The Cache

Collected Papers on Texas Archeology

Volume 1 • 1993

A Publication of the
Texas Archeological Stewardship Network

Office of the State Archeologist
TEXAS HISTORICAL COMMISSION

Texas Archeological Stewardship Network

The Texas Archeological Stewardship Network, founded in 1983, consists of men and women from the avocational archeological community who assist the Texas Historical Commission in the areas of archeological site preservation and public education. Serving as extensions of the Office of the State Archeologist, the stewards distribute educational materials, give slide shows and lectures to school and civic groups, record archeological sites, monitor known sites, document private artifact collections, and assist landowners with the preservation of cultural resources on their land. For more information about the Texas Archeological Stewardship Network contact: Office of the State Archeologist, Texas Historical Commission, P.O. Box 12276, Austin, TX 78711-2276.

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Cathryn A. Hoyt, *Editor*

Office of the State Archeologist
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Austin

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Publications of the
Texas Archeological Stewardship Network
Office of the State Archeologist
Robert J. Mallouf, *Series Editor*
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Preface

The past twenty years in Texas have witnessed an unrelenting upward spiral in the destruction of archeological resources by land-altering construction projects and site looting. While some protection for archeological sites on state and federal lands is afforded through existing antiquities laws, the vast majority of our archeological legacy remains unprotected on private lands throughout Texas—subject to the uncontrollable and unpredictable vagaries of man. The problems of site protection in Texas are compounded by the enormous size and diversity of the state, and even herculean efforts on the part of small state agencies and organizations to instill a preservation ethic in the public have fallen far short of what is actually needed. In addition, long-term fiscal crises in state and federal government do not bode well for preservation efforts, at least in the near future.

Our creation of the Texas Archeological Stewardship Network (TASN) in 1983 was an attempt to meld the professional and avocational archeological communities into a closer-knit relationship in order to better address our common problems and interests. The program has proven to be dynamic and effective in many ways and is increasingly becoming a model for other states—and even other countries—that are faced with seemingly insurmountable preservation needs. But like any other goal-oriented program, the TASN must continue to evolve and expand if it is to fully achieve its potentials. We believe that our new TASN journal, *The Cache*, represents an important step forward in this evolutionary process.

The contributors to this first volume are all to be congratulated for their keen interests and determined scholarly endeavors. These collected papers are a reflection of the TASN itself, in that they reveal the multifaceted and highly varied talents of the organization's membership. Our TASN coordinator, Cathy Hoyt, deserves a special salute for her success in editing and pulling this volume together under less than ideal circumstances. We also would like to acknowledge Senator Teel Bivins of Amarillo, and Mr. Harold Courson of Perryton, whose strong support for the TASN made the initiation of this new journal possible.

Robert J. Mallouf
State Archeologist

Introduction

The Texas Archeological Stewardship Network (TASN) is a volunteer organization of experienced avocational archeologists that was created by the Office of the State Archeologist (OSA), Texas Historical Commission, in 1983. Stewards are appointed by a five-person Stewardship Advisory Committee to assist the Commission in preventing needless destruction of prehistoric and historic archeological sites in Texas and preserving the database that those sites represent. The OSA depends on the spare-time efforts of the stewards, whose network extends throughout much of the state, to support the small OSA staff by providing trained eyes, ears, and hands.

This new publication, *The Cache*, carries brief research papers by members of the Stewardship Network. With it, the Network emerges as a recognized part of the research community. In general the papers are seen as too long or detailed for the newsletters of local archeological societies and the Texas Archeological Society (TAS), and less weighty than those that appear in major scholarly publications such as the *Bulletin* of the TAS and of academic research centers. As an example, in this first volume of *The Cache* the paper by E. H. Schmiedlin would not ordinarily see the light of print even though it is a useful contribution to Texas coastal archeology; in effect, it would fall through a crack between the type of articles seen in *Texas Archeology* (the TAS Newsletter) and the papers in the TAS *Bulletin*.

The TASN gives qualified avocational archeologists an opportunity to spend four years (the steward's term of appointment) following their avocation more intensively than they otherwise would. Under the supervision of the OSA they record sites, give public presentations, document collections, and in general bring public archeology to the local level. In the same way, the preparation of these papers for *The Cache* has given the stewards a taste of the unsung part of archeological research that follows the fieldwork. This is the laborious task of analyzing and synthesizing the data recorded in the field and presenting the results in written form. It is the pulling-together, the organizing, the laying-forth, that finally begins to reveal the human past. It takes a good deal more of the archeologist's time than the fieldwork does. It gives meaning and permanence to the whole scientific enterprise and makes the effort worthwhile.

Modern technology is altering the face of the earth. The information in archeological sites, the basic record of former peoples, is being destroyed *en masse* not only by random relic collecting but even more by urban expansion, highway construction, agriculture, and all the other ways that the ground beneath our feet is being torn, churned, and moved about. What the stewards present in this volume is a small fraction of that vanishing database, a fraction that has been rescued from disappearance by dedicated and systematic work and that becomes, through this publication, part of the permanent record of the past of Texas. It is now available for use in future research.

No better example than this volume could be found of the fact that in archeology the important division lies not between professionals and amateurs, but between archeologists and relic-collectors. The articles in this volume are the work of archeologists.

E. Mott Davis
Professor Emeritus of Anthropology
University of Texas at Austin

The Cache

A Felsite Quarry in the Van Horn Mountains, Culberson County, Texas

by John A. Hedrick

ABSTRACT: *A felsite quarry utilized from the Middle Archaic through the Late Prehistoric periods is discussed.*

A major felsite quarry and associated workshops have been documented in the northern Van Horn Mountains in southern Culberson County, Texas. Felsite is a common raw material used in the prehistoric manufacture of tools in the area (Hedrick 1989).

The northeastern end of the Van Horn Mountains is a volcanic uplift running north to south on the west side of Lobo Valley. A broad, unnamed canyon separates the uplift from the limestone formation of the northwestern part of the chain. The canyon drains northeast and east into Lobo Valley and Wild Horse Draw. The felsite formation is an intrusive volcanic dike running roughly north to south midway up the slope of the uplift on the east side of the canyon (Dr. Robin Hoffer and Dr. Jerry Hoffer, personal communication, 1992). The formation is part of the Hogeye tuff formation of the Garren group, which was formed during the Oligocene period. The felsite dike is associated with layers of andesite, trachyte, dark yellowish tuff, and fine-grained white tuff. The felsite appears as long slender columns, large fractured boulders, and large flat boulders resembling street cobbles.

The lower slopes of the formation contain numerous fragments of hammered and broken felsite material. Midway up the slope are two small benches containing large quantities of flakes, blades, cores, blanks, and preforms. At the base of the mountains and parallel to the deep canyon is a narrow terrace measuring 60 to 90 m wide. The terrace contains three workshop areas, one of which is partially cut by a roadbed. To the southeast and upslope is a deep channel arroyo that cuts through the felsite dike. The area contains an extensive workshop with large amounts of broken and tested material. The known area of the quarry and associated workshop features covers approximately 47,000 square m. The area to the south along the canyon drainage has not been surveyed.

Felsite is an igneous, extrusive material with a texture that is so fine that individual grains are microscopic and cannot be seen with a hand lens. It has an average hardness equal to or less than quartz (Pough 1984:15). Two major classes, nonporphyritic and porphyritic, are very fine and even grained. Felsite is feldspathic and

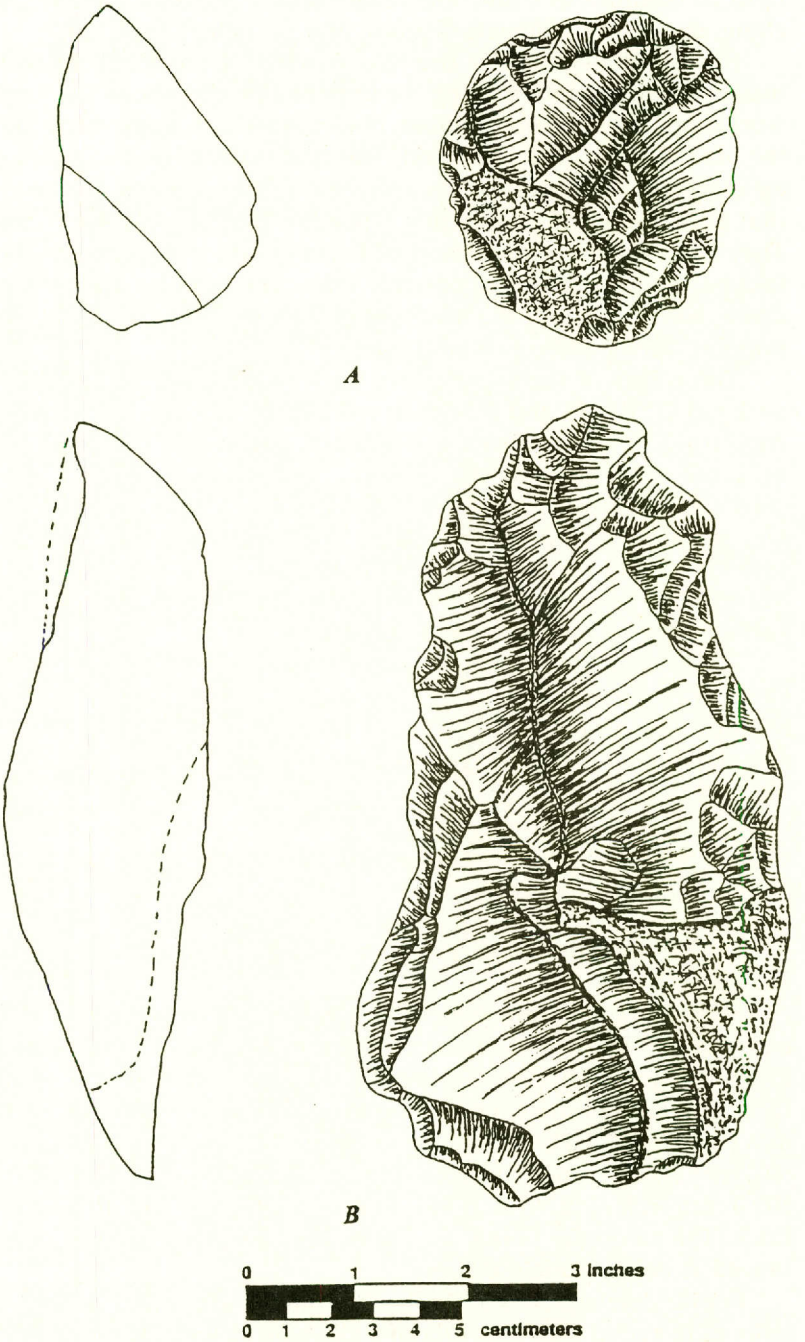


Figure 1. Felsite tools from southern Culberson County: (A) plano-convex, end scraper; (B) chopper.

light to medium in color. The felsite family includes rhyolite, trachyte, dacite, and andesite (Pirsson and Schuchert 1924:333).

Sample collections of the raw material were made from the matrix of the formation along the upper slope and above the terrace workshops. Collections of flakes, blades, and tools were made along the bladed sides of the roadbed. The raw material and samples are an extremely fine-grained porphyritic felsite. Grains are so fine that even under 45-power magnification they appear very small. They form a dense groundmass of fused quartz with phenocrysts of feldspar and black grains, possibly mica. The samples are hard and dense, having at least the hardness of 7 on the Mohs scale. Worked samples show good conchoidal fracture.

The colors of the samples are dark reddish brown (10YR3/4), dark red (5YR3/4), and moderate red (5R3/4) (Geological Society of America 1984). The cortex is a smooth, patinated surface of basically the same color as the interior. Some samples have a blackened desert varnish, and a few flaked tools and raw material samples are repatinated on the edges. The repatination appears as a smoothing and reclaiming of the flaked edge. To date there is no quantifiable relationship between time and the reclamation of the surface edge by the repatination process.

Flakes and blades in workshop features indicate that the felsite was made into tools at the workshops and also may have been reduced into usable blanks for off-site tool manufacture. Worked samples appear to be basic processing tools used for chopping, scraping, planing, cutting, and pounding. They include utilized flakes, choppers, and steep end scrapers. The majority are unifacial, though there are several well-formed bifaces and preforms, as well as one pestle-shaped tool. Very few felsite projectile points have been observed, probably because the material does not lend itself well to fine percussion or pressure flaking. No manos or metates have been noted.

Felsite artifacts are generally sizable: a plano-convex, steep end scraper (Figure 1A) measures 81.6 mm long by 72.2 mm wide by 45.4 mm thick. Choppers (Figure 1B), the most common class of artifacts represented, may measure up to approximately 200 mm by 100 mm by 50 mm. The biface shown in Figure 2A measures 116.6 mm by 60.6 mm by 22.1 mm. Unifaces (Figure 2B, C, D) range from 82.0 to 109.0 mm in length, 61.4 to 76.2 mm in width, and 24.2 to 32.2 mm thick. The projectile points that have been recorded are also large, as well as being crudely made.

Felsite debitage, flakes, tools, and bifaces are found in the majority of recorded sites in southern Culberson County (Hedrick 1989). They occur in greater quantities in sites associated with middens or roasting pits and in campsites along the slopes and upper terraces

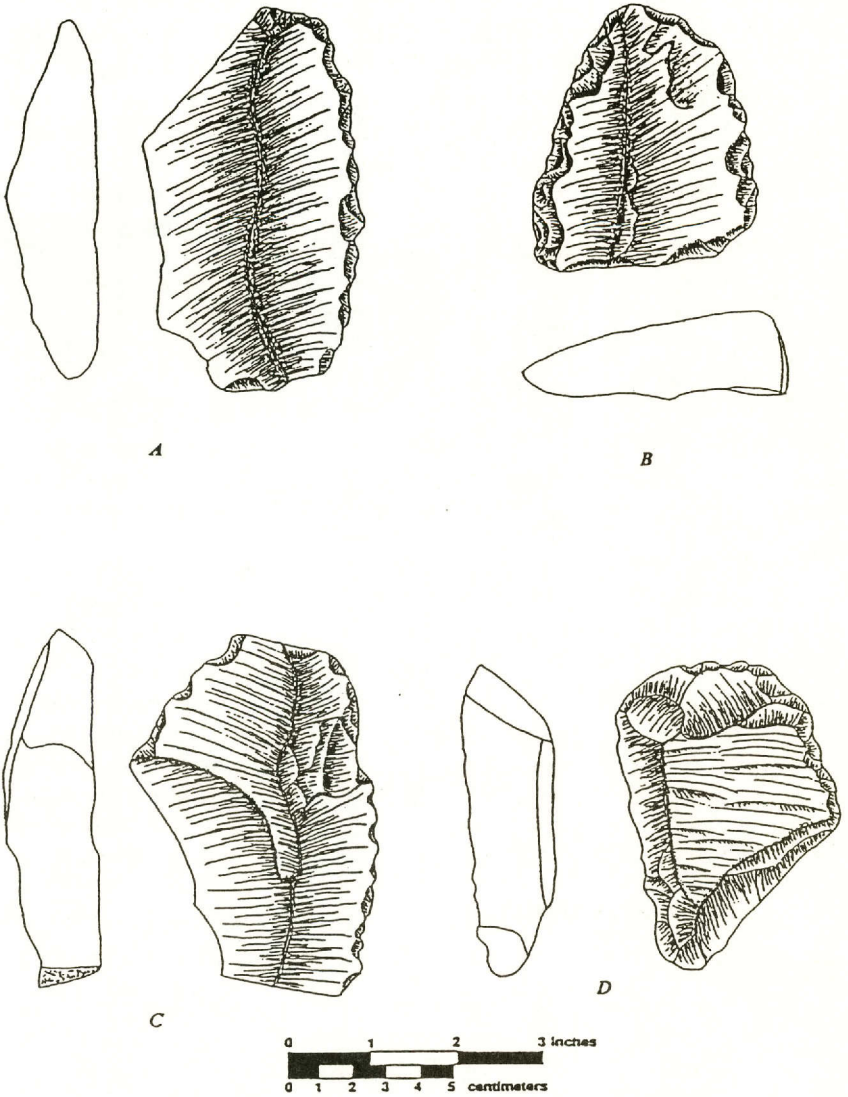


Figure 2. Felsite tools from southern Culberson County: (A) biface; (B, C, D) unifaces.

of the Van Horn Mountains. Associated diagnostic projectile points and ceramics indicate a long time span for felsite material use, from the Middle Archaic through the Late Prehistoric periods. There are also numerous sites with felsite tools and no diagnostic artifacts. The majority of these sites are in the immediate vicinity of the Van Horn Mountains.

Unresolved questions about the felsite artifacts include the following: (1) What kinds of tools were used to work and shape the hard, dense felsite? A close examination of the workshop areas revealed no evidence of foreign materials that might have been used as hammering and flaking tools. (2) What is the distribution of the felsite material outside the region of southern Culberson County?

The accumulated data from other source areas, workshops, and isolated work stations indicate that felsite was a common raw material used in the manufacture of large tools in the area. The relationship of the tools to middens or roasting pits indicates usage as plant- and animal-processing tools.

ACKNOWLEDGMENTS

I wish to thank my survey crew, Harold (Hock) Haynes, Otis Hill, Miriam Ferrell, and Roger and Mary Hill. Special thanks go to Dr. Joe Ben Wheat for his advice and counsel, and to Dr. Robin Hoffer and Dr. Jerry Hoffer, University of Texas at El Paso, Department of Geological Sciences, for their assistance in defining the felsite material and formation.

REFERENCES

Geological Society of America
1984 Rock Color Chart. Geological Society of America, Boulder, Colorado.

Hedrick, John A.
1989 A Preliminary Report on Archeological Resources in Southern Culberson County in the Vicinity of Van Horn, Texas. *Bulletin of the Texas Archeological Society*, 59 (for 1988):129–156.

Pirsson, Louis V., and Charles Schuchert
1924 *Introductory Geology*. John Wiley & Sons, New York.

Pough, Frederick H.
1984 *A Field Guide to Rocks and Minerals*. The Peterson Field Guide Series, Houghton Mifflin, Boston.

