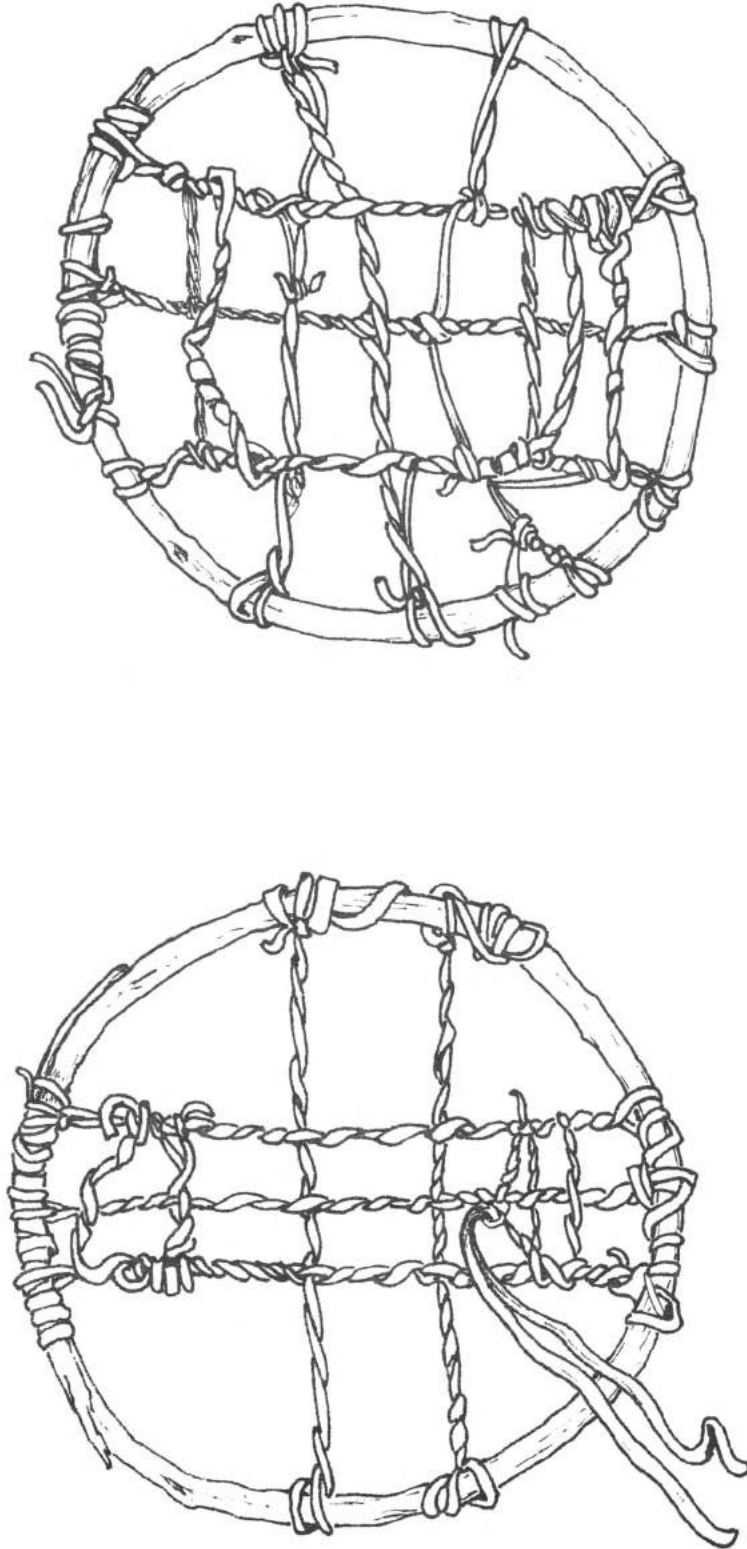


Figure 3. A pair of Taos Pueblo snowshoes. Bert Phillips Collection, Museum of New Mexico catalogue number 16112/12.

Turning to other groups in the Southwest for comparison, several varieties of snowshoes can be documented.

Among the southern Athabascans, the Navajos are reported by the Kluckhohns and Hill (1971, pp. 292-294) to have used the circular wooden hoop variety, as well as frames that were oval, even rectangular. All shapes had wooden cross-pieces attached with yucca cordage and fastened to the foot with buckskin straps in the Ramah area, yucca elsewhere. Rawhide webbing was said never to have been used. Of special interest is the note that these were temporary devices, used only once because of ritual restrictions, a fact that is cited as a possible reason for the lack of preserved specimens. In addition to snowshoes of this type, the western Navajos were reported to have formerly used bark snowshoes, slightly pointed at both ends; while in the east it was said that moccasins were wrapped in bundles of grass. "Overshoes" of burlap or sheepskin were also mentioned.

In this regard, it is of interest that Mason (1896, p. 408) notes, "the Zuni and other pueblo tribes make an overshoe of goatskin worn over the moccasin in the snows, with the hair side out."

Among the Tewas of the northern Rio Grande, the same variations in type exist. Gifford, in his listing of culture element distributions, mentions grass or bark wrapped moccasins used at Santa Clara. Only to San Ildefonso does he attribute snowshoes somewhat similar to the Taos variety here detailed--although closer to the Navajo. These are described as juniper branches bent to moccasin shape, having cross-sticks rather than leather webbing, and attached with buckskin stays tied from the edge of the snowshoe to the ankle (Gifford, 1940, p. 132).

In view of the paucity of recorded data, it is difficult to piece together more than bits of a tantalizing picture. On the subject of Puebloan snowshoes, it can only be said that apparently they can be traced back to prehistoric origins and that they occurred, too, in modern times, probably as a rare trait and, it would seem, patterned more along prehistoric lines than influenced by European examples. However, it has proved impossible to date to find anyone who could

confirm their recent use, at Taos or among others of the Eight Northern Indian Pueblos. So it seems likely that snowshoes of this sort became obsolete in the northern Rio Grande sometime around mid-century.

Museum of New Mexico
Santa Fe, N. M.

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GANASKIDI - THE NAVAJO HUMPBACK DEITY OF THE LARGO

HARRY L. HADLOCK

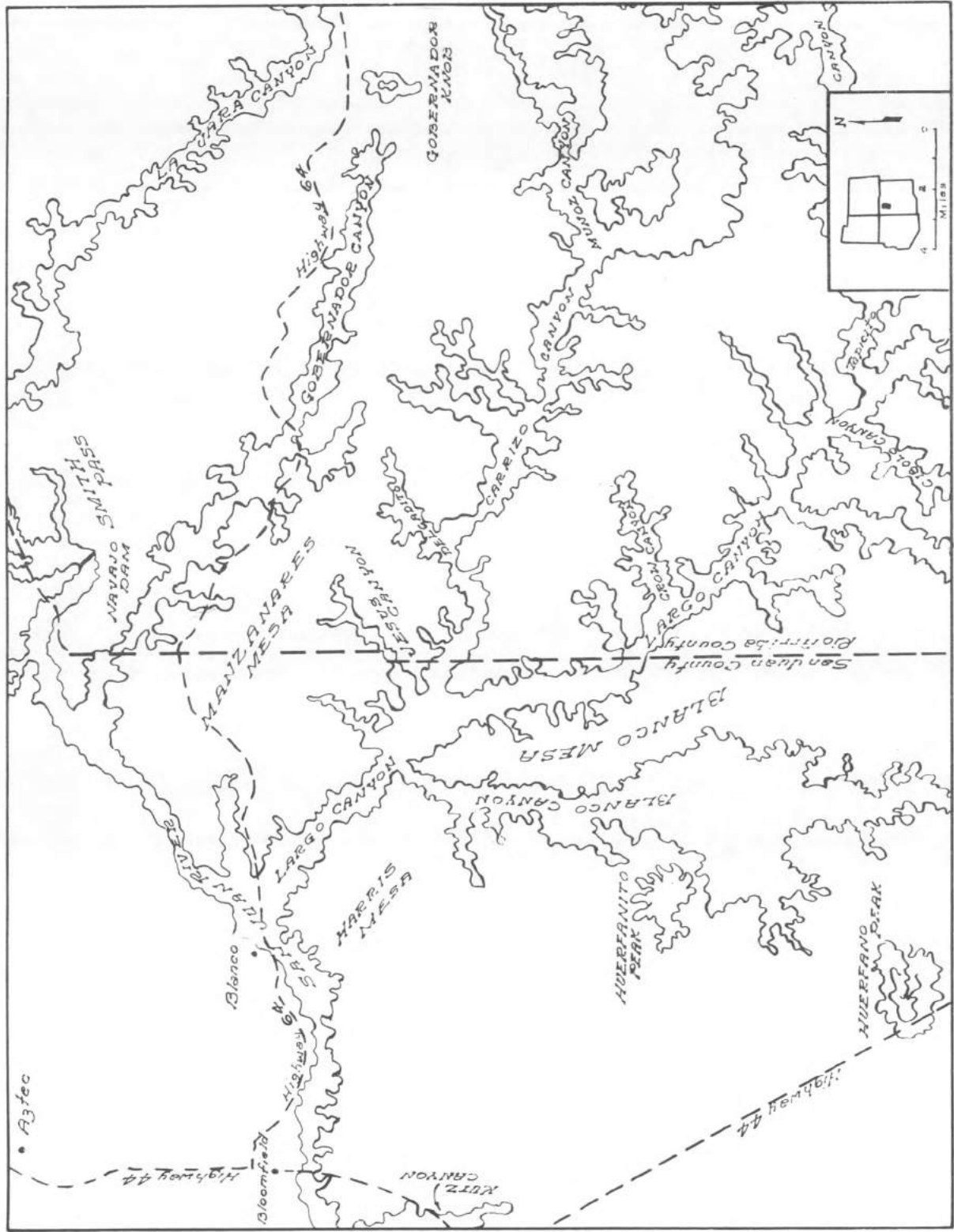
INTRODUCTION

For the past 12 years a survey of rock art has been conducted by myself and wife, Sally, along the Canyon Largo and its tributaries (Map). Many persons have assisted in this survey in helping to locate sites overlooked or hidden from the survey team's view. Considerable assistance was given in locating research materials, and sound counsel was received from some of the state's very fine archaeologists and rock art specialists.

The survey moved slowly due to the fact that it was done only on weekends, holidays, and vacations. In spite of the slowness of the project, it seems that the survey is successful. As of this writing, some 205 sites have been recorded with 52 added in the spring of 1973 by the Archaeological Society of New Mexico rock art field school in Delgadito Canyon, a tributary of Carrizo Canyon. These surveys are on file at the Laboratory of Anthropology in Santa Fe and can be used for study by those interested.

The survey is an on-going project, always expanding to exciting new areas of the Canyon Largo. This region was occupied for more than 6000 years by various cultural groups who found the canyons to their liking, offering game, wild foods, and seeds for the early hunters and gatherers, flood irrigated fields for the Basketmakers' farms, and easily defended homes for the late Athabaskan group named Navajo. The exact date of the arrival of the Athabaskans in the Largo region is unknown, but they were in the Largo drainage by the 1500s. This occupation lasted into the late 1700s at which time the area was abandoned and the people moved to the west and south (Hester, 1902, p. 63). This area is known as the *Dinetah* or old Navajo land.

Two phases are assigned to Navajo occupation. The earlier (1550? to 1698) is known as the Dinetah Phase and the later (1698 to 1775) as



Map of the Lugo Canyon Drainage.

the Gobernador Phase (Dittert, Hester , and Eddy, 1961, p. 245).

The Dinetah Phase is represented only by a scattering of sites and a few recognizable traits which are prevalent in the following Gobernador Phase sites. Many of the traits of this period were adapted from the Pueblo Indians by contact through raiding, trading, and the influx of Pueblo people into the Largo and its tributaries during and after the Pueblo Revolt of 1680. The Gobernador Phase is sometimes called the Refugee Period due to this migration of various Pueblo people.

The cultural traits of the Navajos of the Largo were changed radically during the Gobernador Phase. Farming, hunting methods, pottery making, and weaving, as well as pictographs and petroglyphs, were affected by the presence of these new people. Art during this time is the subject of this article.

Out of the many Gobernador Phase pictographs and petroglyphs recorded in the survey of the Largo and its tributaries, one particular figure seems to stand out from all the rest. It is the figure of a humpback deity, Gánaskǐdi (Fig. 1). This figure is not found in all the canyons where Navajo rock art appears but is confined to only a very small section of the Largo system with only two or three exceptions. The humpback figure in most cases is located in small side canyons leading into the main Largo drainage. Crow and Delgadito Canyons exhibit the heaviest concentrations. Style differences are noted in each separate area, perhaps due to different clans occupying the small canyon regions or to a time difference. However, the style of individual artists who lived in any particular area also might bear on this problem. Much research is needed to find the answers.

In some cases, Humpback occurs in association with other Navajo figures in what appears to be a well organized panel but on most occasions is found as a single figure. Gánaskǐdi or Humpback refers to the black bag the deity carries on his back and because he walks in a stooped position in ceremonies. He represents a god of the harvest, god of plenty, and mist (Olin, 1972, pp. 32-33). Many Gánaskǐdis are mentioned, and in the legends their home is believed to be near *Tse'gǐhi*

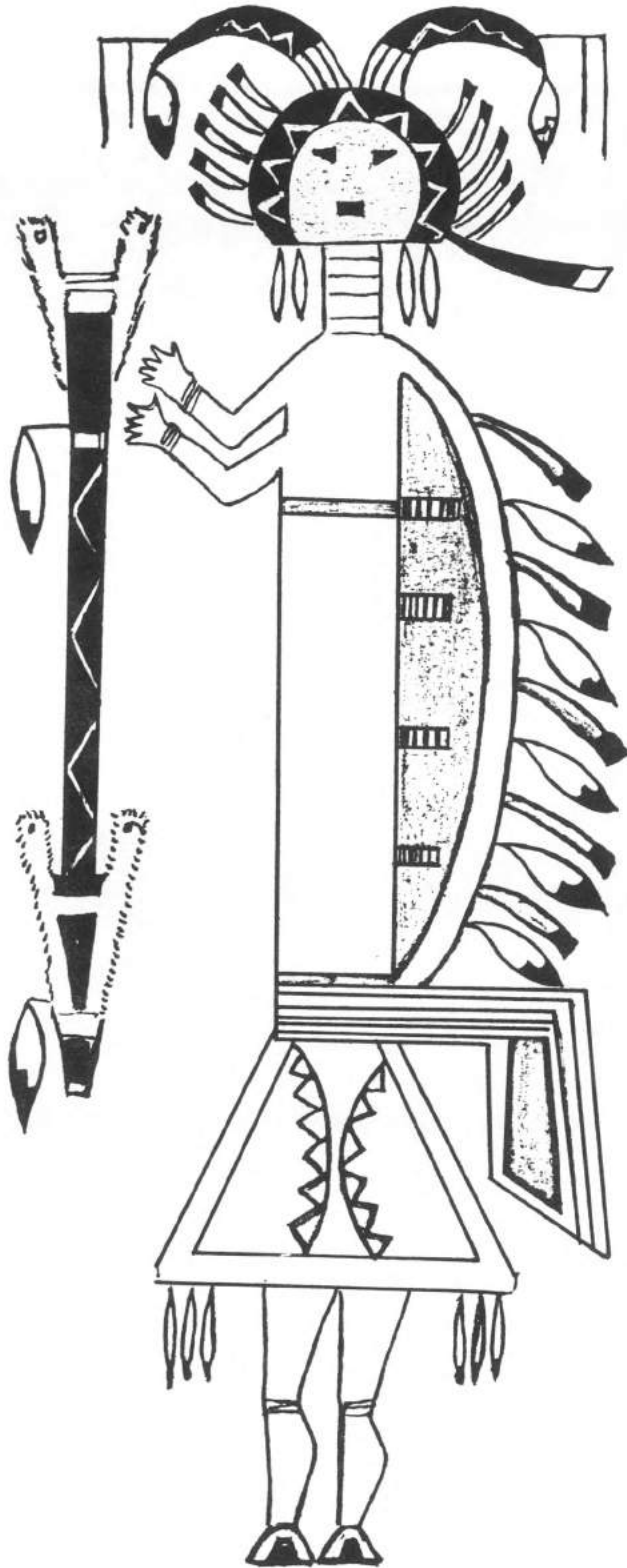


Figure 1. Sketch of Gánaskīdi.

Canyon, according to Washington Matthews (1902, p. 13), but they may be found elsewhere. In the stories, they are many times associated with other *Yéi* (Navajo deities).

The *Gánaskìdis* belong to the Rocky Mountain Sheep People and have a very prominent place in the pantheon of Navajo deities. In the story of the Night Chant, it was the mountain sheep that took the prophet to their dwellings where he was taught the rites of the Night Chant. In the ceremony, he sometimes appears on the ninth day with Talking God and Fringed Mouth God. He is shown in the sand paintings of this chant on the sixth and eighth days.

In one myth of the Night Chant, the hero was hiding in ambush to kill some mountain sheep. When the sheep finally appeared, he was unable to shoot because his fingers froze on the arrow. At this point, the mountain sheep took off their skins, showing themselves to be four humpback gods. They gave him a sheepskin, and he was changed into a mountain sheep, and they went their way as five mountain sheep (Ibid., p. 163).