A Rock-Art Site in Terrell County

by C.K. Chandler

ABSTRACT: *A small rock-art site in northwest Terrell County, Texas, is reported. The significance of this site lies in the presence of a dancing figure bearing a rayed shield in one hand. This figure appears to depict the same event as the nine dancing figures at Meyers Spring and the four dancing figures at Bailando Shelter.*

This site is a few miles north of Sanderson in Terrell County. The tiny shelter is located on a low bluff just below a relatively flat mesa at a fork where two short branches join to form a larger canyon. The pictographs consist of six motifs in red monochrome, one black anthropomorphic figure, and several short, straight, incised lines that do not appear to represent any recognizable thing. One of the dominant motifs of the red monochrome pictographs is a single dancing figure wearing a skirt flared at the waist (referred to as a tailed or tasseled belt by Turpin, 1986), having a waist-length hair queue, and holding a rayed shield in its extended left hand. Another rayed shield in red is displayed below and to the right of the dancing figure. A row of six dots and a rakelike figure also are in red. The single black figure appears to be an army officer wearing a cape and knee-length boots. The space between the cape and boots is badly faded but shows up well in a photograph. The red figures are all faded, and all of the paintings and incisings are quite small. The dancing figure is 12.7 cm tall. All of the pictographs and incisings are depicted in their relative locations and size in relation to the dancing figure; however, they are more tightly grouped in the illustration (Figure 1) than on the curved rock surface where they occur.

In a straight line, this site is 48.3 km northwest of the Meyers Spring site, which is, in turn, 128.7 km from the Bailando Shelter site. Turpin (1986, 1991) suggests the dancing figures with related shields at Meyers Spring and Bailando Shelter depict the same event, which might have been a war dance or some other ritual behavior. The reporting of this site extends the known distribution of this motif and contributes to the knowledge of the movement of both ideas and people at various times in prehistory.

This site is recorded at the Texas Archeological Research Laboratory, University of Texas at Austin, and is designated as 41TE429. The shelter is located about midway between the well-known rock art areas of the Lower Pecos and the Big Bend regions in an area where rock-art sites are virtually unknown.

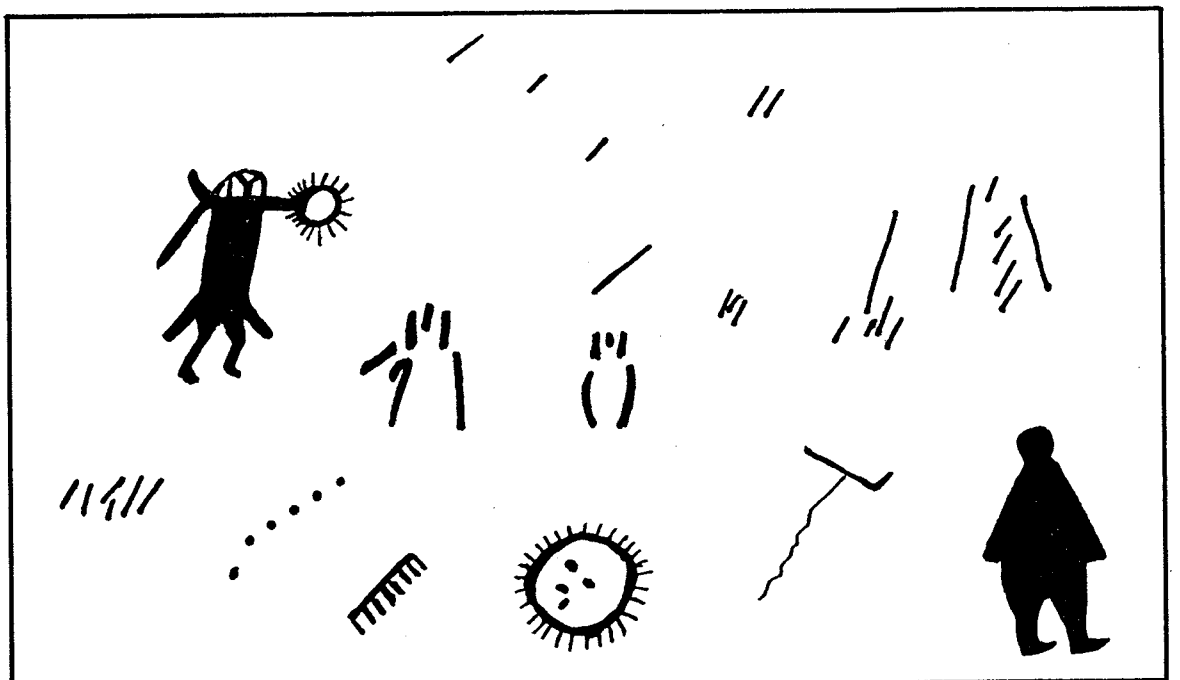


Figure 1. Rock art at 41TE429.

REFERENCES

Turpin, Solveig A.

1986 The Meyers Spring and Bailando Shelter: Iconograph Parallels. *La Tierra* 13(1):5–8.

1991 Shields and Shield Bearers in the Rock Art of the Middle Rio Grande. *La Tierra* 18(2):5–12.

Smith's Station, Butterfield Overland Mail Route, Shackelford County, Texas

by Larry Riemenschneider

ABSTRACT: *The results of the archeological investigations conducted at Smith's station, a stand on the Butterfield Overland Mail route, are reported here.*

In July of 1992, the author was approached by the Texas Historical Commission, Office of the State Archeologist, to conduct an archeological survey of Smith's station, a 19th-century stand on the Butterfield Overland Mail route. The Robbie Davis Johnson Testamentary Trust had expressed an interest in reconstructing the station to its original condition and needed a brief assessment of the site. A survey was conducted to record the site and map any evidence of structures remaining.

Smith's station is located in Shackelford County, Texas, on the Butterfield route between Clear Fork, located 26 mi. (41.6 km) to the northeast, and Fort Phantom Hill, located 12 mi. (19.2 km) to the southwest. The remains of Smith's station are located on the Chimney Creek Ranch, 14.4 mi. (23 km) west of Albany, Texas, and situated on the north bank of Chimney Creek, a short tributary of the Clear Fork of the Brazos River (Blanton n.d.), at an elevation of 1710 ft. (519.84 m).

The Butterfield Overland Mail was organized by John Butterfield, who signed a mail contract with the U.S. Government on September 16, 1857, to deliver mail between Missouri and California. The coaches traveled day and night, as the contract stipulated that each leg of the 2,795 mi. (4472 km) trip had to be made in 25 days or less (Blanton n.d; Grace 1932).

Smith's station, which operated between September 1858 and March 1861, was one of many stops along the route where tired horses or mules were exchanged for fresh teams and meals were available for travelers. The earliest description of the station comes from W.L. Ormsby, a special correspondent from the New York *Herald*, who was on the first westbound run of the Butterfield Overland Mail route. He described Smith's station as having no house yet but a fine corral of brush with the chinks filled in with mud (Ormsby 1858). Although no archival information is available about the exact dimensions or construction of the later facility, Smith's station was probably similar to the Butterfield Overland

Mail stations in Culberson and Reagan counties (Figure 1). These stations, built of native stone, consisted of a large corral with one or two single-room dwellings constructed in the interior corners of the corral. The corral walls were approximately 10 ft. (3 m) tall and 26–30 in. (66–76 cm) wide (Conkling and Conkling 1947). Nothing is known of the original Smith's station keepers; however, local legend relates that the name of Chimney Creek may have originated from the limestone chimney of the station.

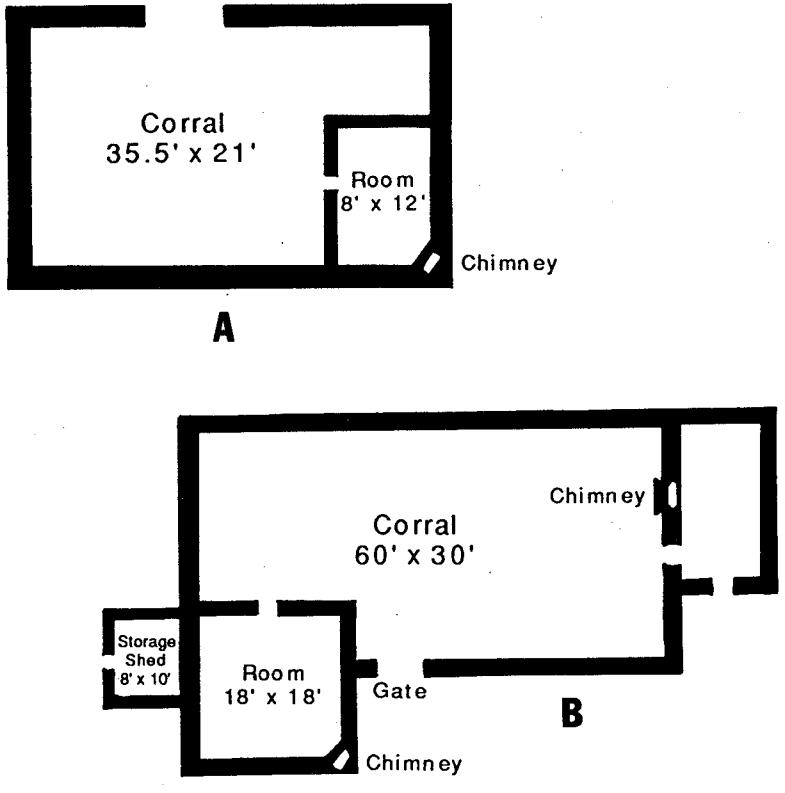


Figure 1. Plans of typical Butterfield Overland Mail stations: (A) Delaware Springs Station, Culberson County; (B) Llano Estacado Station, Reagan County. Adapted from Conkling and Conkling 1947: Plates 35, 37.

The two-day archeological survey of Smith's station was indeed a challenge. The site was obscured by a heavy cover of grass and prickly pear cactus, but the general area of the ruins was indicated by a historical marker placed among a large scatter of limestone rocks. The goal of the survey was to locate the corral walls and foundations of the station room. This effort was made even more difficult by the lack of evidence of a cementing agent on any of the rocks, indicating that the stones were either stacked or dry-walled, and thus we were left with few clues to work with.

From studies of designs of other stations on the route (for example, see Conkling and Conkling 1947), the crew set out to locate patterns that would indicate original dimensions of the corral and room. Metal probes were used to locate concentrated areas of rock. After locating the boundaries of the site by probing, a grid system was established within the boundaries of the site. Again through the use of metal probes, all rocks that were located were mapped. Metal detectors were used to locate concentrations of metals in hopes that the patterns of placement would indicate foundations or remnants of walls. No artifacts were collected, as collecting artifacts was not the intention of the investigations.

Upon completion of the mapping, a 30 x 36 m (98.4 x 118.1 ft.) area of scattered rock was noted with concentrations of rocks in three areas (Figure 2). The loosest concentration of rock (22 x 6 m [72.1 x 19.6 ft.]) begins with six large rocks standing side by side and follows an east-west line. The second, more densely concentrated cluster is located in a roughly 6 x 7 m (19.6 x 22.9 ft.) area south of the six large rocks. East of the six large rocks is the densest concentration of rocks, measuring roughly 8 x 8 m (26.2 x 26.2 ft.). This area was shovel tested to a depth of 30 cm (12 in.) but no building or corral foundations were found. The rocks on the surface and in the shovel tests exhibit angular cracking due to heat and also show a red coloration. Charcoal also was present in the tests.

Documentary studies and the archeological survey indicate that the majority of the stones from Smith's station had been removed from the site to build a roadway in Shackelford County during the 1930s. No foundations or lines of rock indicating the original design of the station are evident; however, the three concentrated areas of rocks possibly indicate the wall of a corral and a room with a chimney. The six large rocks side by side on the eastern edge of the 22 x 6 m (72.1 x 19.6 ft.) cluster may indicate a portion of a corral wall, since the scatter of rocks continues in a westerly direction for 22 m (72.1 ft.).

The 6 x 7 m (19.6 x 22.9 ft.) concentration of rocks south of the 22 x 6 m (72.1 x 19.6 ft.) scatter may have been a room. The nearby 8 x 8 m (26 x 26 ft.) area containing fire-cracked rock and charcoal may be

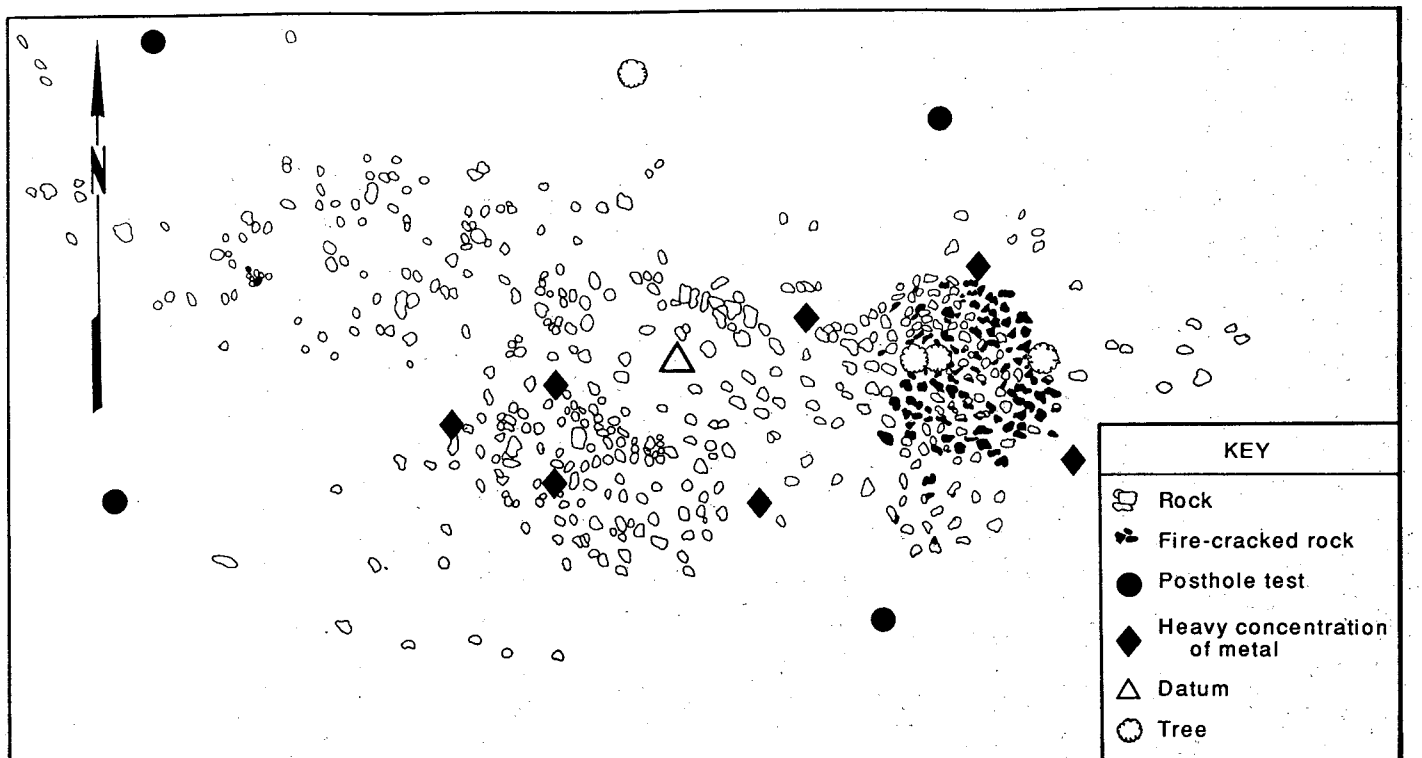


Figure 2. Map of features at Smith's station.

a fallen chimney east of the room. These three concentrations are the only concentrations of rocks that are present on the site.

From start to finish this was a very challenging and enjoyable project. I regret that more evidence of the station's original design could not be located. Thanks to Ted Paup and the Robbie Davis Johnson Testamentary Trust for being a gracious host, and special thanks to a great crew, Mike Shannon, Art Tawater, my wife, Jo, and daughter Angela.

REFERENCES

Blanton, Joseph E.
n.d. Smith's Station on the Butterfield Overland Mail Route. Manuscript on file, Shackelford County Historical Commission.

Conkling, Roscoe P., and Margaret B. Conkling
1947 *The Butterfield Overland Mail.* Arthur H. Clark, Glendale, California.

Grace, Hybernia
1932 The First Trip West on the Butterfield Stage. *West Texas Historical Association Year Book* 8:62–74.

Ormsby, W.L.
1858 *New York Herald.* October and November.

Architectural Details of San Antonio de Los Puliques Mission El Polvo Site (41PS21), Redford, Texas

by Enrique Madrid

ABSTRACT: *Oral histories were used to reconstruct the details of the adobe structure tentatively identified as the Mission of San Antonio de Los Puliques in the La Junta de los Rios area.*

INTRODUCTION

In October 1979 I interviewed Julian Carrasco of Redford, Texas, and C.J. Alvarado and Manuel Franco of Presidio, Texas, concerning the architectural details of the Spanish mission ruins at Polvo, near Redford.

All of these men, in their sixties and seventies at the time of the interviews, remembered the structure when it still existed as standing ruins, and one, Alvarado, recalled having seen the building when it was still completely intact although in a deteriorated condition, in about 1907. At the time of Franco's earliest recollections, the building was standing, but about 50 percent of the roof had fallen in. Carrasco, who was born in 1918 and grew up and lived most of his life near the site, was able to provide the most detailed information about the ruins. At the time of his earliest recollections, the ruins were in a roofless condition, and the highest remaining walls were only about 10 ft. (3 m) high.

Carrasco's most detailed descriptions of the ruins were as he remembered them in the mid-1920s, when he was 10 to 12 years of age. He said that his father used adobes from the ruins to construct other buildings shortly after that period, and some of the buildings in which the adobes were used are still standing. Carrasco had in his possession some wooden frames that, he believed, his father may have saved from the windows of the ruins. The remaining walls of the structure eventually collapsed into a mound of broken adobes and dirt. The mound was later leveled by a road grader and moved in a northerly direction. Carrasco said that the foundations may not have been damaged, since the grading was intended only to level the mound and thus probably did not cause considerable damage below the surface. At the time of the grading, some metates were recovered from the site.

The measurements given below were provided primarily by Carrasco. As a small boy he played among the ruins, climbed on top of the altars, and helped to pen livestock within the standing

walls. All of the measurements are, of course, approximate and based solely on memory. The placements of the windows and doorways are general locations. The final drawings (Figures 1 and 2) were examined by the three men interviewed, and all agreed that the depiction of the ruins was as they remembered them.

Mr. Paul Wiggins, artist-architect, of Redford, was commissioned to produce the drawings based on the information collected from the interviews. These drawings are not meant to be an accurate representation of the original structure or the ruins, but rather graphic depictions based on the combined memories of Carrasco, Alvarado, and Franco. It is hoped that the true dimensions of the structure can be established in future archeological excavations.

IDENTIFYING THE MISSION

Pending a more extensive review of Spanish archives, Catholic Church records, and the literature on Texas missions, as well as a scientific excavation of the site, the best clues to the identity of this mission come from several sources. J. Charles Kelley writes (1952:272–273):

> ...the Spaniards traveled down the Rio Grande to the Redford Valley. In the middle of this valley and on the northeast bank of the Rio Grande they saw the ruined adobe walls of a mission, which was said to be the old site of the Pueblo of San Antonio de Puliques (actually of the Pescados Indians of that Pueblo) where the Tapalcolmes Indians had formerly lived.

Kelley states also that Tapalcolmes (identified as Polvo) was still occupied in 1683, and possibly in 1715 or longer, as a mission had been established on the site (1953:42).

Captain Commander Joseph de Ydoiaga (Madrid 1992:57) viewed the abandoned mission ruins on the riverbank in 1747. He also visited the Pueblo of San Antonio de los Puliques about ten miles upriver from Polvo. The Pescados Indians from Tapalcolmes had by then incorporated themselves into this upstream pueblo.

While one would expect the Mission of San Antonio de los Puliques to be constructed in the pueblo of the same name, there probably was no permanent mission structure there as late as 1747 when Ydoiaga enjoined the Puliques Indians to build a large adobe church (Madrid 1992:51).

Possible confusion in the name of the mission may stem from the tribal affiliation between the Pescados and the Puliques Indians, or because the mission was short-lived, or simply because the mission-period history of the La Junta de los Rios region remains, to a great extent, obscure. A map of Texas missions published in Herbert Mason's *Missions of Texas* (1974) even lists another possible

candidate: the Mission of San Pedro de Alcántara de los Tapalcomes, built in 1715.

DETAILS AND MEASUREMENTS

Height: The original structure probably was 14 to 15 ft. (4.3 to 4.6 m) high. In 1925, the highest remaining walls were about 10 ft. (3 m) high. The sacristy, the smaller of the two rooms, was approximately 3 ft. (1 m) lower than the main chapel.

Width: The main chapel was approximately 15 to 20 ft. (4.6 to 6 m) in width, and the sacristy, approximately 14 ft. (4.3 m).

Length: The combined length of the rooms was approximately 50 ft. (15 m). In the drawing, the sacristy is depicted as 10 ft. (3 m) in length, and the main chapel, 40 ft. (12.2 m).

Windows: Of the total of six windows, five were located in the main chapel. The three windows on the south side were approximately evenly spaced. Openings on the north side consisted of two windows and a door, and these also were evenly spaced. One window was located on the east wall of the sacristy. All six windows were approximately 3 x 5 ft. (1 x 1.5 m) in size and were located about 3 ft. (1 m) above ground level. Although Carrasco does not remember the ruins when the tops of the windows were present, he stated that there were signs of *soleras* (thick wooden planks placed

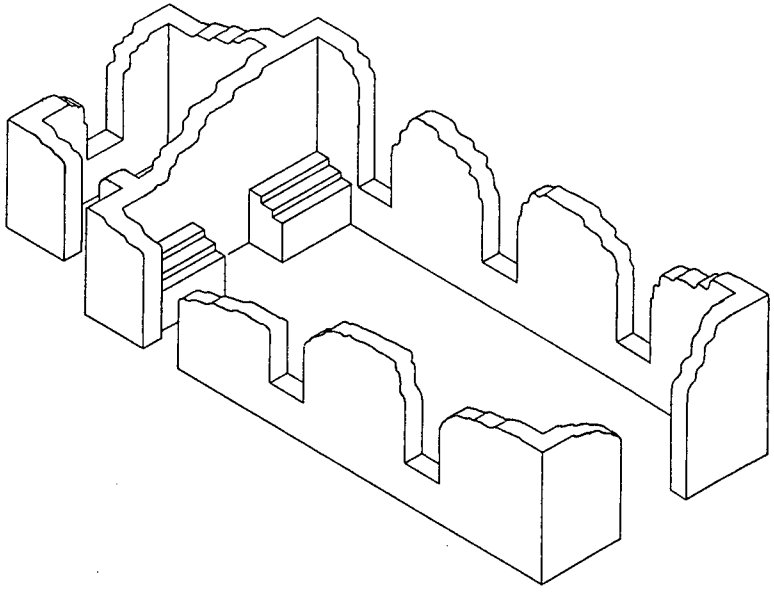


Figure 1. The mission ruins as they looked about 1925. Drawing by Paul Wiggins.

above the windows to support the adobe wall above the windows and to which the window frames were attached). Both Alvarado and Franco remembered the *soleras* in place.

Doorways: One doorway was located in the north wall of the sacristy, and one doorway was located adjacent to the sacristy in the north wall of the main chapel. On the west wall of the chapel, a doorway to accommodate double doors was the main entrance to the chapel. The smaller doors on the north wall were approximately 6 to 7 ft. (1.8 to 2.1 m) high and 32 to 36 in. (81 to 91 cm) wide. The main entrance doorway was about 6 to 7 ft. (1.8 to 2.1 m) high and 5 to 6 ft. (1.5 to 1.8 m) wide.

Altars: Two large (6 to 7 ft. [1.8 to 2.1 m] long), separate altars were located against the rear wall of the chapel, with the ends of the altars against the side walls. A space of about 3 to 4 ft. (1 to 1.22 m) separated the altars. The altars were constructed of adobe, and two "steps," also of adobe, ran the full length of the altars. The main table of the altar was about 3 ft. (1 m) high (no estimation of width was made). Carrasco recalled that the base of the altar nearest the door was about 3 to 4 ft. (1 to 1.22 m) from the edge of the door.

Vigas: Both Alvarado and Franco remembered seeing the roof intact. It was the "standard" *viga* and *raja* construction. That is, *vigas* (stout cottonwood beams) were laid across the width of the building, and *rajas* (wooden planks or splints) were laid atop the *vigas*. Dirt was piled atop the *rajas* to form the roof. The *vigas* either protruded 1 ft. (30 cm) from the wall or were flush with the wall.

Canales: Cottonwood rain gutters (*canales*) to drain the roof of rain water may have been present. Although none of the informants recalled the building having this structural detail, all three naturally assumed that the Spanish would have used *canales* to drain the roof. Although not verifiable, the *canales* were included in the drawing of the mission as it probably appeared (Figure 2).

Plaster: Exterior walls of the structure were bare adobe, interior walls were plastered with clay or mud (*estaban enjarradas*). Franco recalled that portions of the interior walls were still whitewashed, but he remembered no colored paint on the walls. He also remembered that parts of the interior walls were heavily sooted and blackened, as if campfires had been used inside the structure.

Walls: The adobes of which the walls were constructed were laid crosswise rather than lengthwise. The crosswise laying of the adobes formed a stouter, thicker wall than would have been achieved by a single thickness of lengthwise adobes.

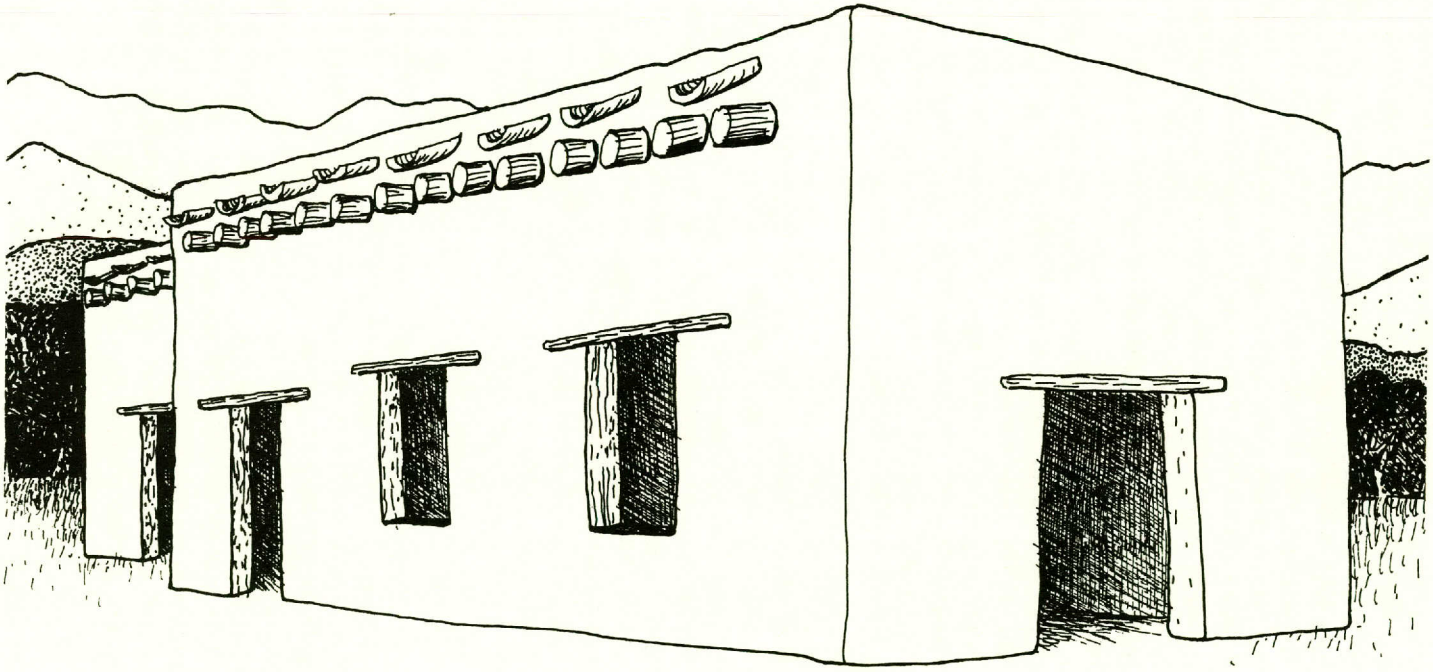


Figure 2. Artist's conception of the mission as it looked about 1907 with the roof still intact. After drawing by Paul Wiggins.

CONCLUSIONS

Alvarado, although not certain of the accuracy of his memory, felt that the only entrance to the sacristy was from the main chapel through a doorway between the altars. He also was uncertain about the existence of two altars and felt that possibly there was only one. His memory of the north side of the building would then exclude both single doors and add another window to the building. Carrasco, on the other hand, was quite positive about the interior details and the placement of the doorways and windows. For the purposes of the drawings, the doorways on the north side were included.

This site is located on a gravel and bolson-fill terrace and is now subject to the severe erosive action of the Rio Grande. It is estimated that since 1915 the river has shifted course about 1/4 to 1/2 mile (.4 to .8 km) closer to the site. One side of the hill on which the site is situated is now the river bank. A destructive flood in 1978 inundated the lower sections of the site and created a new river channel close by. As this channel continues to erode it will place the site in greater danger of destruction. Another section of the site is being eroded from another direction by Church Creek, an arroyo that flows northeast to southwest. Local legends about Spanish treasures, such as gold crucifixes, candlesticks, and statuary, make the site an attraction for treasure hunters as well. Additionally, the area in which the site is located is currently inhabited, and the town is an official United States port of entry from Mexico. In order to protect this important archeological site, it was listed on the National Register of Historic Places in 1977 and designated a State Archeological Landmark in 1984.

REFERENCES

Kelley, J. Charles

1952 The Historic Indian Pueblos of La Junta de Los Rios. Part 1. *New Mexico Historical Review* 27(4):257–295.

1953 The Historic Indian Pueblos of La Junta de Los Rios. Part 2. *New Mexico Historical Review* 28(1):21–51.

Madrid, Enrique Rede (translator)

1992 *Expedition to La Junta de los Ríos, 1747–1748: Captain Commander Joseph de Ydoiaga's Report to the Viceroy of New Spain*. Office of the State Archeologist Special Report 33. Texas Historical Commission, Austin.

Mason, Herbert Molloy

1974 *Missions of Texas*. Oxmoor House, Birmingham.

Handprints as a Rock-Art Motif

by David Alloway

ABSTRACT: *Around the world the handprint is a familiar motif in rock art dating from 25,000 years ago to the present. This paper examines the use of the handprint in rock art of the Big Bend region and methods of creating these unique signatures of past cultures.*

No other rock-art motif is more common or expressively human than the handprint. Handprints in rock art are found on a world-wide basis and in some of the oldest sites up to very recent times. Footprints also appear in some rock art, such as that of the Antelope Creek phase of the Texas Panhandle, but are far less common than handprints. Natural footprints, such as those made in soft earth and later preserved, are considered by many anthropologists to be of the utmost value. This is especially true in African sites such as Laetoli, Tanzania, where such prints can be used to determine the degree of bipedalism of early hominids (Johanson and Shreeve 1989:93).

Although known handprints incorporated into rock art were made by anatomically modern humans, much useful physiological information about the artists can still be gathered from handprints. Determining the intentions of the artist is more difficult.

Handprints appear in both pictograph and petroglyph media. Pictograph representations are undoubtedly more reliable when handprints are being studied for physiological analysis, since the actual human hand is usually used in the direct application of the pigment. In petroglyph examples the hand may have been used for an outline, but it certainly was not held in place while the image was being created.

Pictograph-style handprints are generally created in two ways. The paint is applied directly to the hand, and the hand is then pressed to the rock surface. The image produced in this manner is commonly called a "positive" handprint. Another method, using the hand as a stencil, involves holding the hand against the rock surface and daubing or blowing the paint or pigment around it. The image resulting from this technique is termed a "negative" handprint. Both techniques are ancient and cosmopolitan, and each has its advantages in studying the physiology of their makers.

Experimentation reveals much about the way handprints were produced as rock art. If the palm and fingers are smeared with paint and pressed against the rock, gaps are usually left in the

center of the palm, where the fingers and thumb join the palm, and in the finger joints. Often these gaps are seen in positive handprints. Sometimes, however, the handprints are solid, with these natural gaps appearing to be retouched. In these examples of retouching, the handprint could be larger than the artist's hand, as the outside edges may have been expanded in the process.

One such example of this is located in southern Presidio County, Texas. The handprint shows no gaps (other than some exfoliation in the palm) but is of immense size. From the tip of the middle finger to the heel of the palm is approximately 20 cm, and the thumb also is depicted much longer than normal. I am a 6'0" male weighing 215 pounds. My hands are somewhat small for a person my size (17 cm from tip of middle finger to heel of palm), but even taking that into consideration, they are still dwarfed by this pictograph. It is probable that when the print was retouched to fill in the gaps, the outside was enlarged, which would also account for the unusually long thumb (Alloway 1992).

Because negative handprints use the hand as a stencil and seldom appear to be retouched, they may offer a more accurate indication of the size of the hand used as a pattern. This would be more true if the paint was daubed around the hand instead of blown. If the pigment is blown as a dry powder, the handprint may be slightly smaller than the owner's actual size.

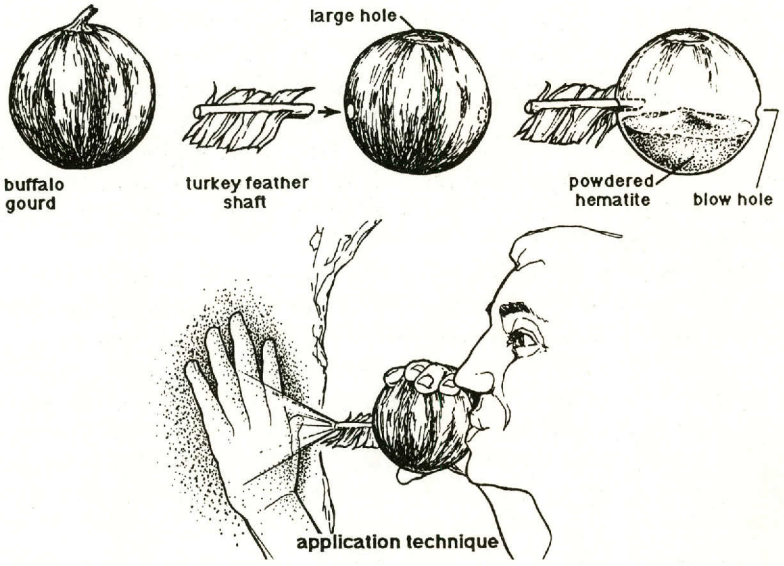


Figure 1. Technique for producing a negative handprint (from Mallouf 1990).

A suggested technique for creating negative handprints as found in some Texas sites incorporates dry pigment in making negative handprints (Figure 1). The rock surface is prepared with a binder of egg yolk and water. A wild gourd is fitted with a segment of turkey quill, and powdered hematite is placed in the gourd. The artist then places the hand on the area that has been prepared and blows through a hole in the gourd opposite the turkey quill, directing a fine spray of powder that sticks to the prepared rock (Mallouf 1990).

In replicating this experiment I have found that the fine dust will blow under the natural curve of the hand, making a slightly smaller image with slender fingers. The difference is not as pronounced, however, as some retouched positive handprints. This leads me to believe that more-accurate hand sizes can be derived from unretouched positive prints than from negative examples.

Handprints cannot be assumed to be exclusively the images of adults. Negative handprints from Gargas, France, dating back to the Gravettian civilization of 25,000 years ago, are believed to have been stenciled from hands of children two to three years old, who had to be held up by an adult at arm's length to reach the area where the negative print was made (Ruspoli 1987:90–92). In this case the handprint would not depict the artist's own hand.