Haile (1947, pp. 69-72) presents a slightly different version of the legend than that introduced by Matthews. Haile states:

There it is related that the Visionary, the hero of the legend, had been waylaying a drove of bighorns which suddenly disappeared out of his sight. When he searched again after a long time what he saw was not bighorns, but Fringed Mouth in his mask approaching him. Fringed Mouth did not speak but gave his call at intervals when he stopped.

He was followed by another person called *Yá''ask'idi'*, Humpback, who also gave his call as he followed Fringed Mouth. Two other calls were heard, that of Talking and Calling Gods...

They may change their garments at will. The young man had followed them as bighorns, here he sees the same beings masked. To demonstrate their power of transformation, Talking God removes his old clothes from him and clothed him in garments like his own even adding a mask which he took out of his own

mask. That done they transformed themselves and him into bighorns because they had planned to take him along with them to their homes.

Both Fringed Mouth and Humpback are primarily responsible for changing the hero into a bighorn sheep and for teaching him the Night Chant ceremony (Ibid., p. 72). Humpback is the representative of the Night Chant at the corral dance of the Mountain Chant. He and other Yéi helped propel a log down the San Juan River in the journey of the hero to the end of the river.

Humpback's mask is blue with black triangular eyes. He wears a basket headdress, the crown made from a Navajo basket from which the bottom has been removed. The black brim of the hat represents storm-clouds with an encircling white zigzag line to indicate lightning. Two mountain sheep horns extend upward from the basket. They are painted black on the bottom and blue on the tips. The horns also are decorated with white zigzag lightning. Downy feathers are tied to the tip of each horn with cotton string. Below the horns, alternating red and black flicker feathers represent sunbeams. They are tied in an upright position around the sides of the basket. Turquoise and red stone pendants hang from the ears which are painted blue.

The bag Gánaskídi carries is painted black, marked on the sides with short white lines arranged in three or four rows. The back perimeter of the bag is decorated with four colors representing the rainbow and is adorned with eagle and red flicker feathers. The bag represents black clouds, is filled with seeds and products gathered from the harvest, and is so heavy that Gánaskídi, it is said, carries a staff to help support the heavy burden. His limbs and body are painted white, and he wears a decorated kilt (Matthews, 1902, pp. 13-14; Stevenson, 1891, p. 265; Horner, 1931, p. 152; Franciscan Fathers, 1968, p. 390).

The staff used in ceremonies should be made of cherry wood and is approximately one yard in length. It is painted black with charcoal and decorated with white zigzag lightning and has two whorls of turkey

feathers and one eagle feather (Matthews, 1902, p. 14).

The early, more primitive renditions of the Yéi pecked in the sandstone cliff faces or painted in the shallow rock shelters do not depict in detail the renditions of paraphernalia and dress of Gánaskídi as seen in the sand paintings of the Night Chang and the Creation Legend. Although many of the petroglyphs and pictographs are well done, only the fundamental paraphernalia identifies him as the Harvest God. The ever present mountain sheep horns, the hump, and the staff are the only means of identification. In some cases in the Navajo Reservoir area, humpback figures are found, but without horns and staff they cannot be positively identified as Gánaskídi (Schaafsma, 1963, p. 61).

Some people advance the theory that Gánaskídi might be a later counterpart of Kokopelli, the humpback flute player, a fertility god of the Pueblo Indians. Certainly Gánaskídi symbolizes fertility and has the hump, but the question of the origin of the two arises. Kokopelli is insect inspired according to Pueblo myth, while Gánaskídi has his beginnings with the mountain sheep, who according to legend have their home in Tse'gíhi Canyon, a region once occupied by ancient Pueblo peoples. With the Pueblos of the Hopi Mesas still occupied a few miles to the south, it might be well to investigate the legends of the Hopis and the origins of their deities.

Archaeological evidence indicates that Navajos of the Dinétah had contact with Hopis during the Gobernador Period. It is highly possible Gánaskídi could have been Hopi inspired.

A priesthood of Walpi, called the Aaltû of Hornmen, also called the Alósaka cult, is said to have been a cult that came from the south. It was active at the ill-fated village of Awatobi and still functions at Hopi pueblos (Fewkes, 1899, pp. 522-524). They are the guardians of the Alósaka cult and also perform its rites.

The Alósaka wear a headdress similar to Gánaskídi with two curved horns of buckskin painted white that extend upward and represent mountain sheep horns. A large rectangular tablet of skin or cloth, stretched over a framework and painted to represent moisture, is

carried on the back of an Alósaka impersonator at ceremonies (Fewkes, 1903, pl. lix, p. 182). A semi-circular rainbow curves above the Alósaka's head representing the god's mode of travel. Navajo Yéi also are said to travel on rainbows. A rainbow was given to Gánaskídi by Talking God as a means of travel for all the Yéi.

The Alósaka lead the column of dancers in the Walpi Flute Dance, the New Fire Ceremony, and the Winter Solstice. This cult is a form of totemism, and the Alósaka represent mountain sheep which they imitate by certain actions in the ceremonies. One of the rites performed by the cult is to cause seed to germinate and to bring rain so the crops may grow.

Although an Alósaka has no hump or pack as does Gánaskídi, the screen or alter used in Alósaka ceremonies has almost the same implications as the contents of the pack of Gánaskídi. Alósaka stands in the center of the screen with triple rain clouds depicted above him. In the lower left is a symbol of the sun and on the right a representation of a sprouting seed. The upper edge of the screen shows a series of hoops covered with cotton to represent snow. A corn symbol is painted on the lower portion of the screen, and the surface is covered with many kinds of seeds such as corn, beans, and other crops of the field. The ceremony held before the screen is a prayer for fertile crops and a harvest of plenty (Fewkes, 1899, pp. 532-534).

Another of the horned deities of the Hopis is Panwú (Fewkes, 1903, pl. xl, pp. 142-143), a member of the Horned Society (Fig. 2). He is the Mountain Sheep Katchina with a headdress of imitation mountain sheep horns with zigzag lines to represent lightning. Turkey feathers hang from the rim of the headdress and a decoration representing a squash blossom is on each side of the head. The mask is brown and the body is clothed in a buckskin shirt and fringed leggings. He wears a kilt tied with a sash. A semi-circular framework with feather decorations is carried on the back. Panwú carries a decorated staff. He appears in the Flute and other ceremonies with the Alósaka. He has power over rain and moisture.



Figure 2. Panwu, a Hopi horned deity.

AREAS OF SURVEY

The Largo drainage is made up of four major canyons (Map). Largo proper heads near Cuba, New Mexico, and flows into the San Juan River at Blanco. Carrizo Canyon heads in Carson National Forest, as Compañero Canyon in that area, and flows into the Largo south of Blanco; Tapicito Canyon also heads in Carson National Forest and joins the Largo near the Truby Ranch east of Blanco Trading Post. Blanco Canyon heads in the Huerfano area and runs into the Largo at the Largo-Carrizo confluence. This confluence is known as *Taxote* 1 wide water place, to the Navajos (Haile, 1938, p. 38). The drainage system of these three canyons is the heart of the Dinétah.

All of these major washes are fed by a maze of winding, sandstone canyon tributaries. Cibolo, Crow, and Delgadito Canyons are three of these many feeder canyons. This discussion will be confined to that portion of the old Navajo homeland with some mention of adjacent areas. Crow Canyon was chosen as a central point. Locations for the other sites mentioned will be given in relation to Crow Canyon.

Of the sites containing rock art of Gánaskídi, Crow and Delgadito Canyons depict the more elaborate workmanship, although not as much as the sandpaintings of 200 years later. They are generally very well executed with some decoration. The poorest rendition of the Humpback is located in Stewart Canyon, an outlying canyon to the west of the Largo and not in Dinétah at all.

Crow Canyon

Crow Canyon is a steep terraced canyon that runs into the Largo from the northeast about 16 km. up the canyon from the point where Carrizo, Blanco, and Largo merge. Clusters of some fine examples of Gobernador Phase petroglyphs are to be found along the base of the northwest canyon wall. These clusters are scattered along a 4.8 km. length of the canyon.

Humpback is found in two panels near the mouth of Crow Canyon. One of these sites is located behind a large section of the cliff face that had separated from the cliff leaving a narrow passageway

much too narrow for desirable photography.

Two humpback figures are located near the end of the narrow passageway (Fig. 3). They are approximately 55 cm. in height. One has a round head with mountain sheep horn headdress. The hump is decorated with 12 pecked lines to represent feathers, with one feather being longer and curved. The staff is a straight line ending in a triangle at the top. The other figure has a square head, also with a mountain sheep horn headdress. Seven crudely pecked feathers decorate the hump, and the figure does not carry a staff.

The square head on the humpback figure is unusual in the petroglyphs in the Largo area and, in fact, is the only one recorded in this area. In some sandpaintings, a square head represents a female figure.

A short distance up the canyon, a site depicts Humpback associated with a petroglyph of an elaborate cornstalk decorated with an hourglass symbol representing the scalp lock, the design that symbolizes Born-for-Water, one of the Holy Twins (Schaafsma, 1972, p. 36). This panel is well known and has been photographed, studied, and written about by several students of rock art and the archaeology of the Largo. Humpback is artistically portrayed (Fig. 4). Feathers decorating the hump are uniform and well defined. Small peck marks may represent seeds scattered in the bag interior. The rainbow encircling the hump is prominent. Humpback's staff is a straight pecked line with a triangle at the top as are most of the staffs of Gánaskídi in the Largo drainage. His tunic shows no decoration except a band around the bottom decorated with a diamond design. Lightning, animal tracks, and a target-like design that could possibly represent a Navajo basket are associated with the humpback figure. (Compare this panel with the screen of the Alósaka described earlier in this paper.)

A small, badly eroded humpback figure is located to the right and below the panel. Only the horns, top of the staff, and the hump are vaguely recognizable. No photograph is available.

About 1.6 km. up Crow Canyon from its mouth are two sites containing humpback figures separated by some 45 m. and situated on the cliff at

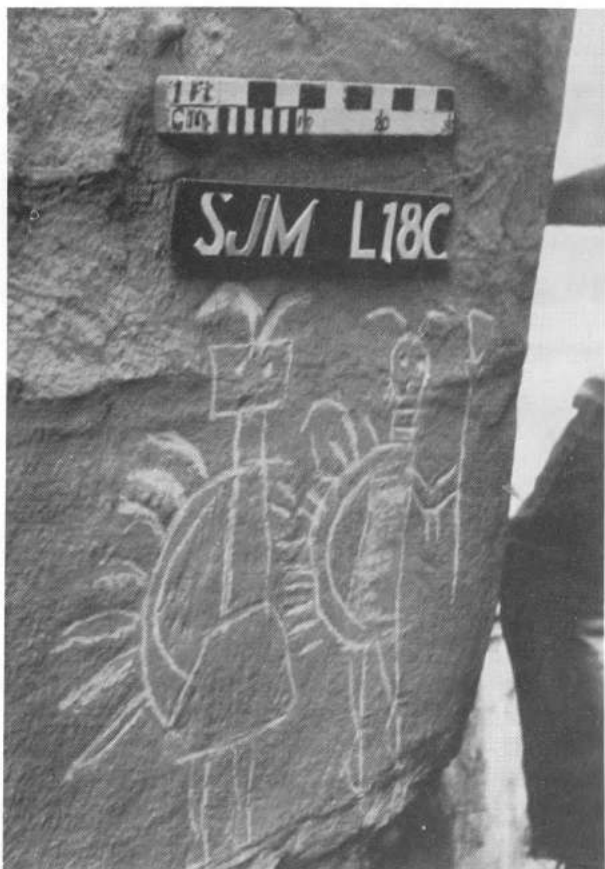


Figure 3 (top) and
4 (bottom)

Petroglyphs of the
Humpback located at
the entrance of
Crow Canyon.

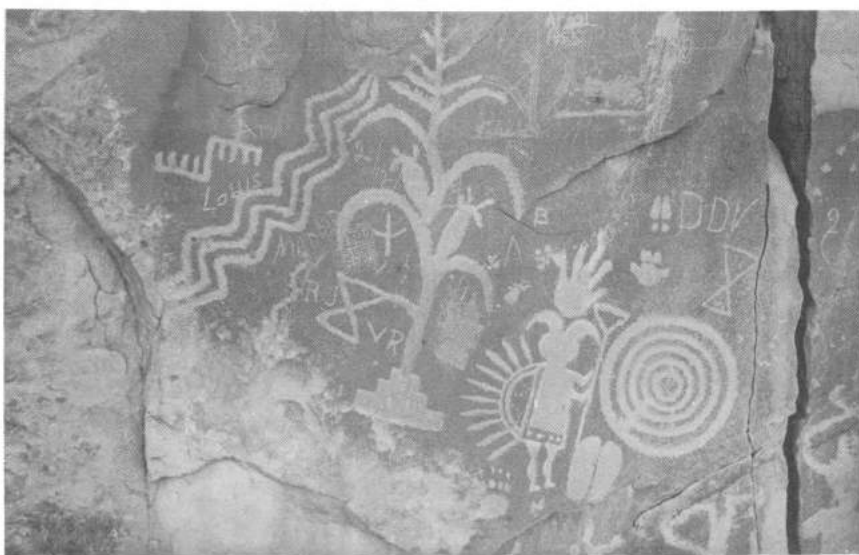




Figure 5.



Figure 6.



Figure 7.

Concentration of Humpback petroglyphs located in the central portion of Crow Canyon.

ground level immediately north of the main wash. The site farthest to the west consists of a line of three humpbacks at ground level (Fig. 5). Erosion has damaged the petroglyphs severely. The legs and bottom portion of the humpbacks are completely destroyed, but the rest of the figures are intact. None of these have feather decorations on the hump but the rainbow is present as well as the staff and horns.

Three humpbacks (Figs. 6 & 7) are located on the cliff face in a site up the canyon about 27 m. to the east. They are 1.2 m. above ground level and are pecked into the very rough, pock-marked sandstone face.

The figure to the left of the panel (Fig. 6) is fairly well executed, with nine feathers decorating the hump. A rainbow around the hump is depicted with two lines. The figure is 45 cm. tall and thinner than most found in the area. The kilt is prominent and is decorated with tassels and fringe on the bottom. His staff has a triangle at the top and a triangle at the bottom, much in the form of the design on the bottom of the staff seen with some humpback figure of the sand paintings (Fig. 1).

Approximately 1.8 m. to the right of this humpback, a crudely pecked but more ornate figure stands with a staff decorated with rainbows and what may represent a feather at the base of a triangular design at the top of the staff. The hump is poorly executed and is decorated with five feathers (Fig. 7). A very small humpback figure located behind this figure is 8 cm. tall. It has no feathers in the hump but exhibits triangles on the top and bottom of the staff.

About 3.2 km. up Crow Canyon from the Largo junction, a small rincon in a short feeder canyon runs into Crow Canyon from the northwest; there a large number of outstanding petroglyphs are to be found. Panels of hunting scenes, masks, geometric designs, Yéi figures, etc., are situated along the west wall of the rincon, but only one panel depicts two humpbacks.

One figure, about 50 cm. tall and well executed (Figs. 8 & 9), is found in the center of a panel that contains buffalo, deer, Yéi figures, a long legged bird, and two figures which may represent the masked



Figures 8 (top) and
9 (bottom).

Petroglyphs of the
Humpback found at the
entrance of the left
fork of Crow Canyon.

impersonator of a female assistant who appears in the Night Chant ceremony (Hester, 1962, p. 121). In the left portion of the panel a horned mask design could represent the mask of Humpback.

To the left of the panel, a humpback figure is found in a small niche. It is somewhat different from most in that it has a feather-shaped object extending upward from between the curved horns of the headdress. Erosion has destroyed the staff if there was one. The hump is poorly done, with only pecked lines to represent feathers. The legs are represented by pecked lines, not like the well-formed legs commonly seen on Navajo figures. A badly eroded, tiny figure with curved horns is located at the right of the humpback's legs.

In looking at the steep, rocky terraces stepping down from the mesatop across the wash from the site, a small dark rectangle appears on the first shelf below the mesa top. It is a small window in a masonry shaft leading up into a walled-in rock shelter. A notched log ladder is encased within this shaft for ascending to the fortified shelter that is about 4.5 m. above the terrace ledge. Remains of standing masonry walls of *pueblito* ruins are found perched on ledges of the sheer cliff adjacent to the shaft of the rock shelter. This section of Crow Canyon seems to fascinate those who visit and observe the works of those who once lived here. One has a feeling of entering into a place of special significance, a place of enchantment that seems to captivate everyone.

Five Gobernador Phase *pueblito* sites are within a 3.2 km. radius of Crow Canyon. Three of these are in the canyon proper and within 1.2 km. or less from a petroglyph site.

Crow Canyon is an outstanding area for study of the Gobernador Phase of Navajo occupation of the Dinetah in association with petroglyphs.