There are examples of childrens' handprints done in negative style on Big Bend Ranch State Natural Area in Texas. Although the heel of the palm is not discernible, I estimate one such print to be about 7 cm from tip of middle finger to heel of palm. I have been told by some people, who are obviously unacquainted with the available skeletal evidence of the region, that this is an adult print and that people were much smaller at that time. This does not account for the other negative handprints done in the same white pigment just a few feet away that are double the size of the smaller print. I took a five-year-old girl to this site and asked her to hold her hand near, but not touching, this print. It was a close match. For whatever reason these people were applying their handprints to this shelter, children also were involved.

Handprints may possibly be used to show the right- or left-handed dominance of the individuals who made them. The Abbé Breuil, one of the best authorities on European cave art, found left-handed negative handprints to be more common than right-handed ones. This led him to the conclusion that Ice Age Europeans were predominantly right handed, using the right hand to paint the left hand (Ruspoli 1987:90–92). Conversely, it is thought that right-handed people used the right hand to make positive handprints. I have just begun a count on right- and left-handed prints in the Big Bend area, but so far the pattern seems to be a predominance of left-

handed negative and right-handed positive prints. This may indicate a right-handed dominance among the aboriginal populations.

Missing digits on hands is another area that needs consideration. The Gargas site of France yielded numerous negative handprints with phalanges or whole fingers missing. At first this was attributable to ritual mutilation or frostbite. These negative renditions could have been made by placing the *back* of the hand to the wall, bending the fingers not meant to be shown, and daubing paint around the "stencil" (Ruspoli 1987:90–92).

Missing digits are also depicted in positive handprints. This can easily be done by leaving paint off the fingers or digits not meant to be depicted. Perhaps these depict hand signals or clan signs as seen in current cultures. "Gig 'em Aggies!" and "Hook 'em Horns!" come to mind.

Missing digits are not common in North American rock art sites, but there are several examples in the Trans-Pecos region of Texas. One on Big Bend Ranch State Natural Area is missing a thumb. A Presidio County ranch is reported to have numerous examples of handprints with missing digits, but access is extremely difficult because the owner's hospitality was previously abused.

Of equal interest are extra fingers, as is frequently encountered in Anasazi sites with handprints showing six fingers. It has been suggested that these were produced by moving a finger to make an extra imprint for the purposes of predicting lunar eclipses, in which counting by sixes is helpful (Calvin 1991). This does not take into account the skeletal evidence of the Anasazi, which shows that six-fingeredness occurred more frequently within that group than the general population. It is likely that the people who made the six-fingered handprints actually did have six fingers.

The reasons for making handprints may be as varied as the handprints are common. Some explain it as an expression of identity—a preliterate signature saying, "I was here" (Kirkland and Newcomb 1967:218). Such expression is still found today in the urge to put one's hand into fresh cement. Some rock-art handprints, however, are decorated by spirals or swirls, giving an appearance of more than a casual signature. In the case of petroglyphic depictions of hands, it is hard to imagine that much work being expended for a gratuitous gesture.

Could children's handprints mark an initiation or ceremony of recognition as found in today's christening and bar mitzvah ceremonies? Perhaps such prints were a growth record, done periodically as parents today make marks on the wall showing the growth of their children. Ethnographic evidence can shed some light on the purpose of handprints as a rock-art motif. Modern Puebloans have been reported to leave handprints in places considered sacred

as identification so their prayers will be heard (Schaafsma 1980:119; Young 1988:178–181). Given the wide distribution of handprints in world rock art, it would be a mistake to assign a blanket purpose to the handprint motif in general, but it may be possible in the future to find definitions in specific locales and time periods.

Because handprints are a common motif, they are often not given as much attention as other rock art. I believe that handprints, especially those found in pictographs, should be well studied, because in the majority of cases, an actual portion of a person's *body* was used to make the rendition. This can tell us something about the artist as well as the art. For this reason I have developed a handprint recording form to be used by members of the Big Bend Archeological Society and other interested individuals (see Appendix for examples). Persons willing to participate may obtain copies by writing the Big Bend Archeological Society, P.O. Box 1, Big Bend National Park, Texas 79834.

Perhaps there is no other symbol as identifiably human as a handprint. When people visit rock-art sites they are drawn to handprints as something they can relate to across the centuries. It is no small wonder that handprints have such a great representation in world rock art from 25,000 years ago to the present.

REFERENCES

Alloway, David
1992 Personal field notes, in the author's files.

Calvin, William H.
1991 *How the Shaman Stole the Moon*. Bantam Books, New York.

Johanson, Donald, and James Shreeve
1989 *Lucy's Child*. William Morrow, New York.

Kirkland, Forrest, and W.W. Newcomb, Jr.
1967 *The Rock Art of Texas Indians*. University of Texas Press, Austin.

Mallouf, Robert J.
1990 A Visit to Brownfield Rockshelter (41NL2), Nolan County, Texas, and a Procedure for Replicating Negative Handprints. Trip Report, on file Office of the State Archeologist, Texas Historical Commission, Austin.

Ruspoli, Mario
1987 *The Cave of Lascaux: The Final Photographs*. Henry N. Abrams, New York.

Schaafsma, Polly
1980 *Indian Rock Art of the Southwest*. University of New Mexico Press, Albuquerque.

Young, M. Jane
1988 *Signs from the Ancestors*. University of New Mexico Press, Albuquerque.

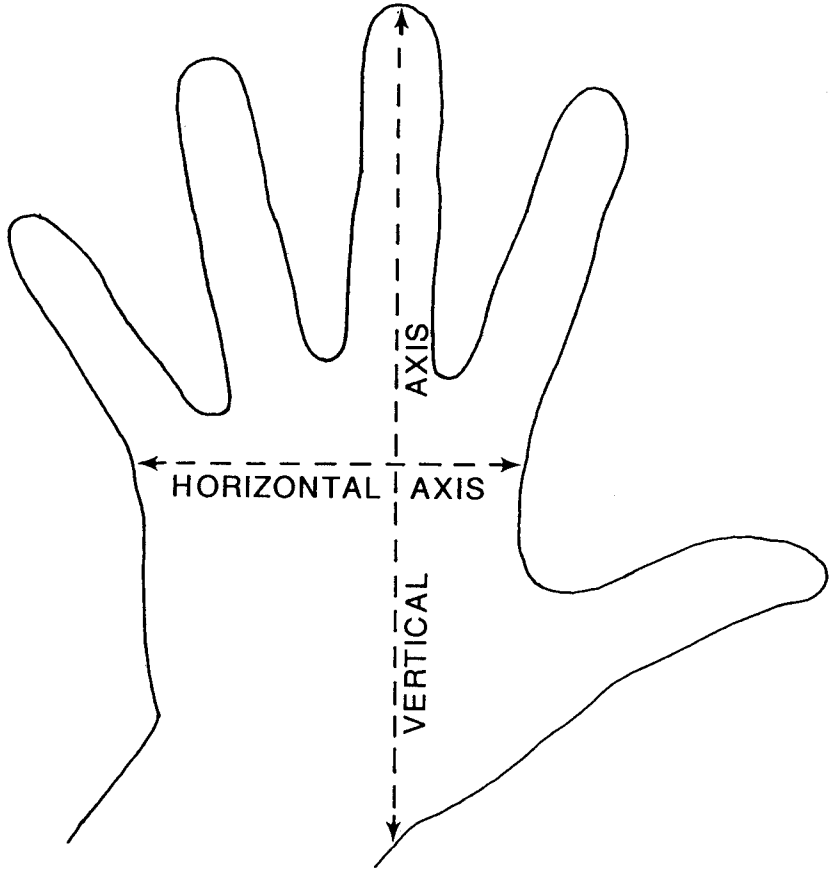
APPENDIX

INSTRUCTIONS FOR MEASURING HANDPRINTS POSITIVE AND NEGATIVE

1. When possible, all measurements should be done in centimeters.

2. If photos are taken, include a scale in centimeters by handprint in at least one photo.

3. Vertical axis measurement is from tip of middle finger to point where base of thumb joins wrist.

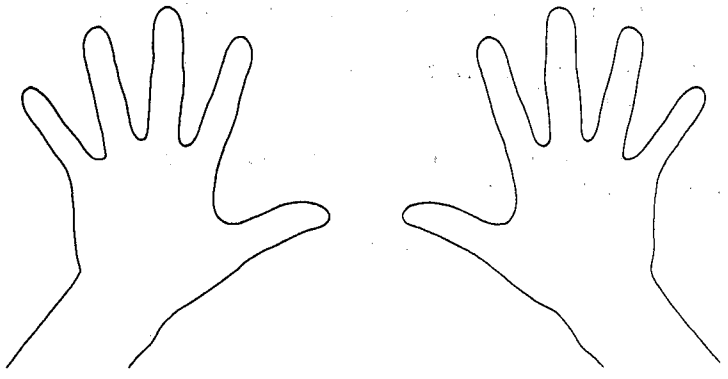


4. Horizontal Axis measurement is across top portion of palm just below where fingers join hand.

(These two measurements were chosen because they vary little when hand is fully open with fingers extended.)

ROCK-ART HANDPRINT RECORDING FORM

Left (Circle One) Right



Color in painted portions of
Handprint (if positive). Do not
color in gaps in print or missing digits..

Positive Negative (Circle One)

Pictograph Petroglyph (Circle One)

Vertical Axis Measurement:

Horizontal Axis Measurement:

Does print appear retouched? Yes No
If so, in what way?

Color Pictures Available?

Are there gaps in print? (If so, indicate on diagram)

Are there digits missing? (If so, indicate on diagram)

Are there extra digits? (If so, add to diagram)

Location (Will not be included in public reports):

Recorder's Name(s):
Date:

Investigation of a Toyah Horizon Site in Karnes County, Texas

by E.H. ("Smitty") Schmiedlin

ABSTRACT: *This paper reports archeological materials from the Sam Hemby site (41KA101) in Karnes County near the city of Kenedy, Texas. Artifacts collected from the surface and from limited test excavations are similar to those reported from other Toyah horizon sites in South Texas. The site also contains surface lithics that may be evidence of an earlier Archaic occupation.*

INTRODUCTION

The Sam Hemby site (41KA101) is located northwest of the city of Kenedy, Texas. The site is situated on a gently sloping hill overlooking a broad plain to the south. Escondido Creek, a tributary of the San Antonio River, flows approximately 0.5 mi. to the west of the site. The archeological materials are found in a dark sandy topsoil that overlays calcareous clays and gravels. The site is divided by a north–south-tending fence that splits the site roughly in half. Both sides of the fence have been cleared of underbrush and trees at some time in the past. The eastern portion of the site has been root-plowed and continues to be plowed at various intervals by the owner. The western portion of the site is covered with cactus and regrowth of brushy invader species, such as mesquite and whitebrush. The eastern side of the site has been extensively surface collected by the owner, Sam Hemby, and various others. Along with the Toyah horizon artifacts reported here, the plowed portion of the site has yielded several earlier projectile-point types, including Scallorn, Tortugas, Desmuke, Langtry, and Early Triangular. The materials collected by Mr. Hemby and the author will be donated to the Texas Archaeological Research Laboratory, The University of Texas at Austin, upon completion of analysis.

TEST EXCAVATION

In February 1992, the author, accompanied by avocationals Bill Birmingham and Don Will, and Cathy Hoyt from the Office of the State Archeologist, Texas Historical Commission, initiated a test excavation in the western portion of the site to assess the research potential of the site. The objectives of the testing were to evaluate the stratigraphic integrity of the site; to attempt to determine the presence or absence of an intact, uncontaminated Toyah horizon component; to determine the density of cultural materials at the site; and to evaluate the damage to the integrity of the eastern

(root-plowed) portion of the site by examining the subsurface integrity of the western half.

A north–south baseline was established and a single 1-m test unit was excavated in arbitrary 10-cm levels at N7-E0. All excavated materials were passed through a 1/4-in. screen. All lithic materials and artifacts were bagged by level, as were representative samples of snails, mussel shell, and bone. Three levels and the southwest quadrant of a fourth were excavated using hand trowels. Culturally sterile deposits were not reached because of time constraints.

Level 1 (0–10 cm) was dark loamy sand and contained one small sand-tempered pottery sherd, large amounts of broken freshwater mussel shell and *Rabdotus* sp. snail shell, and sandstone and flint nodules that had been fractured by heat. In addition, 231 primary and secondary flakes were recovered in the 1/4-in. screen, while 89 thinning flakes were recovered in the 1/8-in. screen.[1] The faunal remains consisted of 62 badly fractured bones from turtle, deer, rodent, and bird; some of these bones were also fire charred. Items recovered and recorded in situ were 2 large biface knives at 3 cm and a portion of a sandstone metate at 6 cm; these items were all recovered in the southwest quadrant of the test unit.

Level 2 (10–20 cm) also was dark sand with broken freshwater mussel shell and *Rabdotus* sp. snail shell. Indications of heat alteration were noted on flint, sandstone, and bone, as in Level 1. A total of 257 primary and secondary flakes were recovered in the 1/4-in. screen, and 94 thinning flakes were found in the 1/8-in. screenings. The faunal remains were consistent with the remains in Level 1. A total of 17 pieces of fractured bone were recovered, the main difference from Level 1 being that the pieces were larger. The artifacts recovered in situ were the distal end of a biface at 11 cm, and a small side-notched arrowpoint at 15 cm. In addition, another distal end of a biface and a complete Perdiz point (Figure 1E) were recovered in the screen.

Level 3 was much the same as 1 and 2 with the exception that the mussel shell and burned rock increased, while the lithic count was greatly reduced. A total of 101 primary and secondary flakes were recovered in the 1/4-in. screen, and 30 thinning flakes were recovered from the 1/8-in. screen. The faunal remains also

[1]Only one bucketful of backdirt per level was passed through the 1/8 in. screen. If the entire excavated material from each level had been passed through the 1/8 in. mesh screen, it is conceivable that the flake count would have increased by several thousand items. In addition, laboratory analysis of the other items would have been very beneficial.

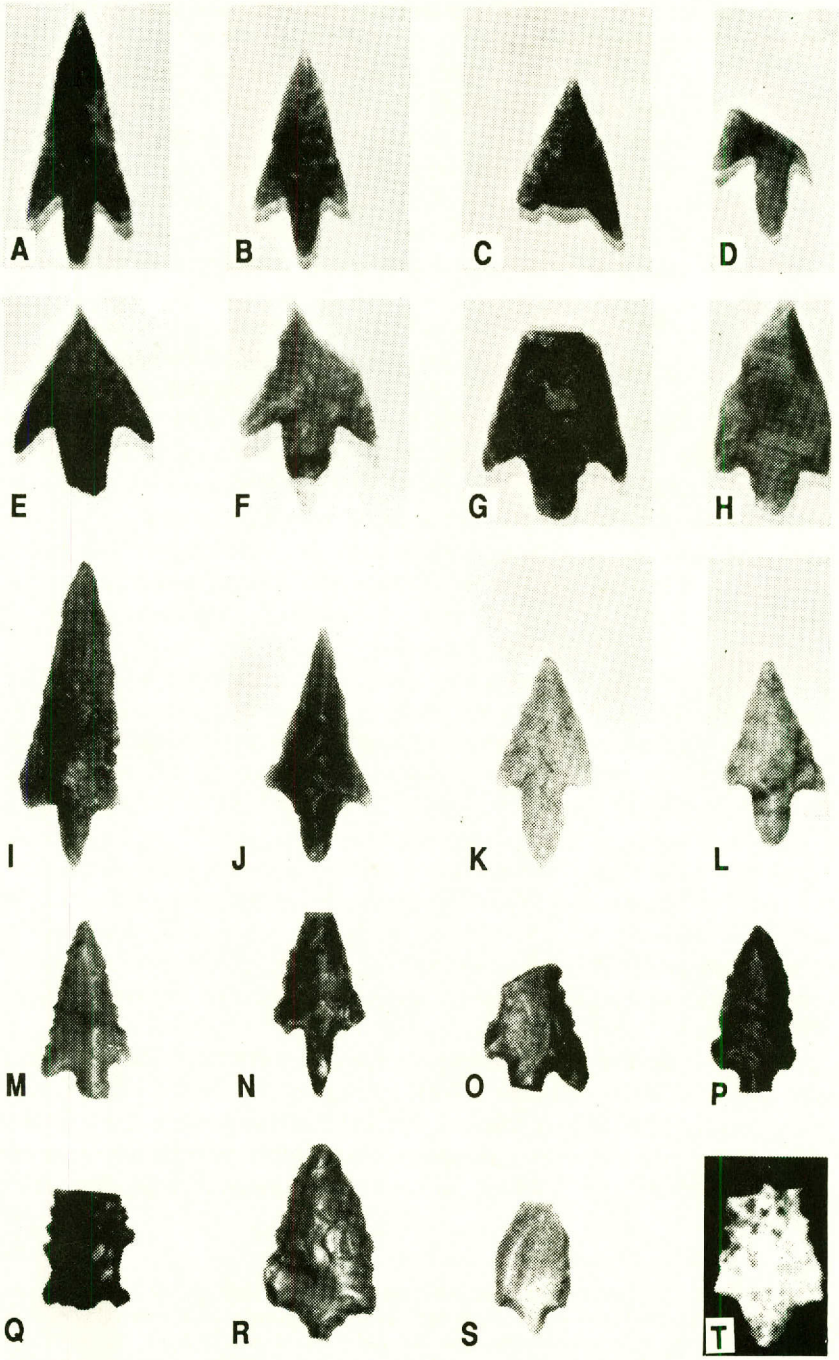


Figure 1. Perdiz arrowpoints from 41KA101. Artifacts shown actual size.

Table 1: Perdiz Points

Figure No.	Prove-nience	Max. Length	Max. Width	Max. Thickness	Uni-face	Biface
1-A	Surface	38mm	15mm	2mm	X	
1-B	Surface	30mm	13mm	2.5mm		X
1-C	Surface	25mm*	16mm	2mm	X	
1-D	Surface	14mm*	14mm	2mm	X	
1-E	N7-E0	27mm	21mm	3mm		X
1-F	Surface	30mm*	20mm*	3mm	X	
1-G	Surface	27mm*	21mm	4mm		X
1-H	Surface	31mm	16mm	3mm	X	
1-I	Surface	45mm	14mm*	4mm		X
1-J	Surface	34mm	16mm	3mm	X	
1-K	Surface	30mm	14mm	2mm	X	
1-L	Surface	26mm*	15mm	3mm		X
1-M	Surface	26mm*	14mm*	3mm	X	
1-N	Surface	22mm*	13mm*	3mm		X
1-O	Surface	18mm*	16mm*	2mm	X	
1-P	Surface	24mm*	13mm*	4mm	X	
1-Q	Surface	17mm*	13mm*	3mm	X	
1-R	Surface	29mm*	17mm*	3mm		X
1-S	Surface	21mm*	12mm	2mm	Flake preform	
1-T	Surface	24mm	16mm	3mm	Flake preform	

* Incomplete Specimen

changed from Levels 1 and 2, with turtle and bird bones being in the majority in Level 3. The amounts and size of the mussel-shell fragments also increased.

Excavation of Level 4 was limited to the southwest quadrant because of time constraints. No appreciable soil change was noted from Level 1 to Level 3. The lithic debitage consisted of 19 primary and secondary flakes from the 1/4-in. screen and 20 thinning flakes from the 1/8-in. screen. The faunal remains consisted of 6 pieces of turtle bone and 1 other small animal bone. The *Rabdotus* sp. snail shell and the freshwater mussel shell recovered in this level were mostly whole.

The use of local materials is evidenced in all levels, with a total of 155 of the 831 flakes recovered being made from petrified or opalized wood that is common in Karnes County. Chert nodules with "test flakes" removed and thinning flakes found in and near a recent borrow pit nearby indicate that chert nodules of sufficient size for artifact production also were available.

In addition to the large amount of thinning flakes recovered in the 1/8-in. screen, large numbers of seeds (probably hackberry or anaqua), small snails, and minute rodent bones also were observed. The cost and time consumed in fine screening have been discussed by Demarcay and Steele in the Choke Canyon report (Hall et al. 1986), but the benefits are obvious and, when a site is evaluated on the basis of a single test unit, the need to save all the evidence becomes extremely important.

ARTIFACTS

The artifacts recovered from the surface of 41KA101 and during the test excavation indicate that the site contains multiple components spanning the time period from Early Archaic to Late Prehistoric. The collection is dominated by artifacts commonly associated with the Toyah horizon (Black 1986) and the Austin phase (Jelks 1962) of southern Texas.

Lithics. A total of 20 specimens fall within the technological range of the Perdiz arrowpoint type (Turner and Hester 1985; Suhm and Jelks 1962). These are characterized by triangular blades with convex-to-straight lateral edges. Barbs are present on most of the specimens, with right angle or rounded shoulders occurring on a few reworked examples. Stems are parallel to contracting with pointed or rounded proximal ends. The Hemby site Perdiz arrowpoints (Figure 1 A–T; Table 1) were predominantly made from bifacial thinning flakes as evidenced by the curvature of the unifacial blades, while some show a definite "arris" that may indicate blade technology. All of the specimens are made from what appears to be locally obtained light tan to brown chert except for

one (Figure 1P), which is made from greenish gray agate. Four of the points exhibit the waxy feel and the pinkish discoloration associated with heat treating (Figure 1B, D, E, O). Stems were produced by bifacial pressure flaking in most instances. The Perdiz arrowpoints shown in Figure 1 have some recognizable differences that can be grouped as follows:

Group 1. A, B, C, and D are characterized by having well-defined barbs that angle sharply downward. The two complete specimens exhibit excellent flaking, with specimens B and C having oblique parallel flaking on the blade. Three specimens have well-made, slightly pointed stems.

Group 2. E, F, G, and H are characterized by short, slightly downward sloping barbs and short rounded stems. The blades are also short and stubby. The flaking is good.

Group 3. I, J, K, and L have barbs that are barely recognizable, and the blades are not well made. The stems are slightly tapered and somewhat rounded.

Group 4. M, N, and O have serrated edges on the blades, as well as broken barbs that may indicate they were being reworked.

Group 5. P and Q, as well as having serrated blades, have been reworked to the extent that the barbs stick out at right angles.

Group 6. R appears to be a rough Perdiz preform with only a slight hint of a stem and little flaking.

Group 7. S and T are probably Perdiz blanks with minimal flaking to partially shape the flake.

With the wide variety of workmanship exhibited from the sample, it appears evident that complete "new" specimens were being made and that broken points were being reworked and resharpened. Also, preforms and blanks were on hand to be finished as the need arose.

Table 2: Beveled Knives

Figure No.	Max. Length	Max. Width	Max. Thickness	Material	Bevel
2A	78 mm	31 mm	8 mm	Quartzite	R.H.
2B	73 mm	41 mm	9 mm	Brown chert	L.H.
2C	91 mm	34 mm	7 mm	Tan chert*	L.H.

* Heat treated

Three beveled knives (Figure 2; Table 2), 3 large bifaces (Table 3) and a sandstone metate fragment may also have been associated with the Toyah horizon component. Other lithic material, recovered from the surface and reflecting an earlier occupation of the site, include 3 Scallorn points (Late Prehistoric), 3 Tortuga points (Early to Middle Archaic), 1 Desmuke point (Late Archaic), 1 Langtry point (Middle Archaic), and an Early Triangular point (Early Archaic). Three side-notched bifaces, 1 lancelate blade with a ground base, as well as cores, scrapers, biface fragments, and flakes, were also surface collected.

Table 3: Large Bifaces

No.	Max. Length	Max. Width	Max. Thickness	Material
A	76 mm	28 mm	12 mm	Tan chert
B	67 mm	22 mm	1 mm	Tan chert
C	80 mm	20 mm	9 mm	Tan petrified wood

Ceramics. A total of 18 prehistoric ceramic sherds, three rim and 15 body, were recovered from the surface of 41KA101. The collection is characterized by fairly thick sherds with varying degrees of surficial erosion due to their exposure to the elements. All of the sherds appear to be related to the southern Texas bone-tempered ceramic tradition (Black 1986; Hall et al. 1986; Hester and Hill 1971; Highley 1986; Johnson 1992).

All sherds were examined under low-power magnification (8–15X) to identify the composition of, and inclusions in, the paste. Interior and exterior surfaces of each sherd were inspected for any remaining evidence of finishing techniques, and sherd thickness was measured. Sherds with similar paste composition were grouped as individual vessels; characteristics of each are shown below.

Vessel #1
No. of sherds: 3 body
Wall thickness: 66–75 mm
Paste matrix: fine, sandy clay with some fine silts
Inclusions: very little bone, mostly fine particles
Interior color/finish: red orange/both brushing and stone smoothing
Exterior color/finish: red-orange-gray/stone smoothed, some surficial erosion

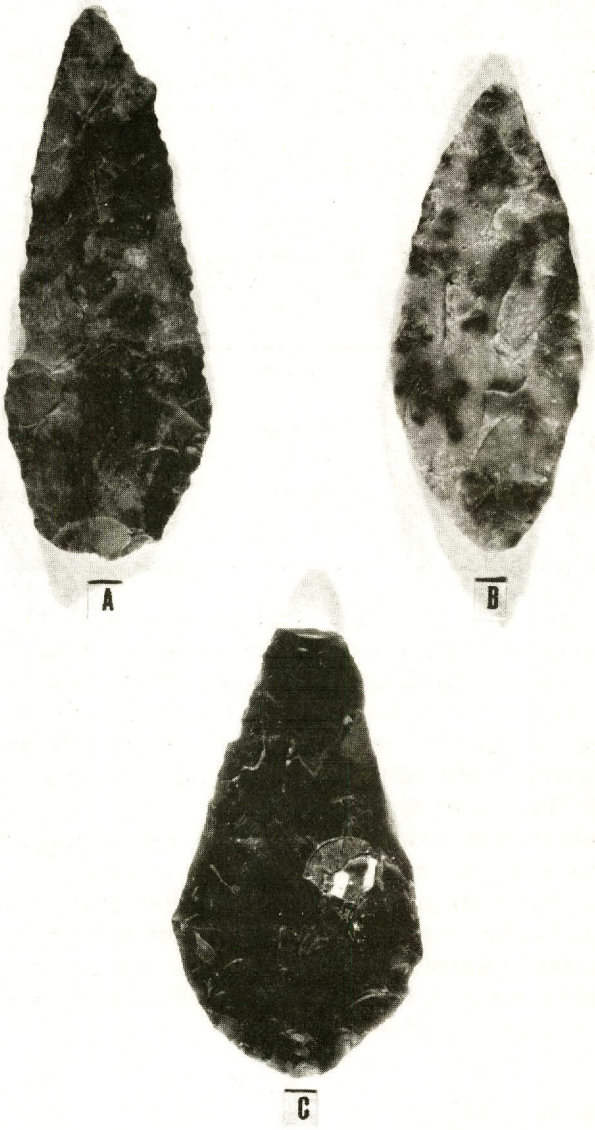


Figure 2. Beveled knives from 41KA101. Artifacts shown actual size.

Vessel #2
No. of sherds: 3 body
Wall thickness: 52–77 mm
Paste matrix: chunky clay, some rounded sand grains
Inclusions: profuse bone, some very large (2–5 mm), two fragments of what appears to be snail shell
Interior color/finish: red-orange/rough brushing
Exterior color/finish: dark gray-black/poorly stone smoothed, several tracks can be seen
Comments: The nonbone inclusion is provisionally identified as snail shell. It may not have been an intentional inclusion in the ceramic paste.

Vessel #3
No. of sherds: 4 body
Wall thickness: 50–66 mm
Paste matrix: fine clay
Inclusions: bone
Interior color/finish: light tan/brushing can be seen on every sherd
Exterior color/finish: light tan/some evidence of stone smoothing, heavily eroded
Vessel form: large cooking bowl(?), ca. 45 cm in diameter
Comments: Sherds may have originally been red-orange in color, but due to their exposure on the surface for a number of years they appear to have been bleached as well as eroded.

Vessel #4
No. of sherds: 3 body, 1 rim
Wall thickness: 72–88 mm
Paste matrix: chunky clay with fine sand and silt
Inclusions: little bone, ground sherds
Interior color/finish: gray-tan/stone smoothing over brushing
Exterior color/finish: tan-black/stone smoothing
Vessel form: beaker-shaped jar
Comments: Gas cavity seen on one sherd. Rim is straight, not flared, and rounded from the interior.

Vessel #5
No. of sherds: 1 body
Wall thickness: 76 mm
Paste matrix: sandy clay, large, rounded sand grains
Inclusions: bone
Interior color/finish: red-orange/heavily eroded
Exterior color/finish: red-orange/stone smoothing
Comments: Very heavily eroded sherd, worst in the collection.

Vessel #6
No. of sherds: 1 body
Wall thickness: 54 mm
Paste matrix: fine clay
Inclusions: bone
Interior color/finish: dark red-orange/stone smoothing, polished to a high luster
Exterior color/finish: dark red-orange/stone smoothing
Comments: Sherd is from a very well finished pot.

Vessel #7
No. of sherds: 1 rim
Wall thickness: 58–73 mm
Paste matrix: fine, sandy clay
Inclusions: some bone
Interior color/finish: gray-tan/stone smoothed, two parallel tracks can be seen just below the rim
Exterior color/finish: gray-tan/poor stone smoothing, some erosion, a small lip appears to have been created during smoothing that was not later obliterated
Comments: Rim is rounded, very well made.

Vessel #8
No. of sherds: 1 rim
Wall thickness: 52–65 mm
Paste matrix: fine, sandy clay
Inclusions: some bone
Interior color/finish: black-gray/brushed then stone smoothed; smoothing was apparently done when the pot was too dry, causing grit to be drug, along resulting in numerous striations running parallel to the rim
Exterior color/finish: dark gray/smoothed
Comments: This sherd is heavily carbonized on the exterior surface around the rim; these deposits may be food or cooking residue.

Ceramic sherds recovered from 41KA101 show a great many similarities with other Toyah-age pottery in South and Central Texas. Coil manufacture is evident from the seams identified in the fractured edges; the upper coil was pushed down and the lower coil was pulled up to weld the seam. Crushed bone is obvious in every sherd. Most bone was completely oxidized when it was burned, to make it easier to crush prior to adding it to the paste, and it appears white, while some of the larger chunks were not oxidized and are black. Snail shell in vessel 2 does not appear to be an intentional inclusion in the paste; it may have originated in the clay gathered for potting. No slips or washes were detected in this

collection. Exterior surfaces of the sherds are all stone smoothed, or burnished, to varying degrees, which is a common trait of Toyah potters, along with stick-smoothed or brushed interiors (Johnson 1992). Voids seen in the surfaces and edges of the sherds could be the result of the inclusion of an organic material in the paste (cf. Highley 1986) to facilitate even drying. Porous materials such as bone, or even grass or bark, would allow moisture to escape during the greenware state; firing would burn out any of these organic materials and leave behind only the altered mineral phase of bone or shell. Alternatively, these voids could be the cavities left from bone inclusions removed by erosion. While the collection as a whole shows a great deal of surficial erosion, the voids are also present in fresh breaks, which suggests some type of organic inclusion in the paste.

The clay used to manufacture the ceramic vessels identified here appears to have been derived from three sources. Vessels 2 and 5 both contain large, rounded sand grains; vessels 3, 4, and 6 have a fine clay paste with few nonbone inclusions, and vessels 1, 7, and 8 have a very fine, sandy clay paste.

Bone Tools. Two bone tools, a smoothed deer ulna and a split and smoothed deer long bone, were surface collected by the landowner.

Shell and Stone Ornaments. Two beads were recovered. One was made from an olivella shell with the umba abraded away to form a hole, and the other is a small, flat, round sandstone disk that was broken in an attempt to drill a biconical hole. Two other objects, a chert nodule and a freshwater mussel shell, show signs of wear indicating that they were worn as ornaments. The chert nodule is naturally doughnut shaped but the center hole shows signs of possible wear. The hole in the freshwater mussel shell, manually perforated from the exterior, is slightly elongated from wear.

Faunal Material. Other faunal material, in addition to the bone tools mentioned above, was recovered from the site. Material recovered during the test excavation included deer bone and teeth, bird bones, *Rabdotus* sp. snail shell, and freshwater mussel shell. In addition, an alligator mandible fragment, bison bone and teeth (Jeff Huebner, personal communication, 1992), and an antelope tooth (ibid.) have been collected from the surface.

CONCLUSIONS

The Perdiz arrowpoints, a sherd of sand-tempered pottery, biface tools, and the absence of Archaic lithics found in the 1-m test excavation indicate that the western section of the site may have

an intact Toyah horizon component, while the surface materials collected from the plowed eastern portion of the site indicate that multiple occupations occurred in that area. Due to the limited area excavated, no firm conclusions can be drawn. Further excavations by trained personnel in both the eastern and western portions of the site will be required to determine if the Perdiz points, bison bone, beveled knives, and pottery sherds can be found in direct association. The presence of Archaic dart points and the tremendous amount of scrapers, cores, bone, and flint debitage collected by the landowner from the eastern portion of the site may indicate that a deeply buried Archaic site may have been disturbed by root-plowing and is now mixed with the Toyah horizon component in the plowed field. The limited depth of the test excavation may not have reached this zone.

ACKNOWLEDGMENTS

Jeff Huebner and Steve Black examined the pottery sherds and provided the descriptions. Cathy Hoyt and Bob Mallouf provided the necessary "prodding" to get this manuscript published. Sam Hemby and his wife were our hosts, graciously loaned the materials in this publication for analysis and provided access to the site.

REFERENCES

Black, Stephen L.
1986 *The Clemente and Herminia Hinojosa Site, 41JW8: A Toyah Horizon Campsite in Southern Texas.* The University of Texas at San Antonio, Center for Archaeological Research Special Report 18.

Hall, Grant D., Thomas R. Hester, and Stephen L. Black
1986 *The Prehistoric Sites at Choke Canyon Reservoir, Southern Texas: Results of Phase II Archaeological Investigations.* The University of Texas at San Antonio, Center for Archaeological Research, Choke Canyon Series, Vol. 10.

Hester, Thomas R., and T.C. Hill, Jr.
1971 An Initial Study of a Prehistoric Ceramic Tradition in Southern Texas. *Plains Anthropologist* 16:195–203.

Highley, Cheryl Lynn
1986 *Archaeological Investigation at 41LK201, Choke Canyon Reservoir, Southern Texas.* The University of Texas at San Antonio, Center for Archaeological Research, Choke Canyon Series, Vol. 11.

Jelks, Edward B.
1962 *The Kyle Site: A Stratified Central Texas Aspect Site in Hill County, Texas.* Department of Anthropology, The University of Texas, Austin.

Johnson, LeRoy, Jr.
1992 Stealing Secrets from Dead Potters: A Plea for Painstaking Ceramic Sleuthing. *APR News & Views* 4(1):16–19.

Suhm, D. A., and E.B. Jelks
1962 *Handbook of Texas Archeology: Type Descriptions.* Texas Archeological Society Special Publication 1, and Texas Memorial Museum Bulletin 4. Austin.

Turner, E.S. and T.R. Hester
1985 *A Field Guide to the Stone Artifacts of Texas Indians.* Texas Monthly Press, Austin.

Cooking With Clay Balls

by Joe D. Hudgins

ABSTRACT: *Several experiments were conducted to evaluate the effectiveness of heating clay balls and using them, together with hot coals, to cook food in an earthen pit.*

INTRODUCTION

The presence of fired-clay balls in prehistoric sites in the Southeastern region of the United States is well documented. Sites such as Poverty Point in northeastern Louisiana (Ford and Webb 1956); the Jaketown site in west central Mississippi (Ford, Philips and Haag 1955); and sites in the Coctawhatchee Bay area in western Florida (Lazarus 1958; Fairbanks 1959) are a few examples.

Fired-clay balls have also been reported from approximately 18% of inland prehistoric sites in Southeast Texas (Patterson 1989). Excavations at site 41WH19, in Wharton County, produced over 4,000 fired-clay balls and clay-ball fragments at all levels, representing Paleoindian to Late Prehistoric time periods. Rounded and oval shapes are the most common, although what appears to be lumps of fired clay also are present. Some specimens have shallow grooves 2 cm to 3 cm in width that were impressed into the moist clay before firing. Sizes generally range from 5 cm to 10 cm in diameter (Patterson et al. 1987).