Delgadito Canyon

Delgadito Canyon holds some of the finest examples of Navajo pictographs found anywhere in northwestern New Mexico. Although a great many Navajo rock art sites were surveyed in the Carrizo Canyon drainage, only four exhibit the Humpback, all of which are found in

Delgadito Canyon.

Delgadito Canyon runs into the Carrizo about 11.2 km. upstream from its confluence with the Largo and about 14.5 km. northeast of Crow Canyon as the crow flies. At the head of a small feeder canyon of Delgadito is a fairly large rock shelter. The rear wall of the shelter is filled with colorful Navajo paintings considered to have been placed there during the Gobernador Phase occupation.

When the site was first visited in 1958, a line of Yéi was found on the rear wall of the shelter painted in blue, white, red, and yellow (Fig. 10). Three humpback figures are included in this array. Two of these figures lack some of the paraphernalia associated with Gánaskídi as shown in sand paintings, but the decorated hump is present. Although somewhat eroded, there is evidence of horns and staff on all three.

One figure is located in the far left portion of the shelter and is somewhat separated from the main panel by a crack in the cliff face. In spite of considerable erosion this figure seems to stand out from all the others as being one of great power and importance. It stands 56 cm. tall, the hump painted in dark blue, and eagle feathers in white with blue tips. The rainbow around the hump is red outlined in white with beautifully executed fine incised lines outlining each feather. White lines remain, indicating where the mountain sheep horns had been, with enough paint remaining to recognize the outline of the horns. A zigzag line that could represent lightning extends upward from the center of the horns and curves down around the hump.

Three short red feathers are located just below the base of the horns on both sides of the head, resembling those seen on Gánaskídi in sand paintings. Blue ear pendants tipped in red are visible and the face is outlined in red and painted blue. The staff is outlined in white ending in a triangle at the top. The body is decorated with joined triangles in alternating reds, blues, and yellows, each triangle outlined in white. Some sandpaintings with Holy People are painted in this same manner but not Gánaskídi (Reichard, 1977, pl. xx; Newcomb & Reichard, 1975, pls. xiv & xxvii). The outline of the arms still

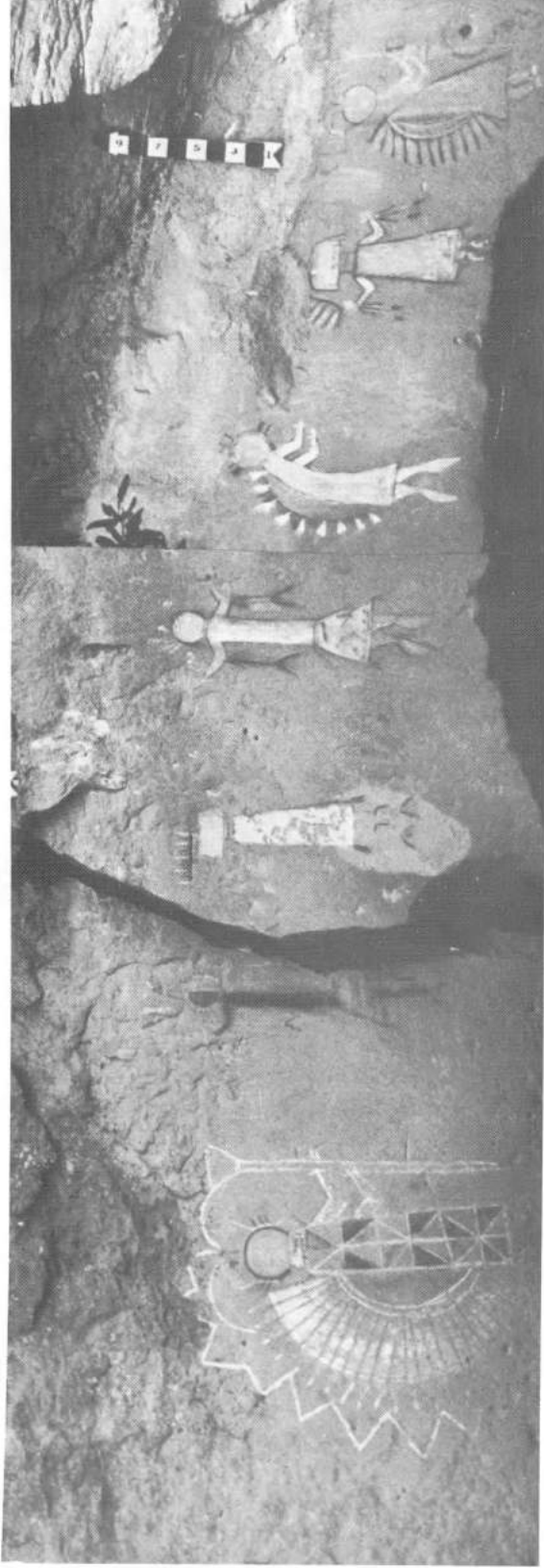


Figure 10. Pictograph panel from Delgadito Canyon, that was salvaged in the spring of 1965 and put on exhibit at the Museum of Navajo Ceremonial Art at Santa Fe.

remain with enough paint visible to indicate they had been solid white. The legs are eroded away, but some pigment remains to indicate they also had been white.

The Gánaskǐdi is a part of a line of seven figures, two female Yéi, two male Yéi, and three humpback figures. The second humpback has a white, curved body with a blue hump decorated with short white feathers with faded blue tips and small red lines between, which may represent flicker feathers. Traces of white show where the curved horns had been painted, and the base of the horns display evidence of blue paint. Faded red lines decorate the headdress and the sides of the head which is painted blue and outlined in red. The arms are extended as if holding a staff but no staff is present. Perhaps erosion has destroyed it.

The third humpback has curved horns outlined in red with white tips. The head as well as the body is outlined in red. White and red feathers decorate the hump and the rainbow around the hump is done in blue, red, and white. The staff is white with triangles both at the top and midway of the staff. This humpback has ear pendants of blue tipped with red, the same as the first one described, but has a white face where the other two had blue faces. The neck of each figure is treated differently, varying from no neck to short neck to a neck with four red lines.

In the winter of 1964, the freezing and thawing of moisture that had collected in and behind the cracks in the cliff caused the panel to separate from the wall and fall face down in the soft sand of the shelter's floor. The next year, salvage of the panel was begun by Dr. Bertha Dutton, then director of the Museum of Navajo Ceremonial Art, to move it to that museum in Santa Fe, with Polly and Curt Schaafsma in charge of field operations. The panel remained on exhibit there for a number of years and then was taken down and crated and was finally purchased by interested parties. It now rests, still in the crate, at the Navajo Tribal Museum at Window Rock.

Two pictographs of Humpback are to be found about 90 m. to the

east and directly across the canyon from the rock shelter where the fallen panel was located. They are painted on very light colored, soft, granular sandstone that is subject to erosion.

These two humpback figures are located beneath a shallow overhang in the cliff wall. They are separated by some 9 m. The figure on the left had been beautifully painted, but weathering has destroyed much of the color (Fig. 11). The horned headdress is outlined in red with a white interior, the same as the face. Red ear pendants are visible and the neck is striped with red. The red-outlined hump is decorated with fine incised lines across its interior, while sixteen incised feathers decorate it. The incised lines of the feathers are painted with thin red lines while the interiors of the feathers are painted white. Usually there are painted tips on the feathers, but if they are present here they have completely eroded away. The staff held in the figure's hands had been painted white and is very badly faded. Another staff, also in white, was added presumably at a later date and angles away from the body more than the original staff. The arms and legs are painted white and outlined in red. The body is clothed in a multi-colored garment of incised triangles. Although the paint is very weathered, enough remains to indicate the alternating triangles of red, yellow, and white. Perhaps blue was used as in other figures in the more protected areas of the canyon, but blue is very unstable and is subject to deterioration. If it was present, it is completely gone now.

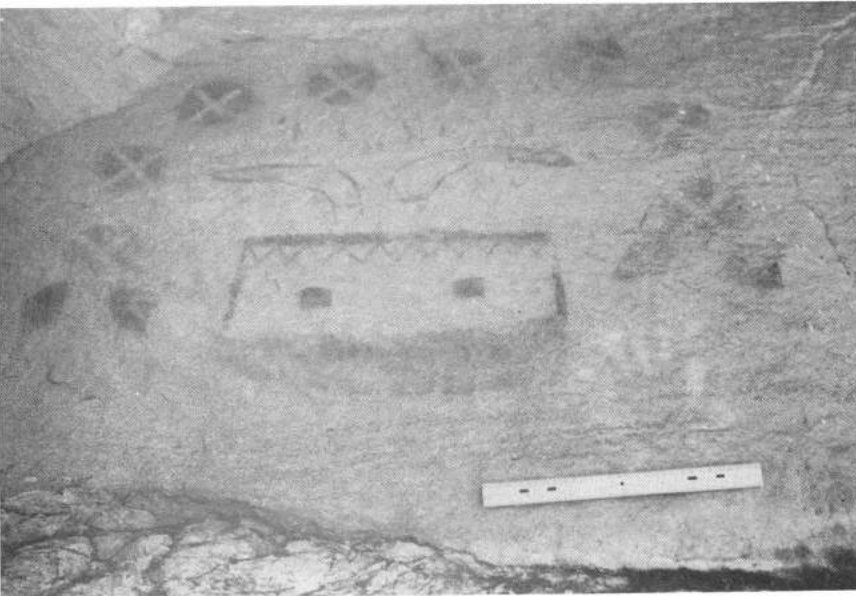
This imposing figure stands at the left of a line of Yéi painted in reds and whites. The first of these figures may be Fringed Mouth, while the others have not been positively identified at this time.

Another figure that may represent Humpback is located about 9 m. to the right, but erosion has almost destroyed this figure. Only traces of white paint indicate that there was a white face with a mountain sheep horn headdress. Faded yellow paint on the body is decorated with faded red lines. The figure is so badly eroded it could not be recognized in a black and white photograph.



Figure 11. Pictograph
in Delgadito Canyon
adjacent to panel in
Figure 10.

Figure 12. Painted
horned mask in
Delgadito Canyon.



A short distance down the canyon, on the first terrace above the valley floor, is what appears to be a mask of Humpback (Fig. 12). This figure, facing south, is painted on light colored sandstone. The mask is 41 cm. across and is painted in red, the bottom portion being solid color. The eyes are square and a zigzag line is painted just below a red line that indicates the top of the mask. Two horns curve upward from the center of the mask while a line of eight circles, 7 cm. in diameter, with negative crosses in the interior curve above the mask. These designs terminate at each side of the mask, where they are decorated with two small red feathers. A small white negative handprint is at the lower right of the mask. The entire panel is 81 cm. wide and 75 cm. high.

About 3.2 km. up Delgadito Canyon from the point where it joins the Carrizo, a line of very small Yéi is depicted in an almost hidden small rock shelter located at the base of the cliff that forms the north wall of the canyon. The largest of these figures is only 15 cm. tall and all are painted in brilliant colors of red, white, yellow, and black. Although there has been some deterioration by the elements, the panel is in good condition (Fig. 13). The figure at the left end of the panel, painted white and outlined in red, was thought to be Humpback by myself and many others, due to the series of triangles in red that decorate the back of the figure, but it does not appear to resemble the feathered hump of Humpback. There is no mountain sheep horn headdress, and the figure carries no staff though the arms are positioned as if to hold one. Its mask is square, painted white and outlined in red. The garment is decorated with many white dots with the lower portion decorated with red vertical lines. It is unlikely this figure represents Humpback.

A small, fairly well preserved Gobernador Phase ruin is located in a box canyon a short distance up Delgadito from the site containing figure 13. It is situated on a large boulder which is about .8 km. north of the dirt road running up Delgadito Canyon. The site is hidden from view from the road by a growth of pinyon and juniper on the first terrace above the road.



Figure 13. Pictograph panel of Yei line in Delgadito Canyon.

When the site was surveyed in 1957, a trash mound contained Gobernador Polychrome and Dinetah Utility sherds, but these have long since disappeared. Souvenir hunters have stripped the site of its material culture.

Largo Canyon Proper

Two figures of Humpback are recorded at a site along the canyon walls of the Largo proper (Fig. 14). The site is located 4.8 km. down the Largo from the mouth of Crow Canyon and immediately west of the main Largo road.

The figures are deeply incised into the soft, light, granular sandstone almost at ground level. One is 28 cm. tall with nine feathers decorating the hump. The horns are curved back toward the hump as if they were in profile. The arms are extended and holding a staff decorated with two incisions in the shape of a shallow "V" at its top and two like decorations at the bottom. Legs are bent in an almost sitting position. Another small figure of a humpback is located just below the feet of the larger figure. It is incised and 15 cm. tall. Its hump also is decorated with nine feathers. The horns curve back toward the hump and the staff is decorated with triangles at top and bottom. It also is in a sitting position. These figures differ from others in the Largo in that they appear to be done in profile and in a sitting position.

Due to the lightness of the sandstone cliff face, the figures can only be photographed in the early morning hours when the sun cross-lights the panel. These figures are barely visible in direct sunlight.

Cibola Canyon

Cibola Canyon is the most isolated area containing Humpback. It is located some 43 km. up the Largo from Blanco and 16 km. from the large concentration of petroglyphs containing the humpbacks in Crow Canyon.

Cibola runs into the Largo from the southwest. Eight km. of the canyon were surveyed, recording 23 Navajo rock art sites, but only one about half-way up the canyon displayed humpbacks (Fig. 15). The site



Figure 14. Incised
petroglyph of the
Humpback in Largo
Canyon.

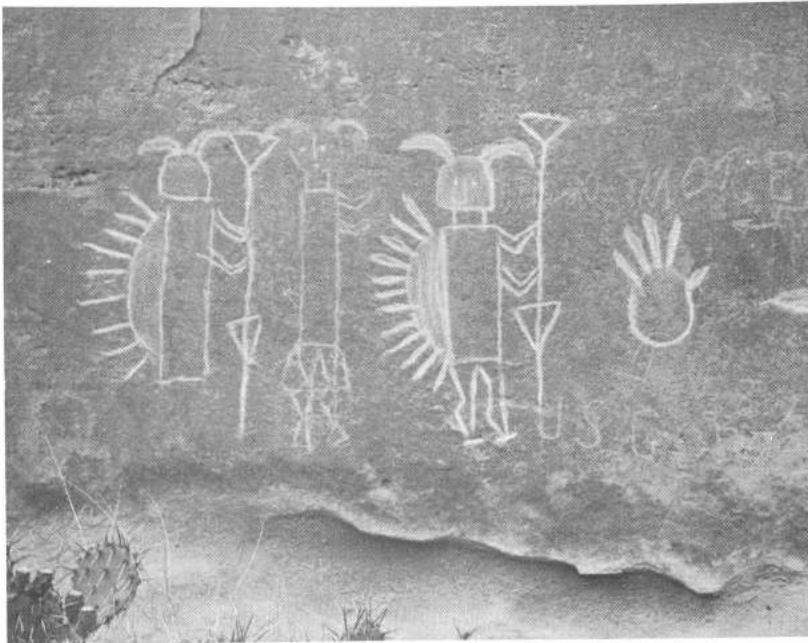


Figure 15. Petroglyph
of Humpbacks in
Cibolo Canyon.

exhibits three humpback figures and differs from others recorded in that masks are indicated on the three well executed figures. These are the only humpbacks recorded in the Largo on which masks occur. These incised representations are 30 cm. tall, and two of the three portray the hump with eagle feathers. The two outside figures carry a staff, while the center one does not and lacks a hump. Mountain sheep horns decorate all three masks. A hand print and a large shield design, adorned with feathers at the four cardinal points, are located immediately to the right of these humpbacks.

Star Canyon

Star Canyon is situated about 7.2 km. down Largo Canyon from the confluence of Crow Canyon and the Largo. Star Canyon joins the Largo from the west. It has a drainage of perhaps only 3.2 km. The canyon forks at its head forming a "Y"; a large sandstone formation in the shape of a star is located on the mesa top separating the two washes and overlooking the main canyon below. It is an outstanding landmark that can be seen readily from the dirt road running along the west bank of the Largo Wash. The rubble of a small Gobernador Phase pueblito is just below the first terrace of the sandstone "star" formation.

Several Navajo petroglyphs were recorded by Explorer Scout Troup 315 in 1972 during its rock art survey of the canyon, but only one site depicting Gánaskídi was recorded. It is a single figure isolated from the other petroglyph sites in the canyon (Fig. 16). It is situated on the north face of a sandstone cliff approximately three quarters of the way up the main wash of the canyon. The incised Yéi is 38 cm. tall and thinner than the average figures of the Humpback found in the other canyons of the Largo. The mountain sheep horn headdress and the staff are present. The hump or pack is decorated with one, large, beautifully pecked eagle feather in the center of the hump. The remaining feathers are depicted by pecked lines only. A rainbow around the hump is present. The tunic is decorated with crisscross lines. The staff is present but poorly done; it may have been decorated.



Figure 16. Incised figure of the Humpback located in Star Canyon.

Figure 17. Petroglyph panel containing Humpback figure in Stewart Canyon.



Blanco Canyon

One figure of Humpback is located in Blanco Canyon at a badly eroded site. Photographs were not suitable for publication. The petroglyph is 18 cm. tall, crudely pecked, and uneven in outline. Even though crude, the horns, staff, and a feather decorated hump are recognizable.

To the right of this figure is a horse and rider done in Navajo style. Another very dim figure is located a short distance to the left, but the hump is unclear.

Stewart Canyon

A site depicting a humpback figure was discovered in a shallow overhang in Stewart Canyon which enters the San Juan River 3.2 km. east of the city limits of Farmington, New Mexico. The canyon is some 56 km. west of Crow Canyon and the Dinetah.

Five figures were recorded, but only one Humpback, in the center of the panel (Fig. 17), is represented. The figure is posed in a stooped position, carrying a staff, and has a curved horn headdress and a hump decorated with feathers. Although the description fits those in the Largo, the style is noticeably different. The figure is short and squatty, not at all like those usually associated with Navajo depictions. There is enough variation to doubt relationship to those described on the preceding pages. Perhaps a group of Navajos resided in the canyon during the 1700s, but a survey of the area yielded nothing of either the Dinetah or the Gobernador Phases. There is little resemblance to the tall, proud figures seen in the sand paintings of later date. This leads one to believe that the figure might have been made during the earlier occupation.

SUMMARY

Although Gánaskidi takes on slightly individual variations in the pictographs and petroglyphs of the Largo, three characteristics always present are the mountain sheep horns, the hump, and the staff. In many cases, the depictions do not compare with the elaborate renditions seen in sand paintings, although almost all the elements are present

in the representation of Humpback in rock art. No headdress is indicated on any petroglyph or pictograph as is done in the sand paintings and as seen on the impersonator. In the pictographs, the colors may or may not correspond with those of the sand paintings, but red is more predominant in the canyon paintings.

The survey and recording of the many varied figures in the panels of rock art on the canyon walls of the Largo is very rewarding in spite of rough, dusty dirt roads and trails of the numerous side canyons and the ever present difficulty of proper photography. After the field work, countless hours have been spent by my wife, Sally, in search of publications pertaining to legends and art forms published some 75 years ago (many now out of print) to the present. Numerous sites are still to be studied and many more hours of research are necessary before the significance of representations are learned from the pecked, painted, and incised figures left by those who once lived in the valleys and on the mesa tops of this wild, beautiful area of the Largo.

A few Navajo figures have been identified such as Fringed Mouth. Olin (1979) noted the resemblance of a Hopi Navajo deity to Fringed Mouth, suggesting close association. Beyond doubt, Pueblo refugees were in contact with Navajos after the 1680 Revolt and had a strong influence on their ceremonial activities as well as their art. Perhaps as much or more influence prior to the refugee contact was transmitted through trade and other activities with the Pueblos adjoining Dinetah, primarily the Hopis, the Zunis, and the Jemez. Interchange of ideas and ceremonies could have been, and probably were, going on many years before the refugee contact (Wheat, 1976). Horner (1931, pp. 156-158) stated:

The Mountain Sheep seem to figure more largely in the Hopi than in the other published Pueblo literature... In the tales of the Tewa, mountain sheep are said to have men in them, that is, they are not real sheep. The San Ildefonso Pueblo... have five Mountain Sheep Dancers with horn headdresses.

Feathers are attached to the horns. The face is blackened... The Jemez people have a Mountain Sheep personation, which appears in the Buffalo Dance... A great dance of the mountain sheep is mentioned at Zuni.

Although time is rapidly running out, elderly medicine men still remember all or part of the legends and ceremonies in which their deities appear. These men should be sought out and contacted before it is too late since they may recognize certain figures in the rock art panels and might relate them to the myths and sand paintings.

The pictographs and petroglyphs are now being defaced rapidly by thoughtless ones who have no regard for the story behind the work of a native artist who long ago placed the figures and designs on the cliff walls. Erosion also is removing flakes of paint and grains of sandstone each day. We should make an effort now to undertake an extensive study in the Dinetah as well as other locations in the Southwest so that future generations can know and see something of their heritage that may otherwise be lost.

ACKNOWLEDGEMENTS

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Archaeological Society of New Mexico
Fruitland, New Mexico

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CULTURAL GAPS AND A CONSTRUCT

BERTHA P. DUTTON

This paper concerns a specific pair of Mescalero Indian moccasins of deerskin which was purchased at the Summit arts and crafts shop on the Mescalero Apache Reservation in 1956. Even at that time such moccasins were rarely offered for sale publicly. The Mescaleros were closely related to the Chiricahua Apaches and formerly occupied adjoining areas of the Southwest. The Chiricahua territory was centered to the west of the Rio Grande. After 1848, the Mescaleros clustered to the east of that river, as far as the Pecos River generally, and on to the Staked Plains.

Inasmuch as the Apaches ranged primarily over southern New Mexico and Arizona and northern Mexico, their terrain varied from warm, semi-desert conditions to the cold of high mountain peaks. This fact influenced their seasonal attire and their life habits. All of the western Apache groups shared a general culture pattern, with certain characteristics which distinguished one band from another.

In some of my writings, as in *THE INDIANS OF THE AMERICAN SOUTHWEST* (1975, p. 119), I mentioned the moccasins commonly worn by these Indians. This brought forth an inquiry from a gentleman (Mr. Raymond Wallace, South Charleston, West Virginia) whose letter was worthy of an answer. He had found the projecting, turned-up toe part of the sole of particular interest. To give him precise information and to refer to a pattern for making such foot gear, I turned to librarians at hand and to researchers who had studied these Apachean peoples extensively. What I had expected to find in a few minutes led only to further searching and realizations.

In 1896, Mason (pt. 1, p. 355) had recognized that the type of moccasin here discussed was "after all the Athapascan legging and moccasin, combined with the addition of a rawhide sole having a broad point turned up in front." This served as a protection against the

thorny plants of their country. Mason observed that the Apaches, being of Athapascan stock, had modified the traditional moccasin fashion to fit their habitat. He described the Athapascan type as a moccasin "with gaiter or extension top." The footing is of one piece, "with seam at the heel and straight up the back or top of the foot to an ornamental tongue piece. The extension top is sewed to the footing so as to extend downward in a curtain to conceal the lacing." Although he did not give a pattern for this style of foot gear, Mason gave facts of construction. He stated:

The long seam down the inside of the leg is made by turning one margin down for half an inch, laying the other margin against the crease and whipping the doubled and the single edge together with sinew thread. For attaching the upper to the sole the raw edge of the former is doubled, the upper margin of the latter is beveled, the two are whipped together, and then the sole projects outward to conceal and protect the seam.

Inasmuch as none of the likely sources that I have consulted in this undertaking had a pattern for cutting the one-piece upper and sole with turned-up toe of the western Apache type, I borrowed from the Museum of New Mexico an example with which I was familiar (No. 36899/12b--SAR). Close examination revealed a complicated arrangement of folds which involved inside and outside portions. As seen in its commonly worn or displayed position, as a boot of thick deerskin colored a deep yellow ocher, the specimen stands to a height of 30 cm.

Both men and women of the western Apaches wore the turned-up toe type. Instead of a pointed flap, theirs are rounded and unornamented for ordinary wear--probably a fact influenced by the rough nature of their territory and its vegetation. (On the cover of ARIZONA HIGHWAYS, May 1975, a colorful illustration shows a young woman in Apache ceremonial attire. She wears a pair of the turned-up toe moccasins which are elaborately beaded.) It is said that women never wore low-cut moccasins, but that Apache men did at times (Opler, 1941, p. 22). An Apache man has remarked that the high-top moccasins could be drawn

up for warmth, or could be folded below the knee as a protection against thorns and rocks (Dutton, 1975, p. 119).

In order for me to achieve a pattern and keep track of the various inner and outer foldings, it was necessary to unfold the moccasin in hand to its entire extent. For an actual pattern, I used heavy brown wrapping paper. For a working model, I chose a piece of white muslin for the upper. For the sole, I cut up an old leather jacket of brown color. That allowed flexibility for handling and sewing. Instead of sinew or fiber, I used black cotton thread so that I could be sure (by conspicuous knots) of what segment of the moccasin I was working at any one time. The sewing is done with the foot and upper held together inside out.

It takes ingenuity and a sizeable skin to provide sufficient material and cut it for a pair of moccasins. Each one of the pair I am discussing required a deerskin 95 cm. in length and 45.5 cm. at its greatest lateral extent. Across the top of the foot, or instep, the skin width is 13 cm., allowing material for the sewing of foot top to the sole. Measurements of the latter are 28.5 cm. from heel to toe limit and 10 cm.

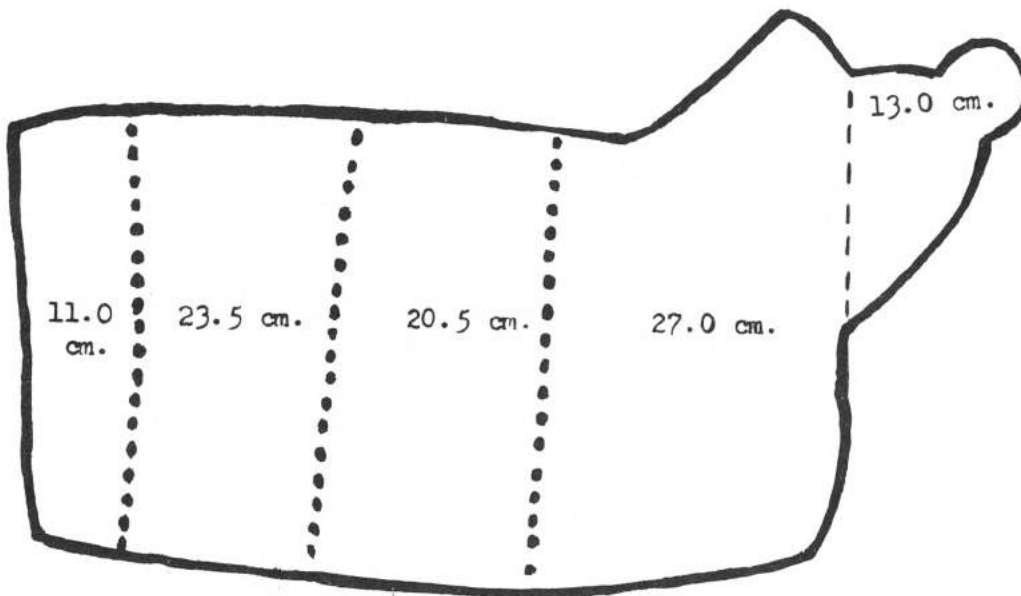
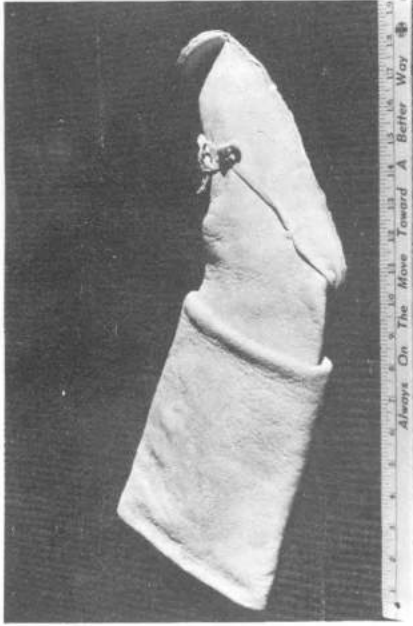


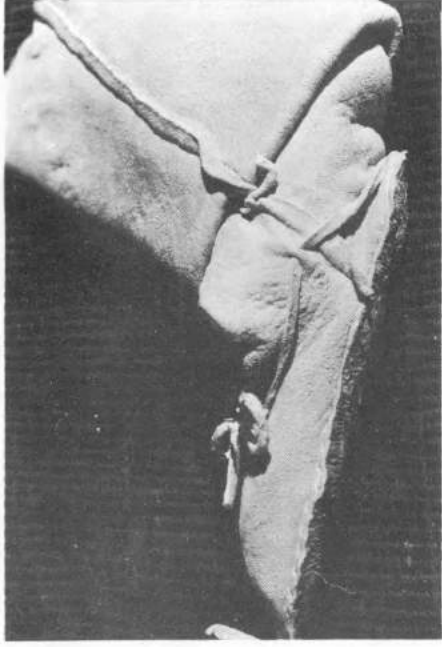
Figure 1. Pattern made from Mescalero moccasin.



Left (outer) side of specimen as worn commonly. Deerskin thong encircles foot, threaded through two small perforations, 3. to 3.5 cm. above sole, and tied in front.



Upper of foot with up-turned toe and tie in bow knot. Wavy appearance of sewing upper to sole on interior of specimen shows conspicuously.

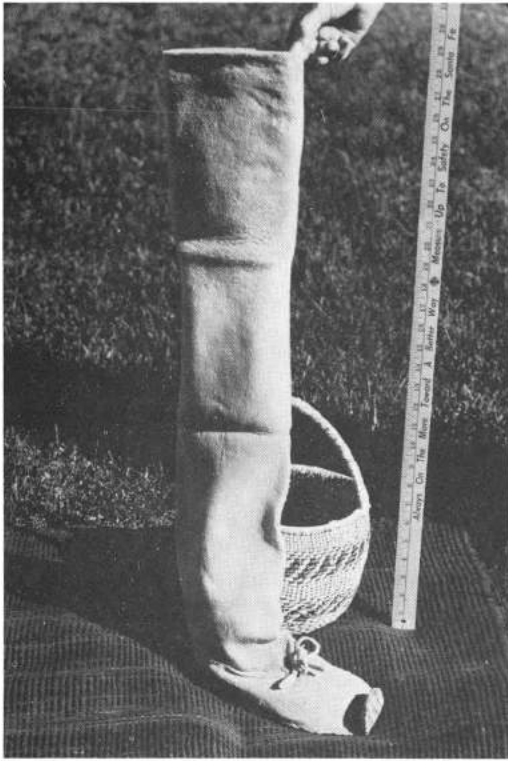


Right (inner) side as worn, showing leg seam and juncture with sole. Thong is threaded through perforations and tied in center of foot. A thong 11 cm. long ties the folded boot to the foot and holds it in proper place. The juncture is the fitting area of the construction.

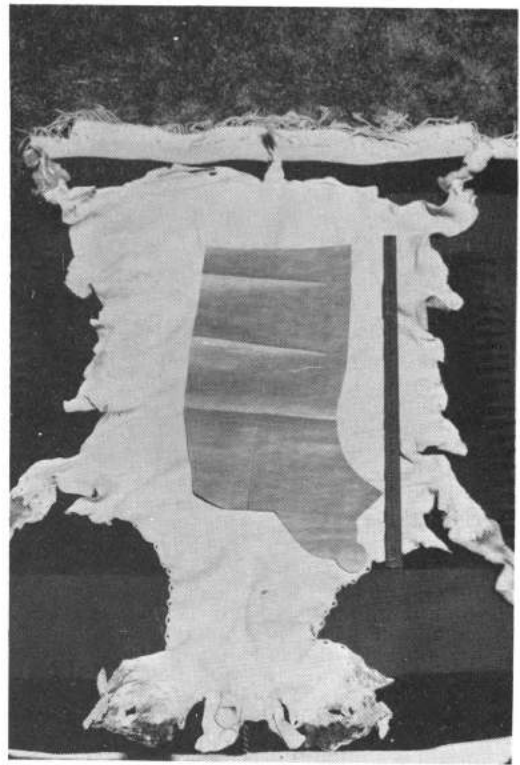


Extended boot as worn ordinarily. Sole shows cowhide with hair not removed.

Figure 2. Mescalero Apache moccasin.



Moccasin unfolded from top fold to sole, propped up by a Mescalero basket made about 1940.



Pattern made from moccasin shown at left, placed on a large deer skin alongside a one meter stick.



Left - Specimen studied for pattern making.
Right - Model made from pattern.

Figure 3. Working model and pattern.

wide. The greatest width of the turned-up toe is 5.5 cm.; its height is slightly under 5 cm.

The raw-edge topmost portion was turned down *into* the tubular upper segment for a distance of 11 cm., so the fold became the top of the boot. At the fold the moccasin measures 36 cm. laterally.

The second segment reaches downward for 23.5 cm. There another fold is made. It is achieved by turning the third segment *up*, inside of the second. That makes vertical use of 20.5 cm. more of the deerskin or the muslin. At this second fold the moccasin pattern measures 38 cm. across, allowing seams each of 1 cm. in width. From that point the pattern is narrowed slightly as it progresses downward toward the sole. At the bottom of the third segment the pattern is 35 cm. wide. A line drawing of the pattern is given in Figure 1.

A fourth segment, 27 cm. in extent, reaches to the sole, 82 cm. below the topmost part, thus accounting for the total of 95 cm. as length of the deerskin utilized in the specimen. On the exterior left of the pattern, the upper of the foot and bottom of the boot itself coalesce in the sewing at 17 cm. from their juncture. It is important to indicate the center back of the sole heel as a guide in keeping the upper and sole in proper position. On the museum specimen, one centimeter is utilized on each side of the leg seam, rather than following the procedure cited above by Mason. The raw edges are not whipped together.