Fired-clay balls collected from the eroded surfaces of sites 41WH2 and 41WH6, in Wharton County, range from 5 cm to 8 cm in diameter, with the majority being spheroidal and oval shaped. Some of the spheroidal-shaped specimens also have shallow longitudinal impressions 2 cm to 3 cm in width. Some large fired-clay lumps also were observed. Surface color of these clay objects ranged from reddish to reddish brown with black cores (Hudgins field notes). Fort Bend County site 41FB42 yielded 15,000 clay balls and fragments of clay balls. Many have shallow impressions 2 cm to 3 cm in width, and most were rounded or oval shaped with tan or buff colored surfaces and black centers (Patterson field notes).

Some theories as to the function of these fired-clay objects suggest their use in earthen pits for roasting or baking meat, fish, and tubers (Hunter 1975). Others suggest a natural origin for their presence (Huebner 1986). Fragments of fired clay can be produced naturally by clearing and burning brush or tree roots that were growing in clay or sandy clay soils. However, these are generally small, fragile, irregular-shaped fragments and are quite different from the well-formed, rounded or spherical-shaped specimens found in

the above-mentioned archeological sites.

There is a need to explain the presence of the fired-clay balls in the deep sandy soils of site 41WH19. Possibly the best insight for their presence in archeological sites comes from an account of the cooking habits of the Australian aborigines. In some areas of the Australian continent, the aborigines would add stones and lumps of anthill to their fires. When the materials were red hot, the aborigines would lay them in the bottom of an earthen pit and place the carcass of an animal on them, adding sheets of paper-bark, ashes, and sand to seal the pit. Larger game, such as crocodiles, would be cut up before being added to the pit (McCarthy 1957).

COOKING WITH CLAY BALLS

To examine the process of cooking food using heated clay balls in an earthen pit, two series of experiments were undertaken. The first series consisted of four experiments. In the first of the four experiments, a round-shaped pit, 40 cm in diameter and 40 cm deep, was dug in moist, dark-brown, sandy, clay loam soil. Using clay taken from this pit, six round-to-oval clay balls and two spherical-shaped balls were made. The clay was moist and easily shaped. Firewood was gathered from the immediate area and layed in the pit. The wood consisted of small dry branches 2 cm to 4 cm in diameter that could be easily broken by hand. Next the eight clay balls were placed on top of the broken branches, then the wood was ignited. After the fire had burned out completely, an eastern cottontail rabbit, weighing 2.5 lbs., skinned, with intestines removed, was placed on top of five of the heated clay balls, with the body cavity facing upward. Two clay balls were placed along each side of the carcass, and one was placed in the body cavity. The hot clay balls were arranged using two straight sticks, each approximately 1 m in length. The pit was then covered by placing a flat, 1-m-square board over the pit. Three hours later, the board was removed and the result was an overcooked rabbit.

The second trial was conducted using the same pit, approximately the same amount of firewood, and eight oval-shaped clay balls of the same type of clay. The firewood was ignited and allowed to burn out. Then a chicken (2.9 lbs.) was placed breast up on four of the heated balls, with two heated clay balls placed on each side of the chicken. The pit was again covered with the board and left in place for two and one-half hours. The result was a thoroughly roasted chicken. This experiment was conducted again for members of the Houston Archeological Society and achieved the same results.

The third trial used two pits, each 40 cm in diameter and 40 cm deep, dug in slightly moist, light-brown, sandy soil. Approxi-

mately the same amount of firewood was placed in each pit. The wood consisted of dried branches 2 cm to 4 cm in diameter. In pit #1, eight moist, round-to-oval-shaped clay balls made from a reddish-yellow, sandy clay were placed on top of the firewood; pit #2 contained firewood only. After both fires were ignited and allowed to burn out, a chicken was placed in each pit. In pit #1, the chicken was laid directly on four of the heated clay balls on top of the coals, with the remaining clay balls placed around the chicken. In pit #2 the chicken was laid on top of the hot coals, but no clay balls were used. Both pits were covered with boards. Two hours later the chickens were removed and examined. The chicken from pit #1, containing the heated clay balls, was thoroughly roasted, while the chicken from pit #2, without the aid of heated clay balls, had roasted wings, back, and legs, but the breast meat was raw. The coals in pit #2 were still warm but not generating enough heat to continue the cooking process.

The fourth trial in this series simulated the previously mentioned Australian aborigines method. A pit that had been used in the third trial was used. Branches of dead tree limbs were gathered and, instead of being placed in the pit, were stacked in a pile outside the pit. Thirty moist and dried clay balls, round and oval shaped and made from reddish-yellow, sandy clay, were placed within and atop the stack of broken branches. Some of the moist clay balls were pressed on the branches to prevent them from rolling aside. The fire was ignited and allowed to burn out. Fifteen of these heated clay balls and some of the hot coals were raked into the pit. A 4-lb. chuck roast, 4 cm in thickness, two large russet potatoes weighing a total of 2.5 lbs., and two large sweet potatoes, weighing 2 lbs., were laid on top of the heated clay balls and hot coals within the pit. The remaining heated clay balls and hot coals were then raked into the pit on top of the food items. The pit was then sealed with the remaining ashes and sand. Two hours later, the ashes and sand were removed, and the four potatoes were found to be thoroughly cooked, but the roast, although not burned, was overcooked to the point of being dry and unpalatable. The roast should have been removed after only one hour of cooking.

MEASURING TEMPERATURE

The second series of experiments dealt with temperature measurements. The first trial demonstrated that food could be cooked using both heated clay balls and hot coals in a covered earthen pit, but how much each contributed to the cooking process was not clear the use of a thermometer was needed to register the heat generated by these elements.

The two pits used in the previous experiment were reopened to the same dimensions as before, and equal amounts of firewood, consisting of dried branches from a dead American Elm tree, were placed in each of the pits. In pit #1, clay balls made from moist, reddish-yellow, sandy clay were placed on top of the broken branches. Pit #2 contained only firewood. The firewood in both pits was ignited and allowed to burn out, then an oven thermometer was placed in each pit. The initial temperature in each pit was too high for an accurate reading, as these thermometers were limited to a maximum reading of 550° F. Once the temperatures within the pits dropped to 500° F., each pit was covered with a flat board. Temperature readings were taken after a one-hour interval; pit #1 registered 375° F., and pit #2 registered 220° F. At the end of two hours, the temperature for pit #1 registered 275° F. and pit #2 registered 150° F. After three hours, the temperature for pit #1 registered 180° F., and pit #2 was cool enough to allow removing the remaining ashes by hand.

A second trial concerning temperatures was begun by placing firewood and eight clay balls in one of the pits. After the fire burned out, the eight clay balls were immediately removed and stacked outside the pit around and on top of the oven thermometer. The temperature quickly registered 425° F. One hour later the temperature registered 275° F., and after two hours 180° F. registered. The coals in the bottom of the pit were observed after one hour and, although they were still hot, heat loss was rapid; after one and one-half hours, they were only warm to the touch.

After all experiments were completed, the pits were examined. The walls and the bottom of the pit dug in the dark-brown, sandy clay loam were black and very hard and were fired to a thickness of approximately 3 mm. The walls and bottoms of the pits dug in the light-brown, sandy soil were visibly scorched but, even though dried and hard, showed no signs of being fired.

DISCUSSION

Most fired-clay balls found in inland prehistoric archeological sites in Southeast Texas have been recorded as to count and weight, and several opinions have been offered for their presence. However, many archeologists in the Southeastern region of the United States consider them to be man-made and to have been used for cooking food in earthen pits; the balls are classified according to shape, size, decorations, and type of matrix (Webb 1982).

The experiments conducted for this paper support Hunter's view that the balls are purposefully made and used for baking orroasting food in earthen pits. More experiments need to be conducted to replicate the surface color and hardness of the fired-clay balls

found in archeological sites 41FB42, 41WH2, 41WH6, and 41WH19. Clay balls used for the experiments in this paper were black in color after firing and not as hard as those recovered from the archeological sites. It was observed in experiment one, trial four, that when the clay balls were fired outside of the pit, a tan or light brown surface color was achieved. Also, the exact amounts of firewood and clay balls needed for cooking different amounts and varieties of foods were not fully determined in these experiments.

CONCLUSIONS

Heated clay balls used in combination with hot coals proved to be very effective in cooking food in an earthen pit. The primary factor in the effectiveness of using heated clay balls appears to be in their ability to retain heat.

REFERENCES

Fairbanks, Charles H.
1959 Additional Elliott's Point Complex Site. *Florida Anthropologist* 12(4):1.

Ford, James A., and Clarence H. Webb
1956 Poverty Point, A Late Archaic Site in Louisiana. *Anthropological Papers of the American Museum of Natural History* 46, Part I:5–136.

Ford, James A., Philip Phillips, and William G. Haag
1955 The Jaketown Site in West Central Mississippi. *Anthropological Papers of the American Museum of Natural History* 45, Part 1:5–164.

Huebner, J.A.
1986 Texas Coastal Clay Objects: Hypotheses Testing by Archaeological Experimentation. *La Tierra* 13(2):32–37.

Hunter, D.G.
1975 Functional Analysis of Poverty Point Clay Objects. *Florida Anthropologist* 28(1):57–71.

Lazarus, William C.
1958 A Poverty Point Complex in Florida. *Florida Anthropologist* 11(1):23–32.

McCarthy, Frederick D.
1957 *Australia's Aborigines—Their Life and Culture.* Colorgravure Publications (The Herald and Weekly Times Ltd.), Adelaide, Australia.

Patterson, L.W.
1989 *A Data Base for Inland Southeast Texas Archeology.* Houston Archeological Society, Report 6. Houston.

Patterson, L.W., Joe D. Hudgins, Richard L. Gregg, and William L. McClure.
1987 *Excavations at Site 41WH19, Wharton County, Texas.* Houston Archeological Society, Report 4. Houston.

Webb, Clarence H.
1982 The Poverty Point Culture. *Geoscience and Man,* Vol. 17. 2d ed. Louisiana State University School of Geoscience, Baton Rouge.

Earthenware Figurines from the Old Texas Town of Velasco

by Johnney T. Pollan, Jr.

ABSTRACT: *This paper provides descriptive data for four earthenware figurines from the old town of Velasco in Brazoria County, Texas. These figurines were recovered during reclamation work performed by the Brazosport Archaeological Society in 1991 and 1992.*

THE ARTIFACTS

Four figurines have been found at the old town of Velasco in Brazoria County, Texas, by members of the Brazosport Archaeological Society during reclamation work at Velasco in 1991 and 1992. These figurines are molded, white-paste earthenware ceramics. Each figure is hand painted with bold colored underglazes that improve the appearance of the molded surface. The colored glazes used to decorate the figures are red, green, blue, and black. These four colors are frequently found on hand-painted ceramics produced from the 1820s to the 1860s. The workmanship of each figure is crude and presumably represents a low-priced statue. The four figures are a mermaid, a seahorse, a kneeling woman, and a standing man.

THE MERMAID

The mermaid (Figure 1A) has long hair, no arms, and a green, scaly body tipped with a red tail. The base of the statue is missing. The face has bright red lips and black eyes and eyebrows. The chest and breast areas are painted with a washed red glaze that gives a flesh color, and the hair is painted with a washed black glaze. The maximum dimensions of the mermaid are 5.8 cm high by 4.4 cm wide by 2.3 cm thick.

THE SEAHORSE

The seahorse (Figure 1B) has a horse's head, shoulders, and forelegs attached to a green, scaly, body tipped with a red tail. The seahorse is supported by blue waves. Half of the base, as well as the tail fin, is missing. The horse portion of the figure is painted with a washed black glaze accentuated with dark black bridle, reins, and mane. A red band at the waist may represent a saddle. The maximum dimensions of the seahorse are 5.7 cm high by 6.9 cm wide by 3.0 cm thick.

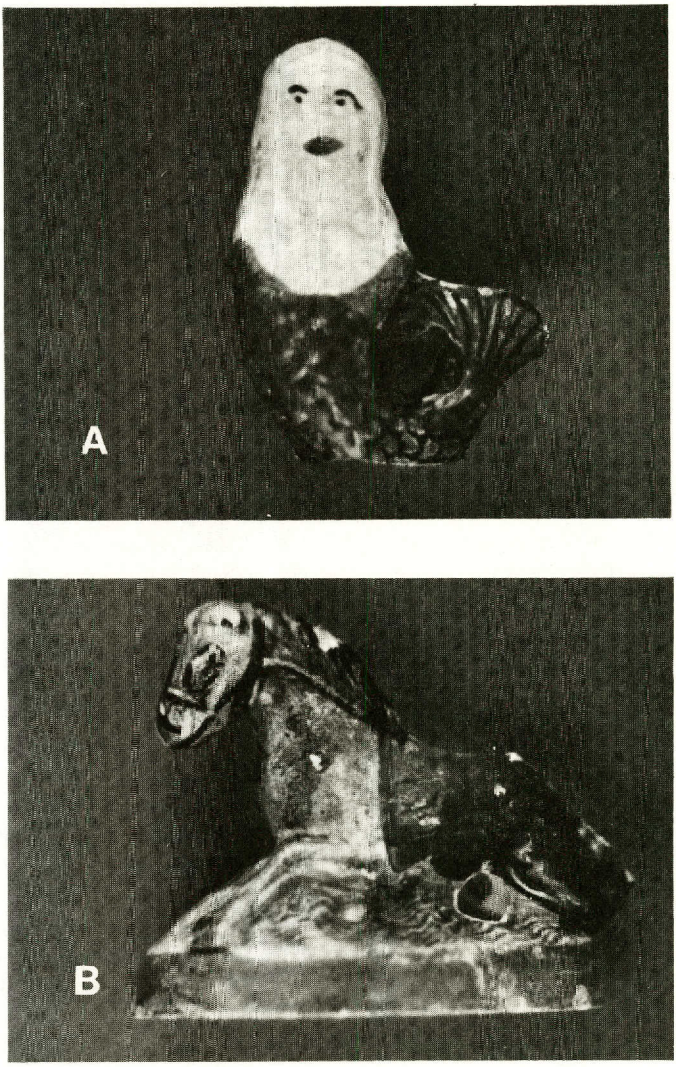


Figure 1. Ceramic figurines from Velasco. (A) Mermaid, (B) Seahorse.

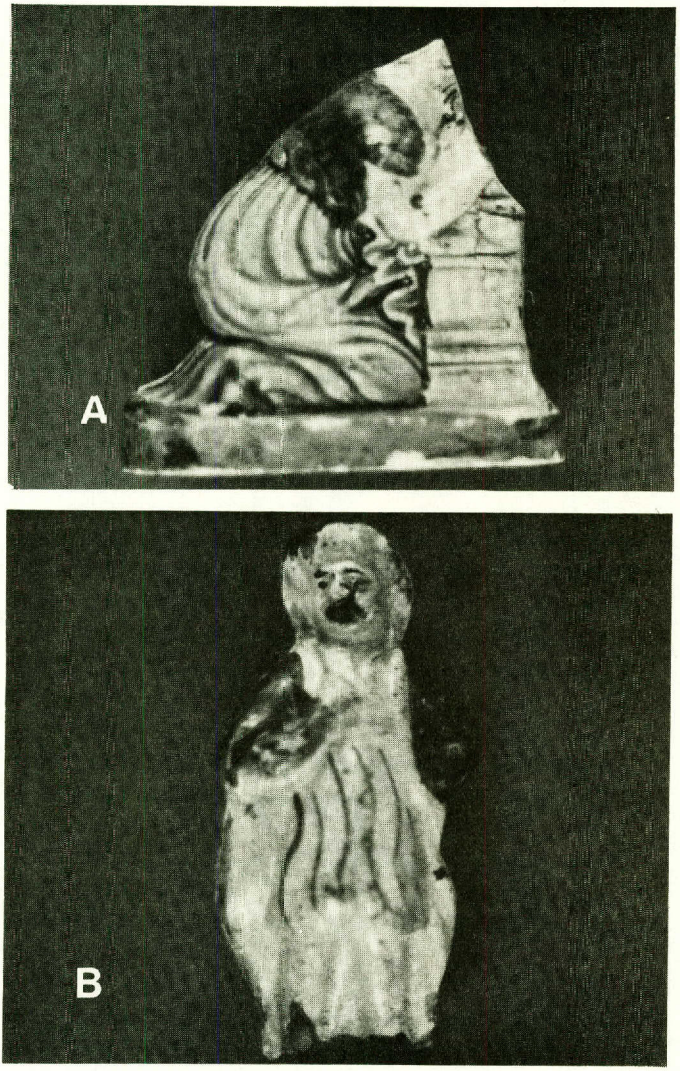


Figure 2. Ceramic figurines from Velasco. (A) Kneeling Woman, (B) Standing Man.

THE KNEELING WOMAN

The kneeling woman figurine (Figure 2A) depicts a woman, with her arms up to her face, kneeling at an altar or pillar. The head and hands are missing, so it is impossible to determine what the woman is doing. She is possibly praying. The woman is dressed in a red skirt and a green blouse. The maximum dimensions of the kneeling woman are 6.0 cm high by 6.2 cm wide by 3.0 cm thick.

THE STANDING MAN

This figurine (Figure 2B) represents a standing man wearing 18th-century clothes and may depict a historic person such as George Washington or Benjamin Franklin. The man has his left hand on his left hip and holds the right lapel of his coat with his right hand. His vest is decorated with thin, wavy green lines. The man's coat is red and he wears a black hat. The base of the figurine is missing. The maximum dimensions of the standing man are 7.9 cm high by 4.3 cm wide by 2.7 cm thick.

CONCLUSIONS

The predominant ceramics found at Velasco are English Staffordshire wares that were manufactured from 1830 to 1865. The four figurines described above were found in association with these ceramics. The figurines have many similarities to Staffordshire ceramics, and it is the author's opinion that these figures are, indeed, Staffordshire. The quality of the workmanship is poor, and it can be assumed that the figurines were inexpensive pieces.

The function of the four figurines is less certain. They may be aquarium statues, toys, or simply knickknacks. Further research is required to determine functionality and to confirm age and origin of manufacture.