Various photographs of the original moccasin show details (Fig. 2), and the working model is seen in Figure 3.

The folds which caused difficulties in working out the pattern served very useful purposes for the Apache people. Their garments had no attached or stitched-in pockets, so by cleverly arranging their high-top moccasins they attained a means for carrying valuable possessions. The late Kaywaykla, a Chihinee Apache ("Red People--because they painted a band of red clay across their faces"), related to his friend, Eve Ball, cultural information about his group, the Warm Springs Apaches (Ball, 1970, p. xiv). He explained that the value of items carried in such pockets lay primarily in their sense of usefulness. As written by Mrs. Ball (pp. 17-18), Kaywaykla said:

Sometimes these included extra cowhide soles, for soles wore out quickly and had to be replaced. We carried the endthorns of a mescal plant with fiber attached for sewing the soles to the uppers. The soles were tanned with the hair left on ... Because we frequently had to abandon our horses to scale cliffs, the moccasin was our most important article of dress.

Another source notes that paints and a knife were carried in these pockets (Hodge, 1907, pt. 1, p. 282). It was a common practice of Southwestern Indians to carry face paint which was used as protection against sun, wind, and storms.

By contributing this paper, I offer a pattern for moccasins of this western Apache style and photographs portraying details. With a working model, I have proven that a fair reproduction can be made from it. These time-consuming efforts led to certain reflections and an admonition.

Newcomers in diverse fields of endeavor and in their methods of fulfilling them, all too commonly feel the need of weeding out the old, discarding in part or totally whatever has been long standing, and injecting new mechanisms. Innumerable instances, too rapid changes take place, which often prove to be hindrances in the long run. Many considerations or events have transpired before the time was right, or before full consequences have been weighed and priorities established. Just think of the items that are burned or thrown out on dump heaps-- not only by professional people but by others as well: books, pamphlets, manuscripts and hand-written or published papers, negatives and photographs, furniture and furnishings, old equipment, cracked pots and worn baskets, and an unending list of things. Thus voids occur, creating gaps in our knowledge and data and in source materials.

Southwestern archaeology has passed from the days of surveys and excavations by the pioneers of our science through stratigraphic studies (with cultural remains relatively dated) and through various technologic developments of outstanding importance. In general, it has become

possible to piece accumulated evidence together to such an extent that it can be interpreted with some degree of accuracy. Recent occurrences, ethnic views, and newly passed laws, have led to changes which greatly effect archaeological policies. Excavations have all but ceased. In their stead, models are devised and studies carried forward by means of them in attempts to calculate or determine probabilities and derive information without disturbing archaeological sites and their visible remains.

It follows that archaeological, historical, and ethnological accumulations--despite their condition--take on added significance. Relative to my study of Mescalero moccasins, museums and collectors have complete examples, of course. But somewhere, someone must have an old, perhaps worn-out specimen of such footgear (or of some other delapidated item) which could be utilized for study purposes. Thus I want to admonish readers of this book to consult with museum personnel (usually curators of collections) and researchers, or some other expert, before you discard your "old junk."

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TURLEY'S MILL AND LA 8146

J. J. BRODY

INTRODUCTION

A massive stone ruin is located on the north bank of the Hondo River about twelve miles northwest of Taos between the towns of Valdez and Arroyo Hondo. This pile of rubble is known as Turley's Mill and is reputed to be the place where Simeon Turley and several of his employees were killed during the Taos Revolt of 1847. Across the Hondo on top of a cliff opposite Turley's Mill are the far less dramatic remains of another 19th century structure. This large adobe building was almost anonymous and practically melted away before it was registered with the Laboratory of Anthropology in Santa Fe as LA 8146 in 1961.

During the summer of 1965, the Field School in Archaeology of the University of New Mexico excavated LA 8146 under my general direction. The field crew included twelve students who worked under the supervision of David Bardé. Robert M. Kennough, who owned the site and the land around it, enthusiastically supported their activities. Archaeology was used as a technique, but the objectives were historical rather than anthropological. The site was vaguely reputed to have been somehow associated with Simeon Turley and therefore with the Taos Revolt, the fur trade, and a kind of booze called Taos Lightning. We wanted to learn about and to understand the correspondences among the tangible remains of the place, documented history, and informed - or misinformed - speculations.

In 1967 and again in 1968, I wrote two different interpretive accounts of our excavations but published neither because of my dissatisfaction with their uncertain conclusions. As will be seen, the nature of the archaeological remains and of the historical documentation left much to be desired if firm answers were to be had for the questions we were asking. And yet, then as now, the site seemed

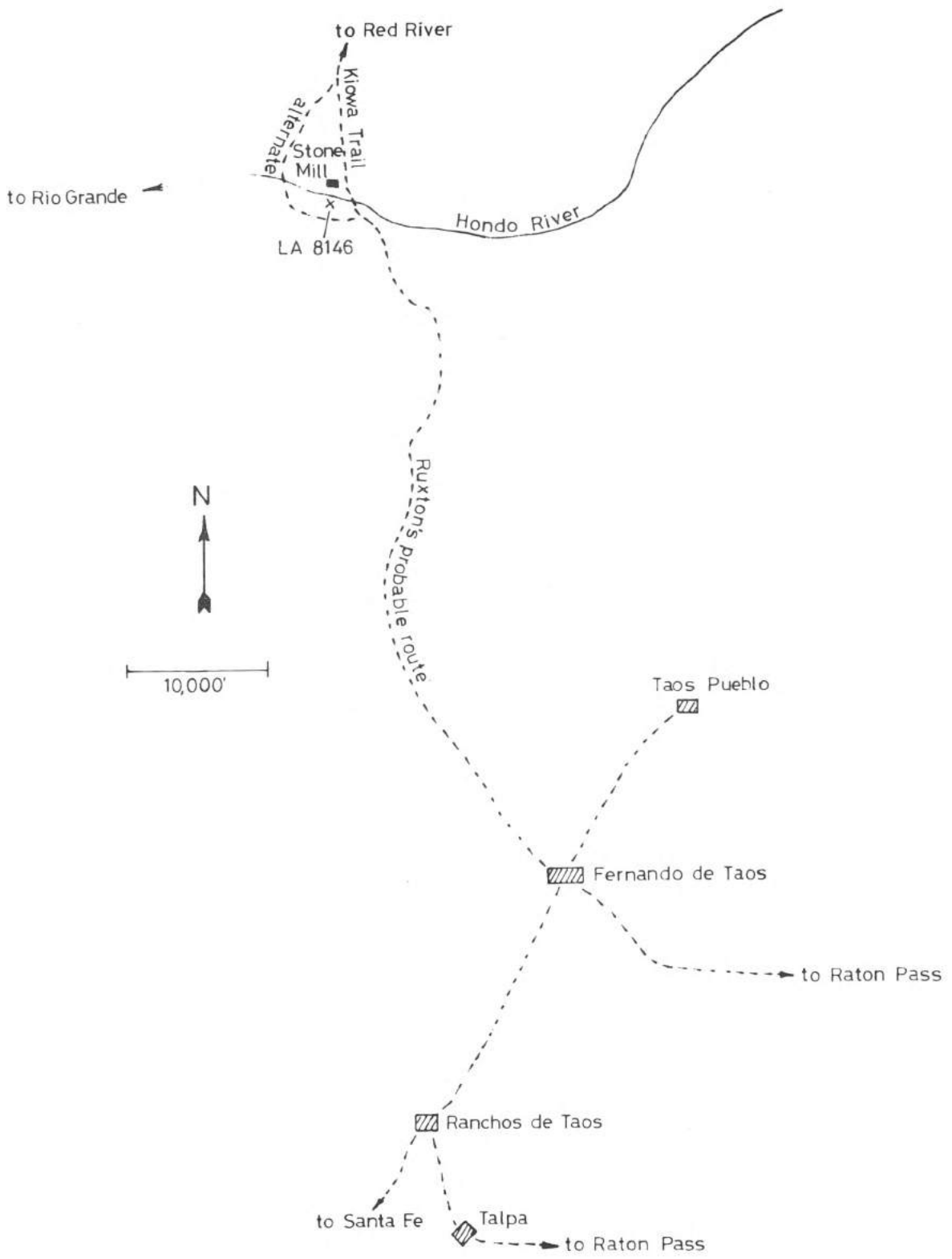
incapable of generating any other questions that were of compelling interest. I am less certain now than I was ten years ago about the meanings of LA 8146 but am no longer as concerned about the uncertainties. "Let others bring order to chaos. I would bring chaos to order..." (Vonnegut, 1973, p. 210).

LA 8146: SITE DESCRIPTION

LA 8146 is located on a rocky cliff about 50 feet high on the side of the Hondo River (Map 1). The promontory runs north-south and is about 250 feet long and 70 feet across at its widest point, narrowing to about 30 feet at the south end. It is virtually inaccessible from the steep north and west sides but can be approached up a gentle slope from the east or down slope from the south. This cliff is a part of the first terrace above the Hondo River and is overlooked by the Taos Valley Plateau south of it. In other directions it dominates the country, including the large stone ruin on the opposite shore immediately below it.

Before excavation, the site was a brush-covered mound about 120 feet long and 50 feet wide. Below it to the east was a dry wall of unmodified fieldstone that still stood from one to three feet high. Debris found on the surface of the site included Indian, American and European ceramics, fragments of iron and copper, sherds of glass, fire-blackened rocks, and chunks of burned adobe bricks. Some alignments of cobbles could be recognized as building foundations.

Excavation was with hand tools: trowels, brooms, whisk brooms, picks, and shovels. After the underbrush was cleared, room outlines were easily identified by double rows of cobbles set in adobe mortar. Each room was excavated as a unit, but since room fill was never more than one foot and generally less than six inches deep, materials found within the rooms had little stratigraphic significance. Stratigraphy was even less meaningful elsewhere. Most artifacts were recovered from the area west of the stone wall from fill that was up to three feet deep. That area was gridded in six foot square units and excavated in six inch levels. However, materials recovered from these sections



Map 1. LA 8146 and vicinity.

had been redeposited, rolled, and tumbled downhill from the house.

The ell-shaped structure has four large rooms and several smaller ones (Fig. 1). Rooms 1 and 2 at the north, forming the bend of the ell, were built as a unit and connected by an interior doorway. Room 3 is subdivided into two equal-sized areas by an adobe brick wall, and room 4, the southernmost one, exhibits the only evidence of an outside entrance. Room 5 (a and b) is an adobe brick addition tacked on to the north wall of room 1. A raised adobe platform in 5b may represent the remains of a cook stove. Other features not attached to the house include a stone corral at the north end of the retaining wall to the east and a keyhole-shaped structure in the courtyard southeast of the house. The latter is of adobe brick that had been intensely burned; ash and slag-like detritus in the fill around it suggest use as a forge. Postholes nearby may have held supports of a shed-like roof.

Other postholes south and east of the main building form no readable pattern but, logically are evidence of a portal. The doorway to room 4 has no sill; elsewhere walls are eroded away below the level of doorsills, and we can only speculate that room 1 had an outside entrance facing south while rooms 2 and 3a had entrances to the east, all protected from the elements by a wooden portal. The adobe wall separating rooms 3a and 3b probably served as a windbreak and may not have extended to the ceiling. The only fireplace is one in the corner of 3b, but evidence of fireplaces in other rooms may have eroded away. Floors in all rooms are of hard-packed adobe. Extensive deposits of wood ash above the floors of rooms 1, 2, and 3 suggest wooden floors once existed above the adobe ones.

The five-foot wide doorway to room 4, absence of a doorsill there, and lack of evidence of a wooden floor suggest that it functioned as a storeroom and loading area. Room 3 is almost certainly a living-bedroom space and room 5 a kitchen. The functions of rooms 1 and 2 could not be determined. All architectural features, including the cobblestone foundation, are entirely consistent with the domestic architecture of 19th century New Mexico (Brody and Colberg, 1966).

LA 8146 HONDO VALLEY
Taos County N.M.

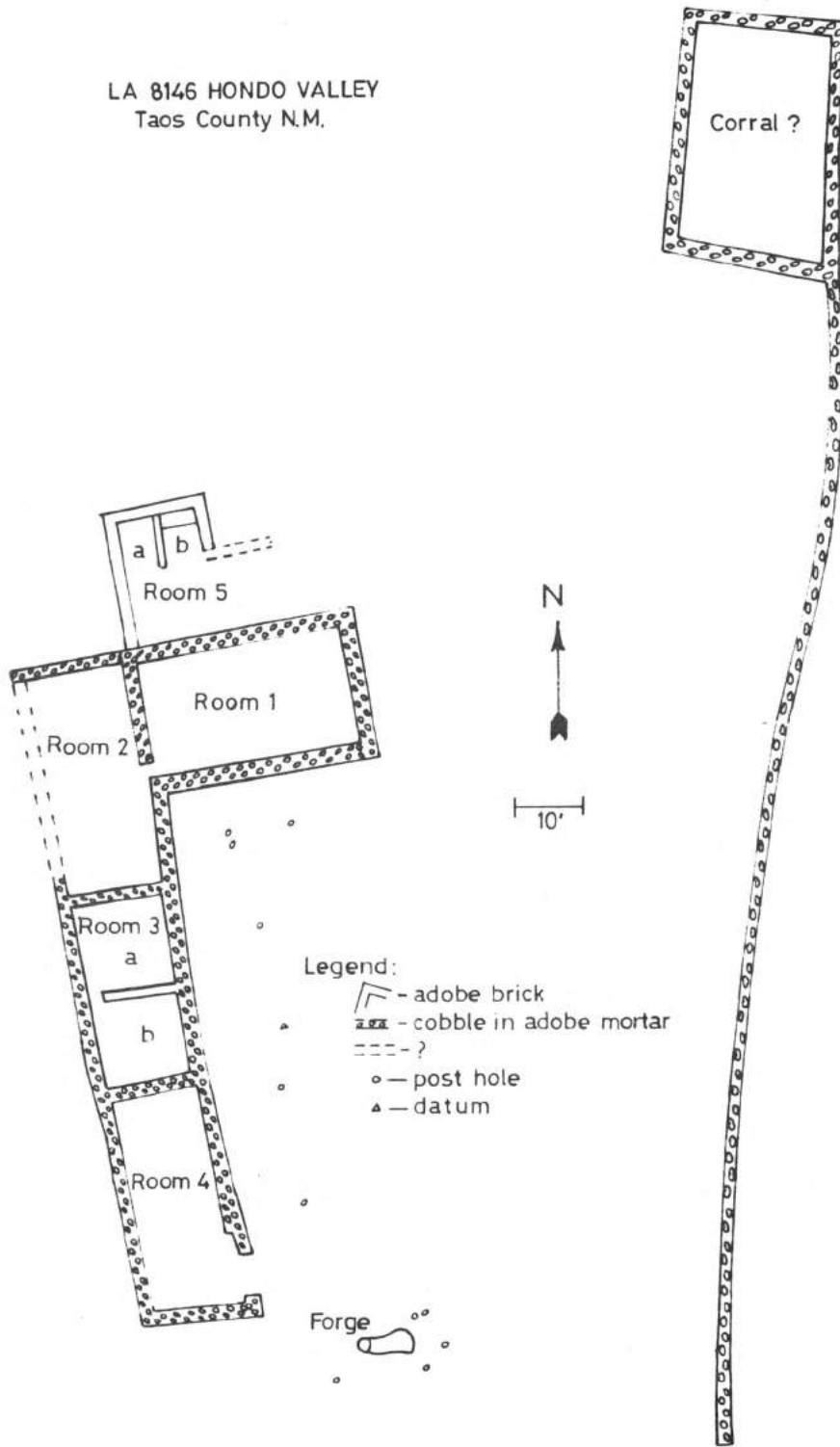


Figure 1. LA 8146 plan.

Most artifacts recovered from the site were found jumbled at the base of the eastern stone wall. Sherds of Indian pottery dominate, but except for a few from a single Zia Polychrome olla of the period ca. 1800-1875, all are northern Rio Grande wares that can only be roughly dated from ca. 1750 to ca. 1900. These include polished red and polished black, unpolished cooking wares, and Taos, Picuris, or Jicarilla Apache micaceous pottery. The only useful dateable ceramics include about 50 fragments of glazed British and American tablewares which cluster into two distinct periods: 60% from ca. 1790 - ca. 1840 and 40% from ca. 1880.

Metal artifacts include tin cans and cut nails that postdate 1860. and a Civil War period belt buckle. A five-pound iron ball, identified as an ore crusher, and several shot-tower made bullets as well as scraps of copper and iron sheeting could all pre-date or post-date 1860. Most glass fragments are of undateable small bottles of European or American manufacture.

The artifactual evidence indicates that the house could have been occupied as early as about 1750 and certainly by about 1840. If wooden floors were added before 1860, they had not been held in place by nails. After about 1880, the house burned and fell into decay. The inventory of metal, glass, and ceramic artifacts confirms the impression given by the architectural features: most of the time the major part of the site was used as a farmhouse.

THE INTERPRETIVE MATRIX

Turley's Mill, the Hondo Valley, and LA 8146

There seemed to have been little or no local awareness of the domestic site called LA 8146 until after its excavation had begun. Later, it was consistently associated with the more famous ruins of Turley's Mill on the opposite bank of the Hondo. There was even one suggestion put forth by a local novelist that it *was* Turley's Mill and that the stone ruin had long been misidentified. But the archaeological evidence gives no support for that view; there was no evidence that LA 8146 had ever been used as a mill or a distillery or anything but a farmhouse. Even the forge, undated, might only have been an

adjunct to agricultural activities. LA 8146 had been a large, comfortable and sturdy enough place, but there is no material suggestion of the wealth and power reputed to have been Turley's. Further, neither of two eye-witness descriptions of Turley's Mill as it was in the 1840s seemed to make mention of the house on top of the cliff on the south bank of the Hondo.

Yet, on the ceramic evidence, LA 8146 was there when George Ruxton and James Webb made their visits, and the suggestion that this farmhouse had been associated with the stone ruin may not be unreasonable. Simeon Turley was prosperous and his prosperity drew on several resources of the Hondo Valley. The house on the cliff may well have been part of the economic complex that ultimately was symbolized solely by the stone ruin below it.

That ruin is massive. Its fieldstone walls are held together by adobe mortar; some still stand 12 feet high and the structure appears to have been about 200 feet long and 40 feet wide. Although it is in a poor defensive location, it is fortress-like in character. Lobo Peak hems it in on the north and the narrow gorge of the Hondo River is just west of it. In Turley's time there was nothing to the east except for some narrow alluvial plains about two miles upstream. The town of Valdez had not yet been settled. To the south is the cliff on which LA 8146 stood, and just east of that on the first terrace above the river is the best agricultural land in the vicinity where the wheat that provided the grist for Turley's Mill probably was grown.

LA 8146 is at the south end of those fields and far more convenient to them than is the stone mill. A labor force was needed to work the mill, the distillery, and the fields, to care for the livestock, perhaps operate a store, perhaps do some mining, and more than likely some mule-skinning. Not all of these people could live at the mill nor would it have been profitable or efficient for them to do so. Other structures were needed, and a closer look at the nature of Turley's prosperity and the sources of his wealth may provide additional support for the assumption that LA 8146 was a Turley enterprise.

Simeon Turley, the Fur Trade, and Taos Lightning

Simeon Turley is mentioned briefly in a number of contemporary accounts. The fullest of these is that published by George Ruxton, a British traveler who spent a few hours at Turley's Mill shortly before the Taos Revolt of 1847. Ruxton reported that Turley's barns were filled with grain, his corrals with livestock, his mill with flour, and his cellars with whiskey. His land was rich, his neighbors few, and he acted the *patron* (Porter and Hafen, 1950, pp.227-230). James Webb also knew Turley's place and was particularly impressed by the number of his pigs and the fact that his was one of only three buildings in New Mexico with plank floors (Webb, 1931, p. 93). Ruxton seems to have been mainly responsible for the story that Turley had a fortune in silver pesos.

Turley had been born in Kentucky in 1805 (Turley, 1965a:personal communication) or 1807 (Porter and Hafen, 1950, p. 195), the youngest son of a prominent pioneering family. In 1827, his older brother Stephen was wagonmaster of a large caravan that travelled the Santa Fe Trail, and in 1829 Stephen and another brother, Jesse, were members of the Argonaut Company caravan to New Mexico (Turley, 1965a:personal communication). It is likely that Simeon had come to New Mexico with one of those groups, for by 1830 he had established a store and distillery near Taos (Porter and Hafen, 1950, p. 195). He may have had the support in this venture of his family and family friends such as Kit Carson who already was well established in New Mexico. In any event, his rising fortunes were closely tied to the fur trade as it evolved in the next decade.

The supply and transportation problems of American fur trappers who went into the Rocky Mountains became severe as distance between themselves and St. Louis increased. Mexican independence in 1821 opened new streams to these beaver trappers but, more importantly, it established the Santa Fe Trail as a moderately safe and rapid route for obtaining supplies and shipping furs. Santa Fe and Taos would thereafter be used as a comfortable winter base by American trappers who could outfit themselves in New Mexico (Phillips, 1961, p. 523).

During the 1830s, as the fur trade began to decline, a greater proportion of pelts were obtained in trade from Indian trappers as the role of many Americans who stayed in the fur business shifted from that of trapper to that of trader. An important trade item was flour milled in New Mexico which was far cheaper than that shipped from St. Louis. Whiskey was of even greater value: "during the Indian summer of the fur trade [merchants] kept their enterprises afloat on a sea of alcohol" (Ibid., 1961, pp. 532-533). Much of that alcohol was known as "Taos Lightning".

American law forbade the sale of liquor to Indians, and over and above normal difficulties and expenses involved in shipping whiskey to the Rockies from St. Louis was the added risk of its being confiscated (Chittenden, 1935, p. 355). United States Indian Agents had no authority to operate on Mexican land, and it was far safer and cheaper to ship it north from New Mexico than west from St. Louis. Thus, New Mexico became a source of whiskey for the fur trade. Turley's distillery was among the first of about ten that were located near Taos between 1830 and 1848. His may have been the only one to last for more than a few years (Bloom, 1928, p. 86; Garrard, 1938, pp. 268, 271-272; Grant, 1934, p. 141; Loyola, 1939, p. 36).

There is convincing evidence that no distilled liquor was made in New Mexico before 1824 and perhaps not before 1829 (Hulbert, 1933, p. 76; Grant, 1934, pp. 38, 143). According to Ruxton, "most distilleries" in the Taos area belonged to Americans formerly involved with the fur trade. Like Turley, many of these people were of second or third generation pioneering families whose fathers or grandfathers had opened the Appalachian frontier during the 18th century. Eight of the ten men known to have made liquor near Taos prior to 1848 almost certainly came from the Appalachian highlands (Porter and Hafen, 1950, pp. 190-191). It thus seems likely that evil-tasting Taos Lightning created for the fur trade was second cousin to the corn-based bourbons invented in the late 18th century in Appalachia. Like bourbon, Taos Lightning was a true whiskey, but it was probably made of distilled

wheat mash instead of or along with corn mash. At least one other distillery in the area was part of a complex that included a wheat farm and flour mill (Grant, 1934, p. 295).

Only one other distillery may have been located on the Hondo River before 1847, probably west of the present town of Arroyo Hondo. According to Charles Bent, the operator was named William Le Blanc, and Le Blanc's mill may sometimes be confused today with the one owned by Simeon Turley (Bent, 1955, p. 317; Turley, 1965b:personal communication). The other Taos stills were located south of Fernando de Taos or east of that town on the Talpa Road. The Talpa Road was the main route leading north to American Territory, Bent's Fort on the Arkansas River, and, presumably, the most efficient way for getting Taos Lightning to its market. In that regard, Turley's location on the Hondo makes little economic sense for it was twelve difficult miles away from Taos in the wrong direction. However, a trail led north from Turley's Mill to Red River and by one of two routes from there up to Colorado. This is known today as the Kiowa Trail and is an ancient route not suitable for wagons but relatively easy for horses or foot traffic. It was impossible to reach the Kiowa Trail from Taos without passing within a few hundred yards of Turley's Mill. Thus, Turley physically controlled one of the two main routes that went from Taos north. Considering the nature of his whiskey smuggling business, it was probably to his advantage that it was the less well-travelled path.

In every respect the isolation of Turley's Mill worked to Simeon Turley's economic advantage. He controlled his territory and the traffic that went over it. He grew the wheat that was the foundation of his success and processed it for market, either as flour or as whiskey. His workers depended on him for their food as well as their pay, he ran the company store, and raised the meat that they ate. He likely fitted out the mule and horse caravans that carried demijohns of his whiskey north, he traded in furs, and he probably had a gold mine as well (Weber, 1964, p. 286; Turley, 1965b:personal communication). It becomes difficult under the circumstances to imagine LA 8146 as anything except a part of Turley's economic empire.

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PONIL PARK: AN EARLY 20TH CENTURY LOGGING AND SAWMILL COMMUNITY IN NEW MEXICO

DAVID T. KIRKPATRICK

On September 9, 1976, David T. Kirkpatrick and Meliha Duran conducted a reconnaissance survey of Ponil Park, Colfax County, New Mexico. Ponil Park, a ghost town on the Vermejo Park ranch, is located on the Park Plateau of northeastern New Mexico which rises from the plains of the Las Vegas Plateau (Fig. 1). This region is rich in Ponderosa Pine and Douglas Fir timber resources. Ponil Park, which existed from 1907 to 1924 as a logging and sawmill community of the Continental Tie and Lumber Company, today is the best preserved of the four logging communities located along the tracks of the Cimarron and Northwestern Railway.

The primary objective of the survey was to determine the feasibility of conducting a future historical study of Ponil Park. There have been very few studies of small western communities and company towns such as Ponil Park. We spent the day taking notes and sketching the buildings and associated artifact scatters, drawing a sketch map of the community, and photographing selected buildings.

HISTORY

In 1880, the Maxwell Land Grant Company advertized for the sale of its timber resources. Because the timber was not easily accessible, the company tried to interest railroad companies which might use the lumber for ties, trestles, and other purposes. A railroad would provide the means for removing the lumber from the forests to the railroad yards and markets. A contract was signed in 1890 with the Denver, Texas, and Fort Worth Railroad, a subsidiary of the Union Pacific Railroad. Track was laid from Trinidad, Colorado to the new mill town of Catskill, New Mexico, on the Red River (Pearson, 1965, pp. 164-166).

Catskill became a prosperous and productive sawmill town. The five mills cut and shipped up to 50 flatcar loads of lumber daily. Two sets of charcoal ovens burned 3,000 cords of wood daily to meet the

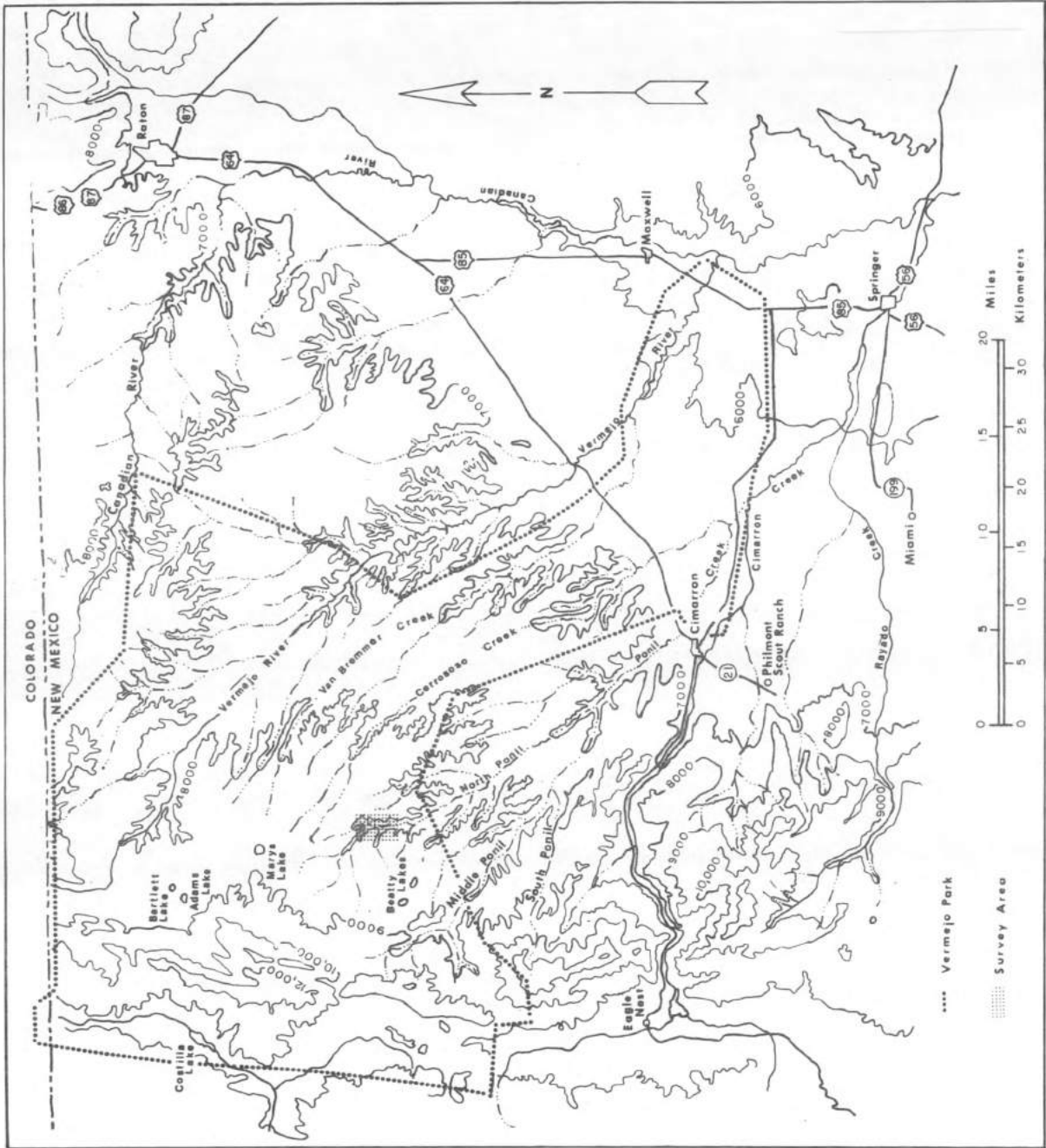


Figure 1. Location of survey area.

demands of the charcoal market (Sherman and Sherman, 1974, p. 34). By 1897, however, only one mill was in operation. J. C. Osgood of the Maxwell Timber Company persuaded the Colorado Southern Railway (formerly the Denver, Texas, and Fort Worth Railroad) to maintain the line until November 1, 1901. This extension allowed Osgood to continue his logging operations in the Red River area, but in January 1902, the Colorado Southern Railroad pulled up its tracks, ending the lumbering and the life of Catskill (Pearson, 1965, pp. 240-242).

Osgood, also the president of the Colorado Fuel and Iron Company, suggested that the C. F. and I. Railroad be extended from Stonewall, Colorado, to Ponil Park, New Mexico. He formed a new company, the Rocky Mountain Timber Company, to continue his logging operations. On March 1, 1901, Osgood obtained a contract with the Maxwell Land Grant Company to log the Ponil Park Region for 20 years. Thomas A. Schomberg, who went to work for Osgood, had been employed by the Maxwell Land Grant Company and had discussed logging the Ponil region with the company before Osgood began his negotiations. In 1906, the Maxwell Land Grant Company terminated Osgood's contract because the railroad had not been built and probably never would be built (Ibid., 1965, pp. 241-242).

In 1907, Schomberg quit his job with Osgood and the Rocky Mountain Timber Company and formed the Continental Tie and Lumber Company and the Cimarron and Northwestern Railway. In Schomberg's contract, the Maxwell Land Grant Company stipulated (Colfax County Deed Book No. 31, p. 278) that

the operation of a railroad in accordance with contract heretofore made, but upon the condition that if at any time the Railroad is not operated for the term of three (3) years, the Right of Way hereby granted, shall cease and the title to so much of the lands hereby granted as has been abandoned shall revert unto the party of the first part, its successors or assigns.

On June 13, 1907, the grading of the railroad bed from Cimarron to Ponil Park via North Ponil Canyon began (Murphy, 1972, pp. 170-171).

On January 6, 1908, Schomberg started his logging and railroad operations (Fig. 2). The Cimarron and Northwestern Railway extended 22 miles to Ponil Park and beyond to Ring. Two other settlements, South Ponil ("The Forks") and Metcalf, sprang up along the railroad. Smaller temporary logging camps were built between these communities. The timber logged in these areas was cut by families or independent contractors and sold to the Continental Tie and Lumber Company. The logs, rough cut at the mills, were sent on flatcars to the Cimarron mill for finishing and drying.

Mine props, cut especially for the St. Louis, Rocky Mountain, and Pacific Company for use in its coal mines near Raton, New Mexico, needed special handling. Crews of two or three men or a family cut props exclusively, and the props often were loaded in boxcars of the St. Louis, Rocky Mountain, and Pacific Company to be shipped to the coal mines (Murphy, 1964, pp. 3-4).

By 1911, the Continental Tie and Lumber Company had extended the railroad 13 miles beyond Ponil Park into Bonita Canyon. The timber resources were depleted in Bonita Canyon by 1916, and the track northwest of Ponil Park was removed. On August 29, 1923, the Interstate Commerce Commission permitted the railroad to abandon its line and remove the track from the junction of North and South Ponil Canyons to Ponil Park. This action ended the logging and railroad operations in North Ponil Canyon, although Schomberg continued logging and railroad operations in South Ponil Canyon region until 1930 (Murphy, 1964, p. 7; 1965, p. 4).