Four Lithic Caches from Terry County, Texas

by Leon Pope

ABSTRACT: *Four lithic caches have been recovered and documented from sites in Terry County, Texas. All four caches are similar in several respects: (1) all contain Edwards Plateau chert (with the nearest source being about 160 km away); (2) most of the pieces are in a secondary stage of production (with very little cortex remaining); (3) all four caches have flakes or bifaces and; (4) no temporally diagnostic artifacts were found with any of the caches.*

Terry County is located in the southern part of the High Plains on the Llano Estacado of Northwest Texas. The topography is dominated by three intermittent draws that traverse the county from northwest to southeast, three salt lakes (intermittent or playa lakes that range in size from 2 to 40 acres in size), and large sand dunes in the northwest, far east, and southern portions of the county. Today approximately 90% of the county is under cultivation, while the remainder is open rangeland.

Although the archeology of this region remains poorly known, four lithic caches were documented by the author between 1989 and 1992. All four caches are similar in number of pieces in the cache, size of flakes and tools, weights, and stone types.

THE POPE CACHE

During a surface survey of site 41TY3 in 1988, the author noticed a partially exposed chert core. The core was removed, and photographs of the site and surrounding area were taken. Probing revealed additional buried lithic material in the area where the core was found. These artifacts, all part of a lithic cache (previously described in Hartwell and Pope 1991), were removed and drawn as they came out of the ground.

The cache is composed of 26 artifacts; 2 cores, 1 bifacial "blank," 6 unifacial tools (probably scrapers), 13 large flakes, and 4 smaller flakes or debitage (Table 1). All artifacts are of Edwards chert, and, with the exception of four pieces, all have remnants of cortex on them, indicating early detachment from the core. All of the large flakes show signs of utilization, and a few show possible minor retouch.

Most of the flakes appear to have been produced from two or three different cores. The cores found with the cache may represent remnant pieces of originally larger cores from which these flakes

Table 1: Pope Cache (41TY3)

No.*	Type	Shape	Max. Length (cm)	Max. Width (cm)	Max. Thick-ness (cm)
1	Secondary flake	Oblong	7.33	4.48	1.37
2	Uniface	Oblong	8.33	5.02	1.30
3	Core	Multidirectional	13.19	10.73	2.86
4	Secondary flake	Trapezoid	13.14	9.00	2.50
5	Tertiary flake	Contracting	10.90	4.66	1.16
6	Core	Multidirectional		9.80	6.93
7	Secondary flake	Contracting	11.30	3.76	0.95
8	Utilized secondary flake	Contracting	8.97	3.88	0.89
9	Uniface	Oblong	6.29	4.00	1.09
11	Secondary flake	Trapezoid	7.78	4.82	1.09
12	Secondary flake	Ovoid	8.17	8.70	1.20
13	Secondary flake	Rectangular	9.29	7.01	1.41
14	Uniface	Contracting	7.77	3.77	1.93
15	Biface	N/A	13.65	8.17	2.01
16	Tertiary debitage	N/A	3.52	1.82	0.53
17	Secondary flake	Trapezoid	8.94	10.99	2.43
18	Utilized secondary flake	Oblong	6.83	4.70	2.05
19	Utilized secondary flake	Rectangular	7.45	4.04	0.79
20	Uniface	Rectangular	8.67	4.78	1.70
21	Utilized secondary flake	Rectangular	10.43	3.41	2.64
22	Secondary flake	Expanding	1.96	1.77	0.27
23	Tertiary flake	Rectangular	2.98	1.13	0.67
24	Secondary flake	Contracting	12.57	4.80	0.70
25	Secondary debitage	Rectangular	3.01	2.56	0.94
26	Secondary utilized flake	Ovoid	11.05	10.88	1.96
27	Uniface	Rectangular	10.58	4.31	2.17

* Cache pieces were misnumbered during recovery; there is no specimen 10.

were obtained. So far, attempts to refit flakes to cores have been unsuccessful, although near matches have been observed.

The biface in this cache shows extensive reduction on both sides and is a classic "blank" that was most likely intended to be worked into smaller and smaller varied tools and eventually into a projectile point.

All of the unifaces were produced on large flakes, having intact platforms, to produce end and side scrapers. Nearly all of the intentional retouch has been applied to the dorsal sides of the flakes. Some edge spalling of flakes occurred on both dorsal and ventral edges from apparent use.

THE BROWNFIELD CACHE

Lee Brownfield of Brownfield, Texas, allowed me to document a lithic cache he recovered from a plowed field in about 1967. Mr. Brownfield described the site (now recorded as 41TY110) as being on a ridge east and south of a salt lake. The area immediately around the cache site is known locally as an Indian campsite. Burned rock and other cultural debris is exposed on the surface.

The 25-piece cache was found at a depth ranging from the surface to approximately 30.5 cm below the surface. There was no apparent discoloration of the soil to indicate that the cache was placed in a container.

The Brownfield cache consists of 25 bifacial preforms made of Edwards chert (Table 2).

THE TOLIVER CACHE

The Toliver Cache was discovered several years ago by Mr. Coke Toliver of Brownfield, Texas, after one of the bifaces was exposed during shallow plowing on the site. Mr. Toliver and his son returned to the site and exposed the remaining cache pieces by using a rake. Mr. Toliver informed the author of the cache find, and the pieces were subsequently documented and analysed.

The Toliver Cache consists of 21 pieces of Edwards chert; 16 of which are classified as biface preforms or blades, 2 are core remnants, 1 is a chopper, and the remaining 2 pieces are side or end scrapers (Table 3).

THE CASWELL CACHE

The Caswell Cache was found at the southern end of a salt lake approximately 19.2 km northeast of Brownfield, Texas. Located about 3 m from the edge of a bubbling freshwater spring, the cache had eroded from the edge of an erosional gully. When found, 17 of the cache pieces had fallen from the cutbank and were lying in disarray about 1 m below the top of the erosional gully. One piece,

Table 2: Brownfield Cache (41TY110)

No.	Type	Shape	Cortex %	Max. Length (cm)	Max. Width (cm)	Max. Thickness (cm)	Weight (gm)
1	Bifacial preform	Ovate	0	11.5	8.5	1.8	212
2	Bifacial preform	Ovate	0	9.4	8.5	1.8	168
3	Bifacial preform	Ovate	0	9.8	4.0	1.5	179
4	Bifacial preform	Rectangular	2	9.7	3.5	1.0	156
5	Bifacial preform	Partial ovate	0	11.2	3.7	0.9	160
6	Bifacial preform	Ovate	0	10.8	6.7	1.9	188
7	Bifacial preform	Ovate	0	12.0	7.0	1.6	192
8	Bifacial preform	Circular	0	19.5	6.8	3.5	190
9	Bifacial preform	Partial ovate	3	10.9	7.4	3.5	205
10	Bifacial preform	Partial ovate	0	9.8	5.2	1.4	182
11	Bifacial preform	Ovate	0	10.7	6.2	1.2	193
12	Bifacial preform	Triangular	4	11.4	4.4	1.9	177
13	Bifacial preform	Amorphous	0	9.8	5.7	0.6	151
14	Bifacial preform	Semicircular	0	11.0	8.4	1.2	170
15	Bifacial preform	Ovate	1	10.9	4.9	2.0	188
16	Bifacial preform	Partial ovate	5	13.0	5.4	1.4	199
17	Bifacial preform	Amorphous	0	10.7	5.9	0.4	152
18	Bifacial preform	Rectangular	2	9.6	2.7	1.7	164
19	Bifacial preform	Ovate	0	6.6	6.0	1.0	159
20	Bifacial preform	Ovate	0	7.8	4.8	1.6	163
21	Bifacial preform	Partial ovate	2	8.1	5.0	1.5	178
22	Bifacial preform	Rectangular	0	8.0	2.7	1.7	162
23	Bifacial preform	Ovate	1	6.1	4.4	1.6	150
24	Bifacial preform	Semicircular	0	5.5	3.3	1.2	148
25	Bifacial preform	Ovate	0	4.9	3.7	1.0	151

Table 3: Toliver Cache (41TY111)

No.	Type	Shape	Cortex %	Max. Length (cm)	Max. Width (cm)	Max. Thickness (cm)	Weight (gm)
1	Bifacial preform	Ovate	1	9.1	6.5	1.9	155
2	Bifacial preform	Ovate	2	8.0	6.5	1.8	104
3	Bifacial preform	Ovate	2	5.7	4.4	1.1	83
4	Bifacial preform	Ovate	2	8.2	4.1	1.0	101
5	Bifacial preform	Ovate	4	8.3	5.6	2.1	141
6	Bifacial preform	Ovate	10	8.4	5.8	1.8	132
7	Bifacial preform	Ovate	5	9.6	5.8	2.3	145
8	Bifacial preform	Ovate	8	10.1	5.7	1.8	156
9	Bifacial preform	Ovate	3	9.2	7.3	2.9	183
10	Bifacial preform	Ovate	1	6.3	4.0	1.2	79
11	Bifacial preform	Ovate	1	7.6	4.5	1.2	107
12	Core	Amorphous	10	9.5	8.5	3.6	250
13	Core	Amorphous	7	6.0	5.7	2.7	192
14	Chopper	Ovate	10	10.5	7.9	4.0	221
15	Bifacial preform	Ovate	1	6.8	5.2	1.3	101
16	Bifacial preform	Ovate	1	7.3	4.8	1.3	123
17	Bifacial preform	Ovate	0	6.5	4.2	1.2	116
18	Bifacial preform	Ovate	1	7.4	4.6	1.0	121
19	Scraper	Ovate	8	5.5	3.5	1.7	33
20	Scraper	Ovate	0	5.2	3.7	1.0	37
21	Bifacial preform	Ovate	2	8.5	4.6	0.7	136

Table 4: Caswell Cache (41TY112)

No.	Type	Shape	Cortex %	Max. Length (cm)	Max. Width (cm)	Max. Thickness (cm)	Weight (gm)
1	Bifacial preform	Ovate	10	13.6	7.1	2.8	330
2	Bifacial preform	Rectangular	10	15.1	6.8	2.0	267
3	Bifacial preform	Ovate	10	11.1	6.1	1.8	172
4	Bifacial preform	Amorphous	0	9.7	7.7	2.5	161
5	Bifacial preform	Ovate	20	98	8.7	2.3	283
6	Bifacial preform	Ovate	25	10.9	8.6	1.7	220
7	Bifacial preform	Ovate	8	8.5	7.5	1.8	136
8	Bifacial preform	Amorphous	10	10.1	6.5	2.3	162
9	Bifacial preform	Ovate	5	7.6	7.6	1.5	104
10	Bifacial preform	Ovate	7	7.9	6.2	3.6	191
11	Bifacial preform	Ovate	25	7.9	7.2	1.7	127
12	Bifacial preform	Ovate	0	7.5	6.4	1.5	112
13	Bifacial preform	Rectangular	30	7.9	5.2	2.0	110
14	Bifacial preform	Triangular	25	9.4	6.1	3.0	157
15	Bifacial preform	Ovate	0	8.1	6.7	3.4	210
16	Bifacial preform	Amorphous	50	8.8	8.1	2.5	138
17	Bifacial preform	Amorphous	60	9.4	6.8	1.6	175
18	Bifacial preform	Ovate	20	9.5	8.5	2.0	191

#6, was still embedded in the soil about 61 cm below the topsoil. There was no discoloration of the surrounding soil.

Most of the cache appears to be made from Edwards chert, although a few pieces display characteristics unusual for Edwards Plateau formation cherts and may indicate that some of the cache pieces were imported from lithic sources in New Mexico (Eileen Johnson, personal communication, 1992). Some cortex remained on the artifacts, but they all appeared to be in the blank, preform, or secondary phase of production (Table 4). A few cache pieces exhibit usage marks.

A small ceramic sherd, tentatively identified as Chupadero pottery, was reportedly found between two of the cache pieces. The landowner, who collected the cache, noted that the sherd was encased in the same mud as the cache pieces, but there remains the possibility that the sherd may have dropped from the top of the cutbank and been mixed with the cache.

SUMMARY

All four caches recovered in Terry County exhibit several striking similarities: (1) all contain Edwards chert, the nearest source for which is about 160 km away (see for example Tunnell 1978:Figure 30); (2) most of the pieces are in a secondary stage of production (with very little cortex remaining); (3) all four caches have flakes or bifaces; and (4) with the exception of the ceramic sherd possibly associated with the Caswell Cache, no temporally diagnostic artifacts were found with any of the caches. The weight and number of pieces in each cache is also similar, perhaps indicating a reasonable number of pieces and total weight that one person could comfortably carry (Table 5).

Table 5: Summary of Terry County Caches

Cache	No. of Pieces	Average specimen weight (gm)	Total cache weight (gm)
Pope	26	250.2	6506.3
Brownfield	25	173.5	4337.5
Toliver	21	129.3	2715.3
Caswell	18	180.3	3246.0

REFERENCES

Hartwell, Ted, and Leon Pope
1991 The Pope Cache. *Southwest Federation Bulletin.*

Tunnell, Curtis
1978 *The Gibson Lithic Cache.* Office of the State Archeologist Report 30. Texas Historical Commission, Austin.

Preliminary Report on the Hagler Site (41PP325) in Palo Pinto County, Texas

by Laurie Moseley III

ABSTRACT: *Preliminary results of investigations at 41PP325 are reviewed. Located adjacent to the Brazos River, 41PP325 is a deeply stratified site that contains at least 3.2 m of cultural deposits separated into at least four discrete levels. Recovered material from the site and from the area provides indications of Paleoindian through Late Prehistoric occupation.*

INTRODUCTION

The potential of 41PP325, a deeply stratified site adjacent to the Brazos River, was brought to my attention in 1989 by Gary Snow of Weatherford, Texas. In 1991, Charles and Doris Hagler, owners of the property, gave permission for initial survey, posthole testing, and excavation of four 1 x 1 m units in order to test the site. Cultural features were discovered that determined the need for further examination.

For four days in March, 1992, the banks of the Brazos River were visited by members of the Texas Archeological Society, who conducted additional test excavations and survey designed to take a more comprehensive look at the archeological potential of the site. Two areas were designated for excavation, one area for posthole testing, and two areas for survey.

Site 41PP325 is located on a river terrace where a small creek meets the Brazos River (Figure 1). As the river flooded, the fire hearths and debris of at least four distinct zones of occupation were sealed beneath layers of river silt (Figure 2). In the U.S. Soil Conservation Service Geomorphology report for the area, this terrace is designated Terrace Level 1. Terrace Level 1 is approximately 10 m above the bed of the river and is composed of fine-grain sediments that are free of rock and gravel. The lack of rock and gravel in the deposit facilitated feature identification, since all stone present had to have been transported to the site.

A number of factors make the site an ideal camping area. The site is protected from the west wind by a ridge that runs perpendicular to the river. The river bounds the site on the north, Beddo Creek serves as the southern and western boundary, and there are open plains to the east. Springs issue from the river bank, and there is a hard rock shelf that has served as a river-crossing for centuries. Foods available to the inhabitants included river and creek resources such as shellfish, fish, and turtles. The river bottoms, creek banks, and lowlands would have furnished berries, roots, and nuts.

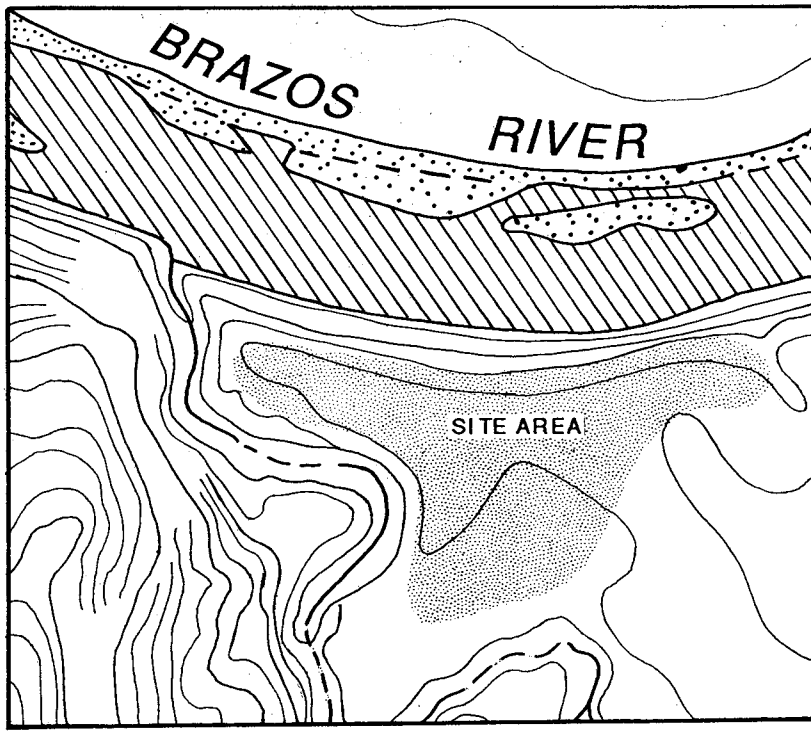


Figure 1. Approximate location of the Hagler site (41PP325) in relation to the Brazos River.

The upland areas had many deer and turkey, while bison and other plains animals were also readily available.

Initial survey and testing in 1991 had revealed the presence of at least four cultural zones—designated as Zones A, B, C, and D from the ground surface downward—based upon the stratigraphy and materials exposed in the creek banks and from materials recovered during initial testing in 1991. Figure 2 is a profile of the cutbank of the creek.

The initial design of additional testing in 1992 was to conduct deep tests in order to examine occupation levels. An excavation block 20-m long from north to south and 4-m wide was laid out in order to determine the extent of the site from the river on the north toward the creek to the south.

ZONE A

Zone A extends from the surface down to approximately 28 cm. The major feature of Zone A was a series of hearths that were slightly impacted by plowing but remained largely intact.