ARCHIVAL RESEARCH

From September 1-7, 1976, we visited several institutions that have archival material pertaining to the Ponil Park region. The Maxwell Land Grant Papers are in the archives of the University of New Mexico Library. This extensive collection contains over 100,000 items, including censuses of settlers, deeds, land contracts, court records, grazing and agricultural claims, invoices, other business and legal documents, and photographs and maps. In addition, the library contains

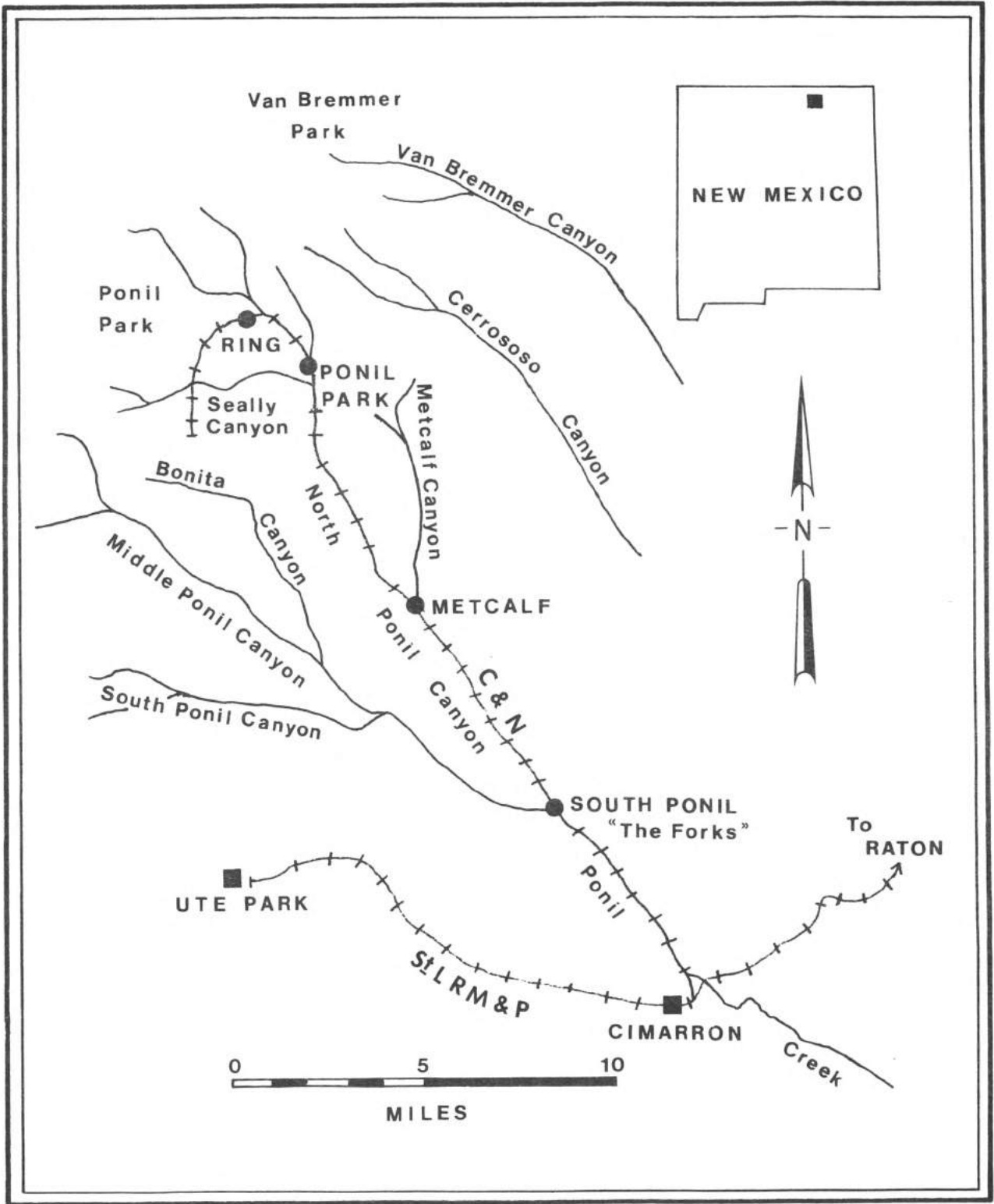


Figure 2. The Railways, 1911.

the business records of the Raton Grocery Store, 1907-1938, and the Floersheim Mercantile Company, 1899-1969, records of the latter containing over 7,000 items, including inventories, account books, invoices, cash books, and tax receipts. The Frank Springer Papers, 1867-1926, are also held by the archives. Frank Springer was a lawyer for the Maxwell Land Grant Company, and his papers cover the legal, scientific, and personal aspects of his life.

The next stop was at the Laboratory of Anthropology, Museum of New Mexico, Santa Fe. We checked the site record files for any historic sites in the Ponil Park region, but none had been recorded.

At the Seton Museum, Cimarron, New Mexico, we looked at Lawrence Murphy's manuscripts and notes, and other materials he used in writing his history of the Cimarron region. Murphy's notes contained information from several local newspapers, county documents, and an interview with Thomas W. Schomberg, son of Thomas A. Schomberg.

We then discussed the local history and early settlements in this area with Mr. and Mrs. R. U. Haslanger, of the Vermajo Park Ranch. These discussions were very informative and helped bring to light facets of the yet unwritten history of this area of New Mexico.

Because of time limitations, we were not able to look at the archival material at the Colfax County Court House, the Raton Public Library, nor the Springer Historical Museum.

SURVEY METHODS

On September 9, 1976, we conducted a reconnaissance of Ponil Park (Fig. 3), between Hart Canyon and Seally Canyon, working from the mouth of the latter canyon. We tried to find benchmark BM 7838 to use as a reference point for our sketch map but were unsuccessful.

We started our reconnaissance at the first cabin on the east side of North Ponil Canyon opposite Seally Canyon. The cabin was sketched in relation to the topography and the abandoned railroad bed, was measured by pacing, and architectural and construction techniques were recorded. We paced off and recorded the distance between structures and

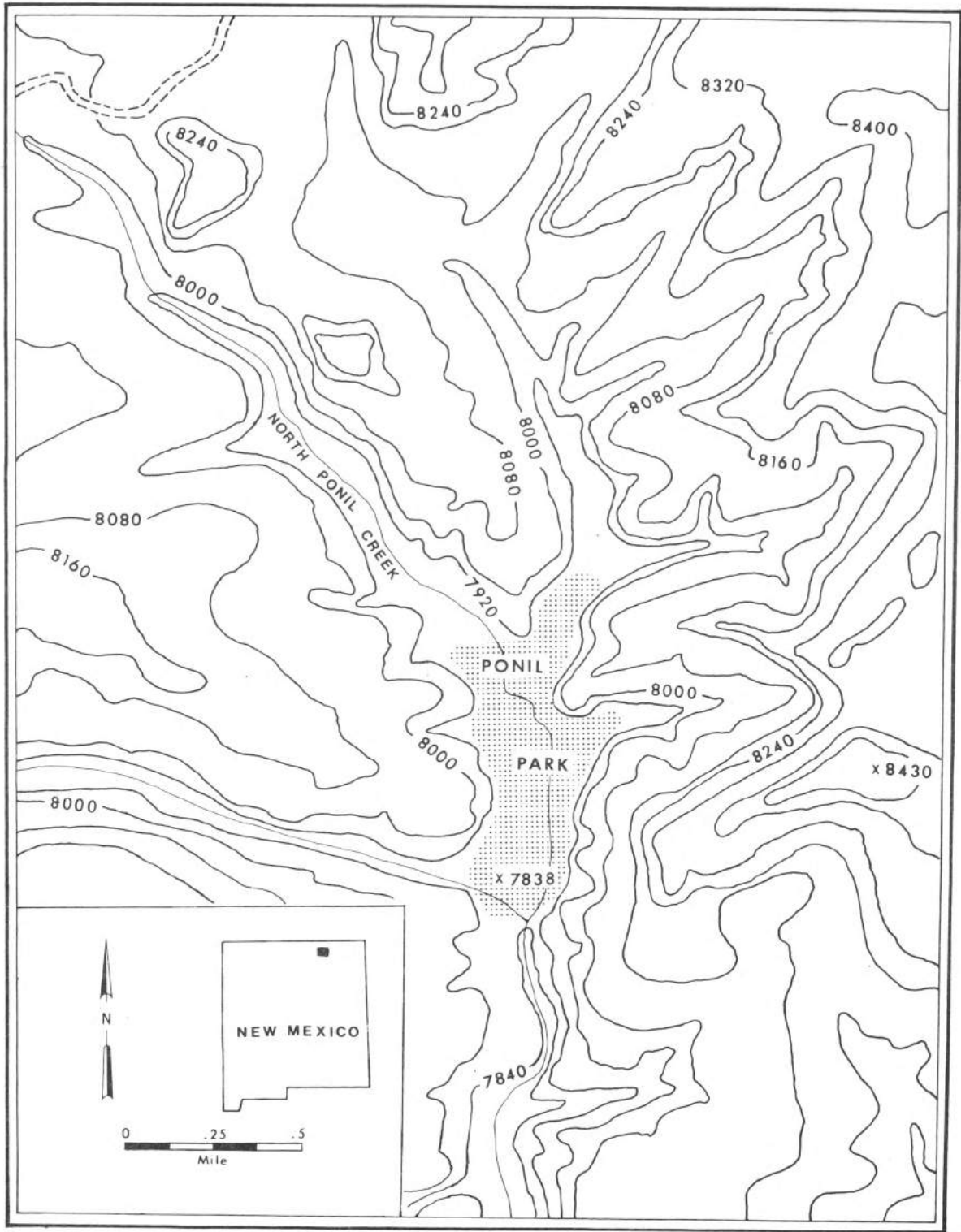


Figure 3. Location of Ponil Park.

the remainder of the site was recorded in a similar way. Floor plans of multiroom structures were sketched, and selected buildings were photographed to record architectural form, the degree of preservation, and construction techniques. We listed the noticeable artifacts and tried to note any variability in artifact classes associated with the buildings and features. Such differences become important when attempting to determine the function of each structure.

SETTLEMENT PATTERN

Based on the data recovered during the reconnaissance, Ponil Park has been divided into two areas, the Continental Tie and Lumber Company buildings and homesites. The company area occupies the northern half of the settlement, while the habitation area is generally associated with the southern section. The cemetery lies between the two areas (Fig. 4).

The company buildings consist of log cabins, loading docks, and the remains of a sawmill. Structures 10 and 11 are located at the southern end of one of the loading docks (structure 9). Features 5 and 6 probably are wells. The sawmill was near structure 8, a concrete foundation with two rows of bolts. A scatter of fire brick, ashy soil, charcoal, and coke is nearby. Feature 3 is a stack of firewood, at least 3 ft. wide, 3 ft. high, and 6 ft. long. Feature 2 is a series of large logs held together by spikes. The latter is associated with the sawmill, but its specific function is not known. Structure 13 is a second loading dock with remains of railroad ties in front of it. Structure 4, a log cabin, the northern half of aspen, is the only dwelling with double square notching similar to the company buildings. Structure 1 is the only corral found in Ponil Park.

For the most part, the dwellings in the northern and southern halves are quite similar. The southern half of Ponil Park contains log cabins, frame structures, and parts of an old road. These structures tend to cluster together and appear to form distinguishable units. However, without excavation, it is not possible to determine whether, or which, associated structures form single habitation units. Most of the units

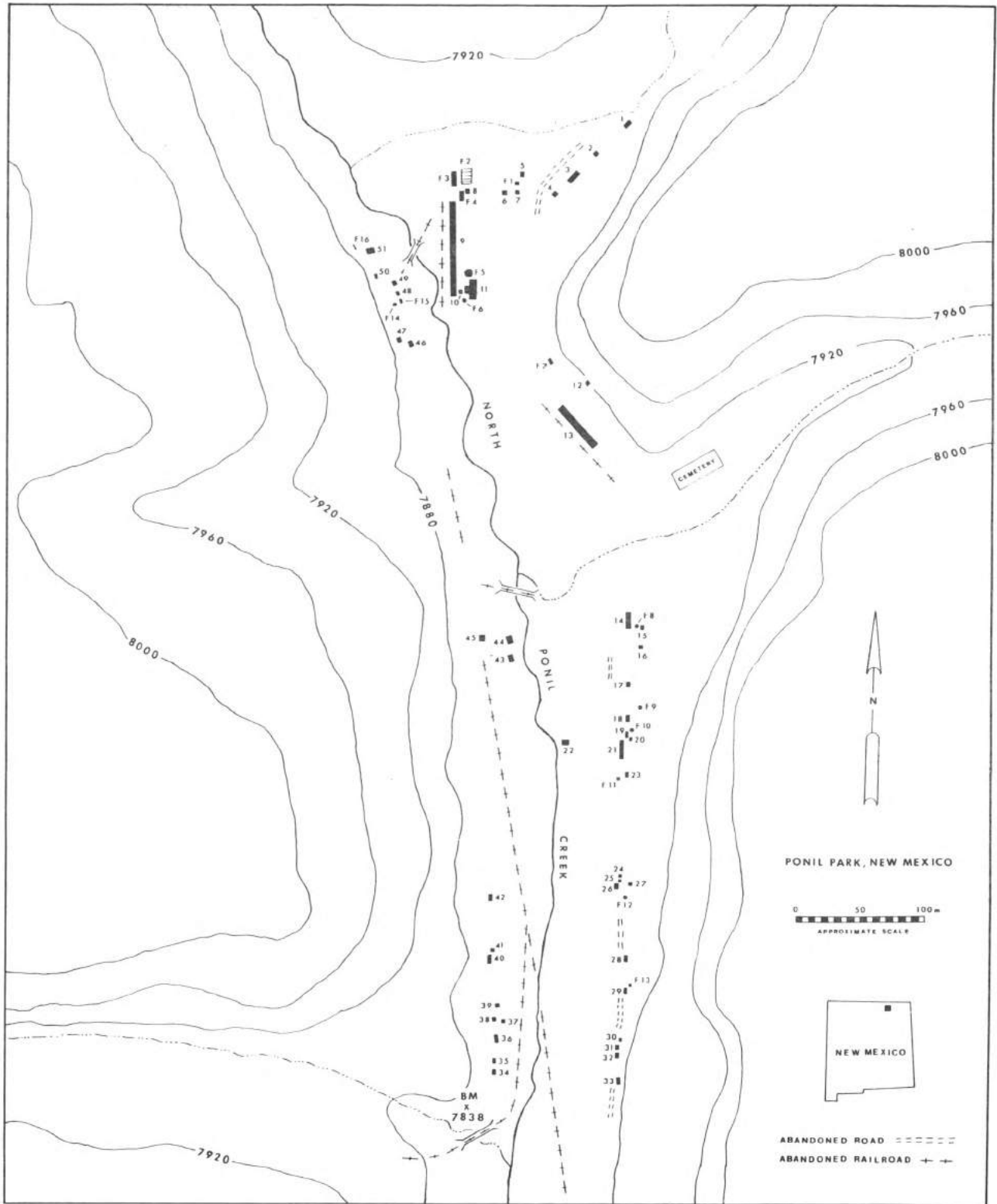


Figure 4. Sketch map of Ponil Park.

are the remains of log cabins and collapsed frame buildings, but evidence for an outhouse usually is lacking. Structures 30, 31, and 32 are representative of the basic habitation unit. The dwelling (32) consists of two rooms, each 9x9 ft. Associated artifacts in the rooms and outside the houses include china and glass fragments, stove parts, metal bed frame, buttons, a tobacco tin, various metal fragments, and a piece of a large cross-cut saw. The storage shed (31) measures 6x6 ft., but no associated domestic artifacts (china, eating utensils, etc.) were found. The outhouse (30) is farthest from the dwelling and slightly behind. It measures 3x3 ft. and consists of a scatter of rocks and planks.

The cemetery has between 50 and 75 burials enclosed in a barbed wire fence. Grave sites are delimited by stone clusters, picket fences, headstones, and wooden crosses. The surface of the entire cemetery is littered with china and glass fragments from broken vases. There are two marble headstones which date prior to the founding of Ponil Park, the sawmill community. The first belongs to "Henry Paker, Died Feb. 22, 1880, Aged 23 years." The second reads "In memory of Jane Matilda Moore, Born November 28, 1964, Died July 2, 1883." There is another headstone devoid of writing, but heavily inscribed on all sides. The ethnic identity is unknown. In addition, there are several rough sandstone slabs that have a cross of four equal-sided lines pecked into the surface. The most recent legible date is August 27, 1912, a patent date on the back of a small metal name plate.

ARCHITECTURE

The buildings at Ponil Park were built from logs and culled lumber (Murphy, 1972, p. 171). The majority of log cabins are still standing, but nearly all of the plank frame buildings have collapsed. Most of the cabins were built for (human) habitation, while the frame structures were used for either storage or animal shelters.

The cabins were made by using round logs for the wall. The construction technique used in structure 34 is typical of the cabins in Ponil Park (Fig. 5). A double saddle-notch joint was used in the cor-

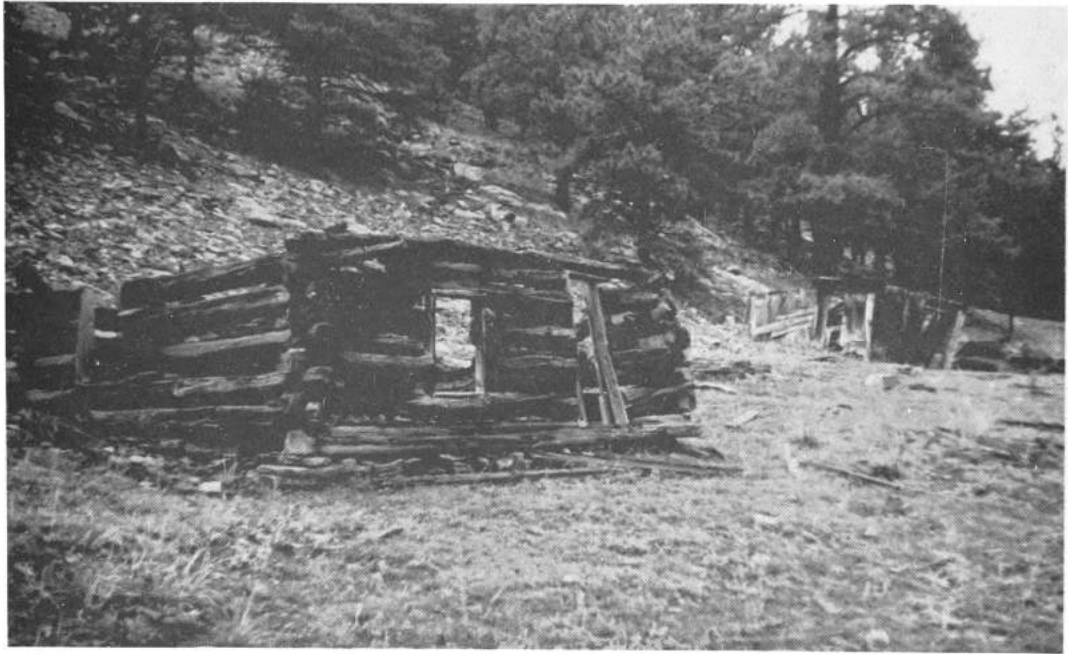


Figure 5. Structures 34 and 36.

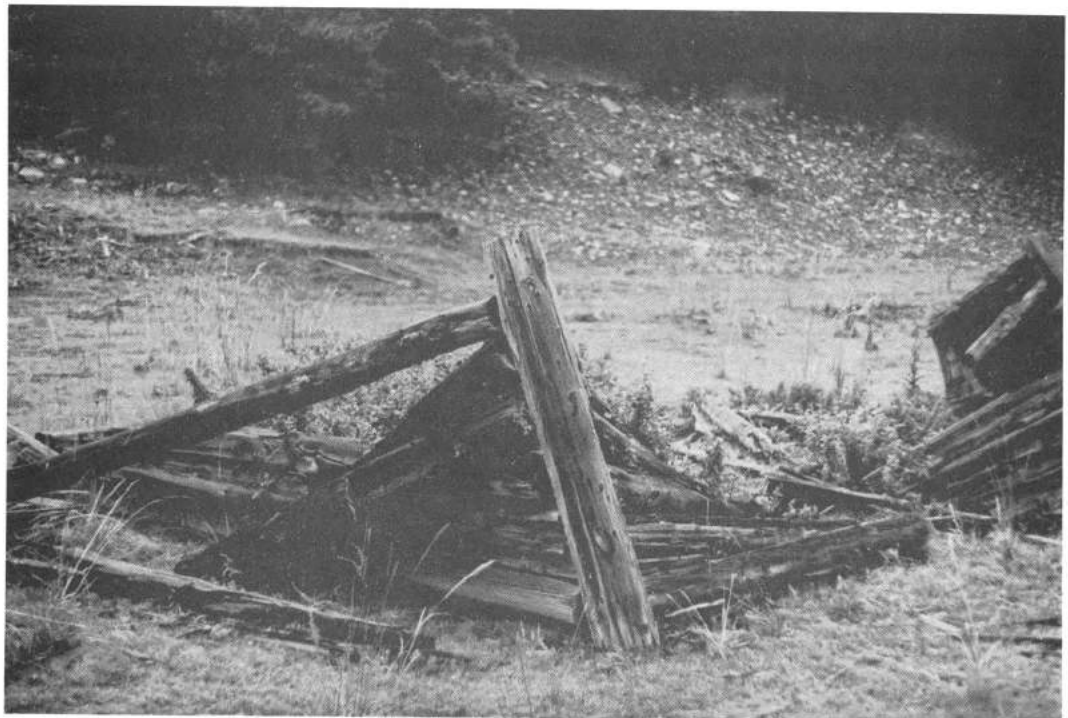


Figure 6. Structure 43.



Figure 7. Structure 11.

ners, a style common in walls with alternating tiers of logs. The foundation of this log cabin is unusual in that it extends the full length of the walls. The foundations for most of the log cabins are simply rocks placed only at the corners of the walls.

The cabins with even tiers of logs have the corners joined with a "hog trough" which is made by nailing two boards together at right angles (Fig. 6). The hog trough is then nailed to the ends of the wall logs. This cornering technique requires that all the wall logs be the same length. On the other hand, the alternating tier and the double saddle-notch technique do not require that the wall logs be of equal lengths. In some cases, walls held together with the hog trough technique preserve as well as wells with notched corners.

Structure 11 is representative of the 3 or 4 Continental Tie and Lumber Company buildings. The company buildings have alternating tier log walls with double square-notch corners (Fig. 7). However, the interior and exterior sides of the logs have been hewn flat. The foundation for this building consists of large rocks with adobe mortar. Most rock foundations are dry-laid.

The chinking on the alternating-tier walls and some of the even-tier walls consists of either adobe, rocks, and culled boards, or a combination of several or all three. This is best seen in the walls of structure 11.

Structure 40 (Fig. 8) appears to be the best preserved structure in Ponil Park. It is a two-room building with a door between the rooms. The corner notching on the two southern corners is the hog trough type, while all four corners in the northern half are the double saddle-notch type. The southern half probably was added later. The even-tiered wall for hog trough cornering would have been the most efficient way to build a weather-proof joint between the two rooms, as it was flush with the wall. The interior of the northern room has a rough, milled plant floor, and the walls were plastered with adobe (to provide a flat surface), and painted or whitewashed.

The roofs of most of the structures at Ponil Park have deteriorated

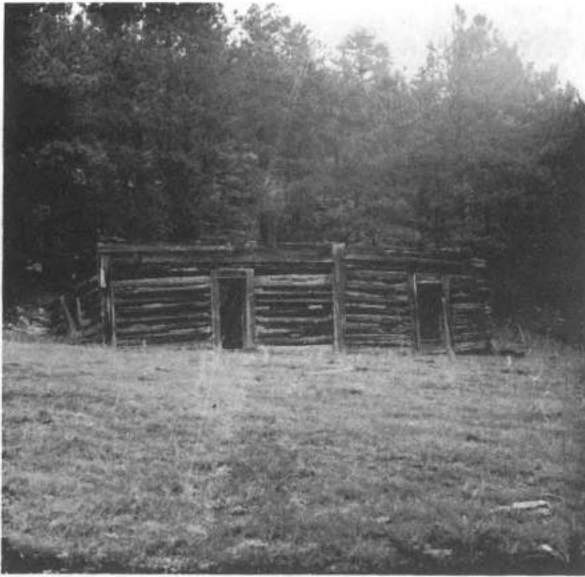


Figure 8. Structure 40.



Figure 9. Structure 40.

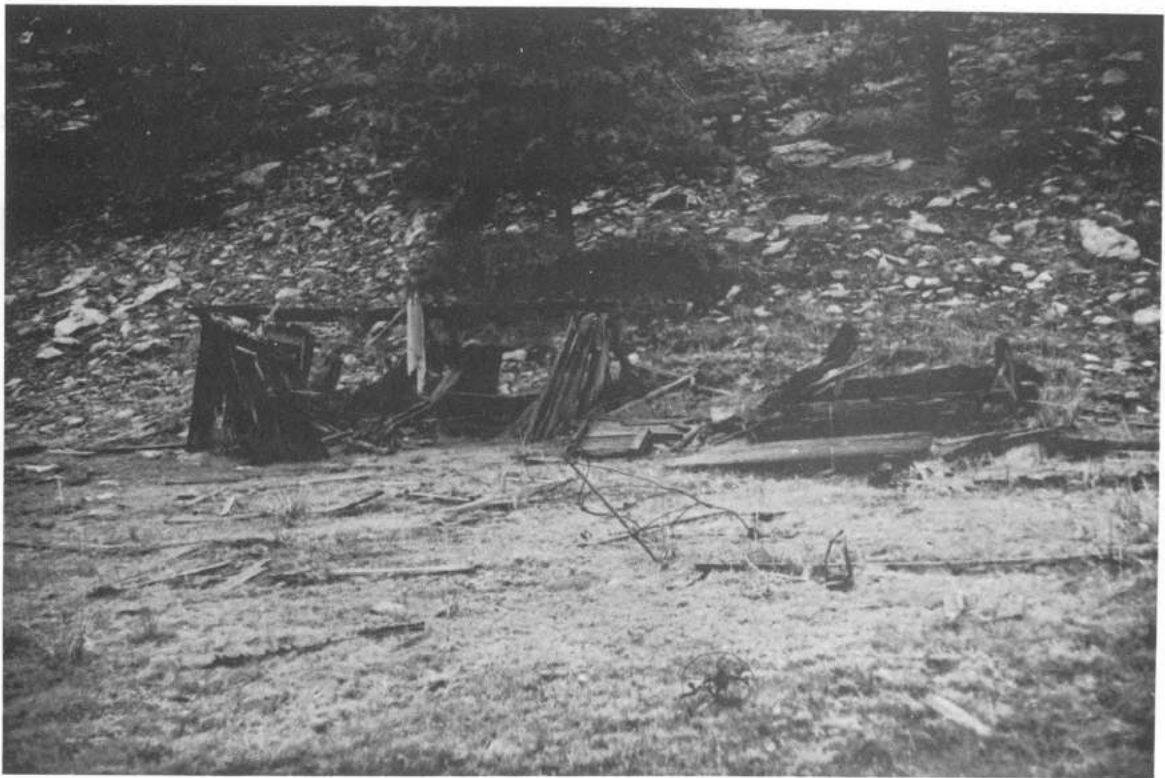


Figure 10. Structure 36.

or collapsed, or have been removed from the area. Structure 40's roof (Fig. 9) is the best preserved, a fact that explains the preservation of adobe and paint on interior walls. It is probably representative of most roofs on Ponil Park log cabins. A beam extends down the middle of the structure parallel to its long axis. Rough milled planks (?) were nailed to it and to 2"x4" boards on top of the log wall. The cracks in the roof boards were covered by other boards to make a fairly weather-proof roof. Pieces of corrugated tin were found near many of the cabins, perhaps indicating that some of the roofs had been covered with sheet metal.

The frame structures were made from a variety of board sizes and poor quality lumber which may have been culls from the sawmill. Storage structures and privies were usually frame.

Structure 36 (Fig. 10), possibly a storage or feed shed, is the best preserved frame structure. Posts were sunk into the ground, and a frame was built around them. Most frame structures have collapsed because of poor internal support. Corners were usually vertical 2"x4" boards nailed to the floor. One structure is unique in that the floor and probably the walls were made with tongue-and-groove boards. Since the Ponil Park sawmill cut only rough mill boards (Murphy, 1964, p. 4), these boards must have been shipped into Ponil Park. No artifacts were found to specifically suggest the function of this structure.

Most of the frame structures do not have foundations. Those with foundations are usually similar to the dwellings, i.e., a rock under the corner. In a couple of cases, the rock foundation extends the entire length of the walls.

Only three structures can definitely be called privies. Privies, like modern outhouses, probably were rough plank structures, hastily built and relatively impermanent. Two outhouses measure 3x3 ft., and one measures 7.5x3 ft. The large privy and one of the smaller ones each had a two-hole plank present in the collapsed ruins. These structures are relatively close to log cabins. Other possible privies present are not easily identified.

Most of the dwellings contain only a single room. However, some, like structure 40, have two or more rooms (Fig. 11). The rooms are generally between 6x12 ft. and 12x12 ft. in size. The square footage ranges between 67.5 square feet to 144 square feet. Twenty-two of the 32 structures average 144 square feet or less.

The frame storage structures, usually smaller than the log cabin dwellings, measure about 6x6 ft. to 9x9 ft., equivalent to an area ranging from 36 to 81 square feet. Only two of the dwellings have less than 81 square feet of living space.

CONCLUSIONS

Based on the field survey data, Ponil Park appears to have consisted of at least 21 dwellings, 14 storage structures, 4 privies, 16 structures of unknown function, and 3 work areas which contain sawmill buildings and the remains of loading docks and trestles. Most of the buildings are still standing, although some buildings can only be inferred from foundations and/or artifact scatter. Some of the log cabins and frame structures may have been built by cannibalizing abandoned structures. Future research should include a dendrochronological study, not only to reveal reuse of logs but to record the building sequence and growth of the Ponil Park community.

Ponil Park is a fairly well preserved historic site. It is typical of an unknown number of small, short-lived settlements and communities that contributed to the growth of the western United States. A combined study of the history, ethnography, and structural remains of Ponil Park and the surrounding region should provide interesting and informative data on the occupants of the region and their role at the turn of the century.

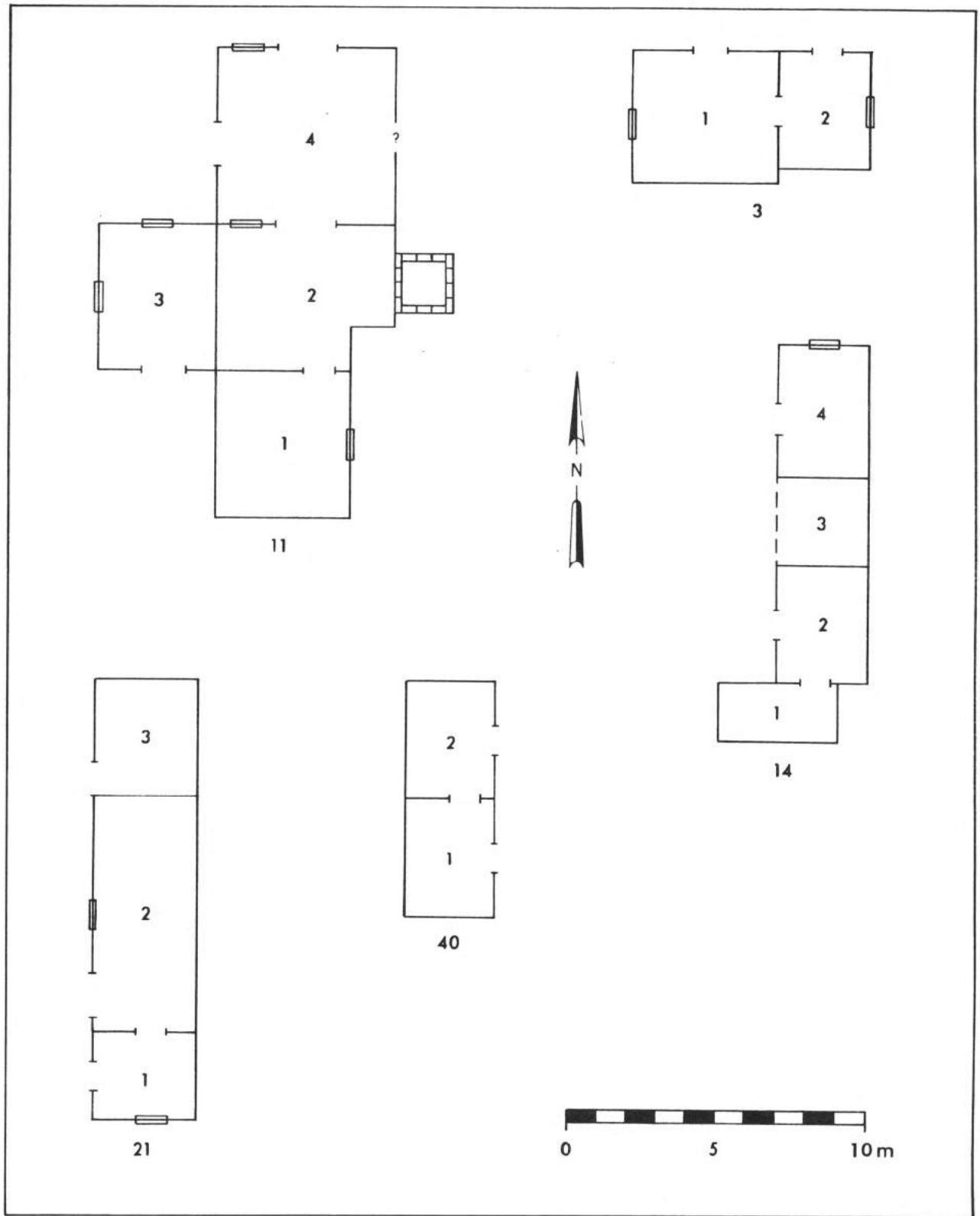


Figure 11. Floor plans.

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

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

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