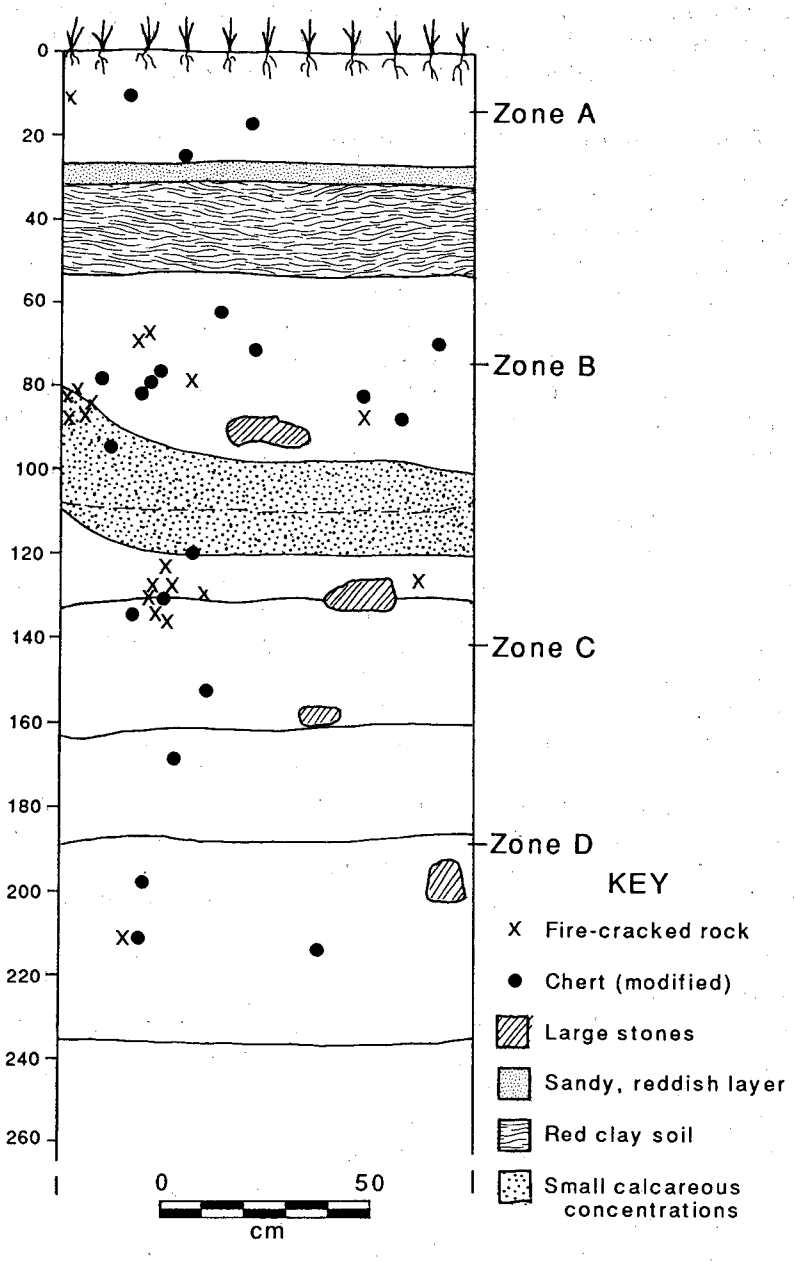


Figure 2. Profile of cutbank.

Sometimes the hearths have rocks laid across the bottom as if constructed on a pavement. The excavated hearths describe a slight arc and are almost 3 m apart. This pattern may be fortuitous, however, due to the pattern of excavation; only further testing can confirm this.

Debitage, burned rock, mano fragments, red ocher, bone fragments, and small shell fragments were recovered from almost every unit excavated. A preliminary review of the debitage revealed many small secondary and tertiary flakes but very few primary cortex flakes. Near the hearths, many finishing flakes were found. Preliminary observations of the lithic material reovered point to flint sources ranging from Oklahoma to South-Central Texas.

The burned rock is local limestone and sandstone and often includes broken metates and manos. The ocher generally occurs in small (2–3 cm) pieces with a concave curve on one side as if the pieces had been scraped to remove ocher for use. Bone preservation in Zone A is poor, but some small fragments have been identified as young deer and young bison, as well as several smaller animals. Despite the availability of the creek and the river, no remains of fish have been identified; however, poor bone preservation may be a factor in this. Surprisingly few complete or almost complete shells were found, and there were no piles or groups of shells.

Excavation of units in Zone A adjacent to the river yielded fire hearths, part of a large bifacial blade, and a Scallorn arrowpoint. The amount of debitage from Zone A in this area was very large, with an average of 300 pieces of debitage from each 10-cm level.

A well-preserved hearth was encountered in Zone A approximately 40 m from the northern terrace edge. The hearth was constructed by stacking 3 to 4 layers of small, thick, rectangular rocks in a 40-cm diameter circle and placing a floor of rocks across the bottom. Finds near this hearth include chert cores, a quartzite chopper, and numerous finishing flakes. The hearth was mapped, photographed, and left in place. Other Zone A finds from this area include additional hearths, manos, bone fragments, red ocher, shell fragments, and burned rock, as well as a Rockwall arrowpoint, a Cliffton arrowpoint, and utilized flakes.

Tools from Zone A recovered in excavations farther from the river include Scallorn arrowpoints, part of a parallel-sided biface, utilized flakes, and a small scraper. As excavations progressed farther from the river, the debitage counts decreased to an average of 100 pieces per 10-cm level. Interestingly, a large number of dart-point bases were found in Zone A as well. There is a possibility that the inhabitants were collecting dart points and reworking them.

Doris Hagler had previously collected artifacts from the tailings pit of an oil well that had been drilled in the eastern area of the site. Among her artifacts is a flake knife that is characteristic

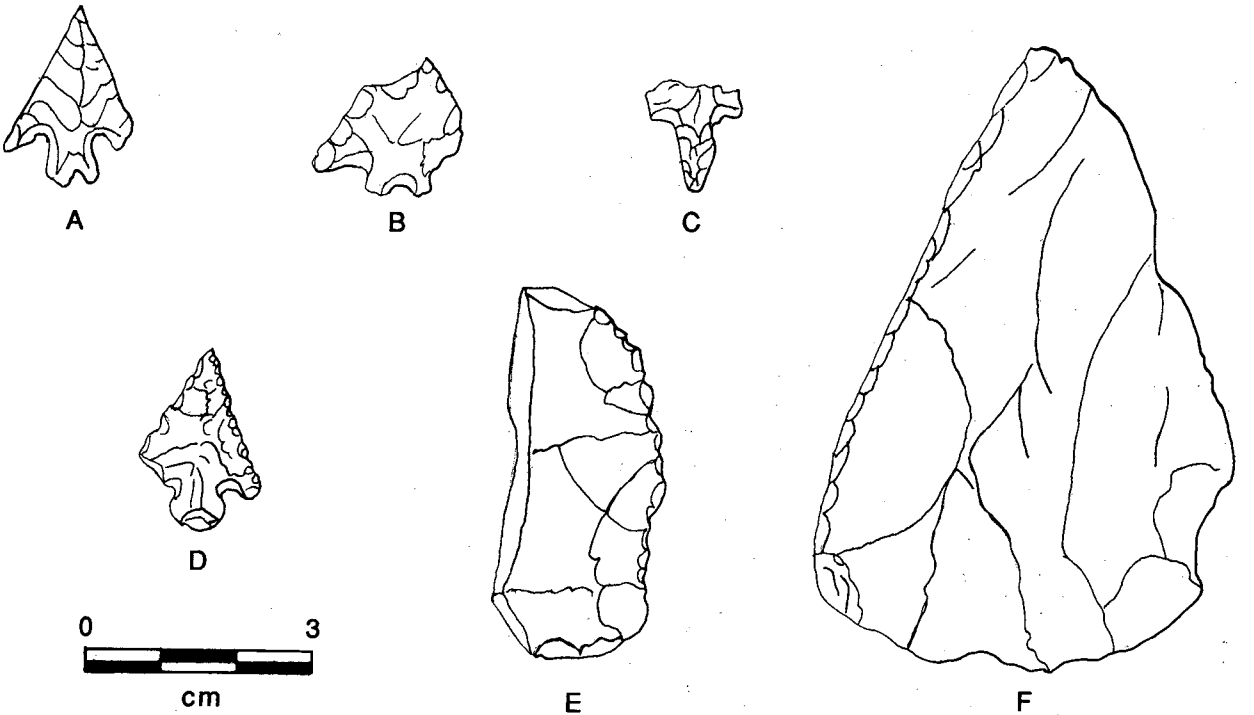


Figure 3. Examples of artifacts recovered from Zone A: (A–B) Cuney arrowpoints, (C) Perdiz arrowpoint, (D) Rockwall arrowpoint, (E) knife, (F) biface.

of the Toyah phase. The hearths that were constructed by stacking rocks on the ground surface also are believed to be characteristic of the Toyah phase. Based upon these items, as well as some diagnostic projectile points, Zone A is expected to include a component of the Toyah phase. Figure 3 illustrates a sample of tools recovered from Zone A.

ZONE B

In a 1991 test unit, at about 50 cm below the ground surface, a pavementlike feature of burned rocks was encountered, with a Lange dart point lying on the burned rocks. In order to investigate the rock feature, units were excavated to the level of the feature at 50 cm (Zone B). The feature consisted of a single layer of large burned rocks that were tightly packed together. The rocks appeared to have been burned in place rather than having been debris from hearths or earthen ovens. This was indicated by the fact that the rocks were fractured but still joined. The feature extended about 8 m on a north–south axis and was at least 1-m wide.

In 1991, Zone B was also encountered in posthole testing, and a Darl dart point was recovered. In 1992, several test units were deepened, and two hearths from Zone B were discovered. The hearths were basin shaped and were composed of much larger rocks than the hearths in Zone A. The debitage count in Zone B was much lower than in Zone A, but the size of the flakes was larger. Figure 4 (A, B) illustrates a sample of tools recovered from Zone B.

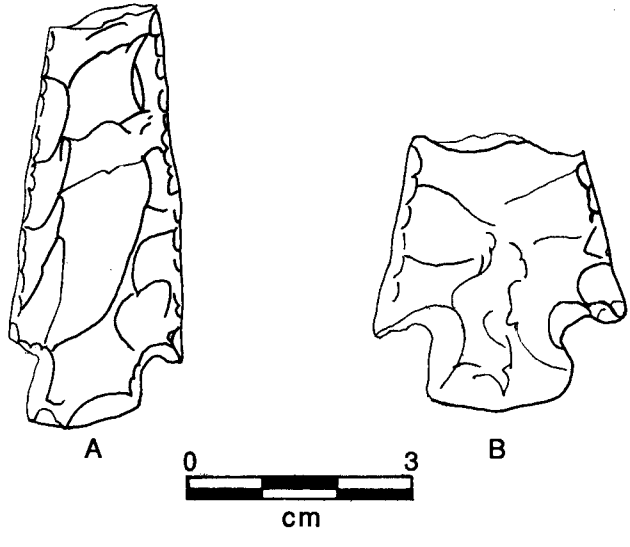


Figure 4. Examples of diagnostic artifacts recovered from Zone B: (A) Darl dart point, (B) Lange dart point.

ZONES C AND D

Zone C was encountered on the western periphery of the site, midway between the Brazos and the creek. One unit was excavated to test for Zone C, and at approximately 90 cm a scatter of burned rocks, debitage, and shell fragments was found. No tools, hearths, or diagnostic artifacts were encountered. The excavation was carried down until a sterile zone was encountered. Zone C was also noted in the creek-bank profile and other test areas

Zone D also was defined from observations of the creek-.bank profile, as well as from posthole testing, and from the auger hole tests. No diagnostic artifacts have been recovered from Zone D, but some large flakes, large rocks, and shell have been noted. Zone D appears to have been concentrated near the northern edge of the terrace.

Additional posthole testing and deep probes with a bucket auger also encountered Zones C and D. The auger was furnished by Dr. Alan Skinner, and the auger work was directed by Bill Young. In one auger-hole test, flint flakes were encountered at a depth of 320 cm. In all of the auger-hole tests, cultural materials from Zones A, B, C, and D occurred at approximately the same depths as had been found in excavations and posthole testing.

CONCLUSIONS

The Hagler Site (41PP325), is a significant site that shows evidence of intermittent occupation for several thousand years. The site has great potential for scientific study because of the almost sterile separations between occupation zones. The artifacts at the site appear to come from areas located on a north-to-south axis from Oklahoma to South-Central Texas.

During Zone A occupations, it appears that 41PP325 served as a base camp. The survey crew located several smaller, possibly related, sites in the area that could have been used to exploit different food resources. Since some of the bones appear to have come from very young animals, there is a possibility that the site was occupied in the early spring. Zones B, C, and D have been tested only briefly, but they appear to have great potential for study as well.

Based upon the depth and the sealed nature of the cultural deposits, it is possible that the lower zones may date to the Early Archaic or Paleoindian periods. Evidence for this comes from diagnostic artifacts located during survey activities, including two Early Triangular dart points, a reworked Angostura point, and the base of a Golondrina point. Some indications of occupations below Zone D have been noted, but an occupation zone has not been defined.

The GG Site (41UR136): A Surface Evaluation in the Little Cypress Creek Drainage, Upshur County, Texas

by Bo Nelson

ABSTRACT: *Artifacts collected from the surface indicate that the GG site has a Late Archaic component and that the major occupation occured during the Late Caddoan period. The Late Caddoan component has been identified as a Titus phase habitation site belonging to the Tankersley Creek Subcluster of the Cypress Cluster.*

In the Northeast Texas area of the Cypress Drainage Basin, agricultural-related industry dominates the area's economy. Poultry production is the leading agricultural industry in the area (Camp County Extension Office 1992). Although beneficial, this industry requires large tracts of land for even minimal operations, with expansion occurring quite frequently. The consequent construction activities are on landforms that were also frequently preferred by earlier aboriginal populations.

Typical of these sites is the GG site (41UR136), located in north-western Upshur County. The site is adjacent to a spring in an upland setting in the Caney Creek drainage portion of the Little Cypress Basin. Poultry-house construction at the site has occurred in two phases, with the initial construction of two poultry houses in the northern portion and additional poultry houses constructed in the eastern portion. Only further testing can determine the extent of site damage caused by both phases of poultry-house construction.

At the present time only surface investigations, covering a period of several years, have been completed at the site. The surface artifacts collected are from a cultivated field extending over an area 90 m x 50 m, with four poultry houses to the north and east and a flowing spring to the south and west.

Although the investigations at the site have been limited, they suggest that the GG site was occupied during several periods. A minor component is from an Archaic occupation, the major component is from a Late Caddoan occupation, and a late-nineteenth-century stoneware pipe suggests a Historic occupation.

The late-nineteenth-century stoneware pipe is of personal interest to the author. The site is located on property owned by several generations on the maternal side of my family, with my great-grandparents still residing adjacent to the site. The possibility of the stoneware pipe belonging to a pipe-smoking great-great grandfather who cultivated the area only intensifies the author's interest.

The Late Archaic occupational debris at the GG site consists of several hundred pieces of lithic debris, several thick preforms (probably used for large bifacial tools and dart points), and two diagnostic Gary points. The predominant material is of locally derived quartzites and cherts from small pebbles. The sample of Late Archaic lithics is large and a more in-depth analysis is planned.

The artifact assemblage relating to the Late Caddoan occupation includes 6 diagnostic Maud arrowpoints, 2 arrowpoint preforms, 1 elbow-pipe bowl, 15 plain rim sherds, 247 decorated body and rim sherds, and 886 plain body and base sherds. The lithics are of locally derived quartzite and chert materials. The ceramic sherds are well made, coiled, fairly thin (5–8 mm), and are mainly from jars, bowls, and carinated bowls. The predominant temper used is grog, with less than 5% of the sherds tempered by bone.

The decorated and rim sherds were tabulated by decoration technique: (a) brushed (102 sherds, or 41.3%); (b) engraved (47 sherds, or 19.0%); (c) incised (40 sherds, or 16.2%); (d) punctated (28 sherds, or 11.3%); (e) appliqued (22 sherds, or 8.9%); and (f) neck-banded (8 sherds, or 3.2%).

The decorative techniques can be classified into decorative elements: (a) the brushed sherds consist of Bullard Brushed, Harleton Appliqued, and Karnack Brushed-Incised, with the Bullard Brushed being the most common; (b) the engraved sherds consist of Ripley Engraved and one Taylor Engraved; (c) and (d) the incised and punctated sherds mainly derive from Maydelle Incised, with Harleton Appliqued and Karnack Brushed-Incised being less common; (e) the appliqued sherds derive mainly from Harleton Appliqued, but Maydelle Incised and Karnack Brushed-Incised are present; and (f) the remaining neck-banded sherds belong to the La Rue Neck Banded type.

The Ripley Engraved sherds can further be classified into three motifs: Scroll and Circle, Pendant Triangle, and Scroll and Semicircle, ("careless curvilinear") (Thurmond 1990:Figure 6). The Scroll and Circle motif is the most common observable decoration of the Ripley Engraved sherds.

The decorative analysis of the ceramic sherds, together with the elbow-pipe bowl and the arrowpoint type, indicates that this is a habitation site of the Titus phase. Furthermore, based on the abundance of brushed sherds, the types of Ripley Engraved motifs, and comparisons with other Titus phase habitation sites (Thurmond 1990; Perttula et al. in press), the GG site belongs in the Tankersley Creek Subcluster of the Cypress Cluster. As Thurmond (1990:Figure 35) shows, most known Tankersley Creek components occur along Big Cypress Creek and tributaries west of Lake O' the

Pines; the Tuck Carpenter site is one of the better-known Tankersley Creek components (Turner 1978, 1992). It is estimated that the Tankersley Creek component at the GG site dates from ca. A.D. 1450–1600.

SUMMARY

The GG site contains two archeological deposits indicating a Late Archaic occupation and a Titus phase (Tankersly Creek Subcluster affiliation) occupation, and a probable intrusion of a late-nineteenth-century pipe from a neighboring Anglo-Historic site (Perttula, personal communication, 1992). Sites of these types are common in the Cypress Basin but are unknown in the Little Cypress Creek area, due, in part, to limited professional investigations (e.g. Story 1990; Thurmond 1990). Although a surface collection is the only information from the GG site, it is suspected that any subsurface testing will confirm the preliminary analysis.

The future expansion of poultry houses on the GG site is expected due to limited alternatives for expansion of the present facilities. Because of the possibility of future destruction of the site, further subsurface testing is planned in the fall of 1992 by the author and Timothy K. Perttula of the Texas Historical Commission.

The additional testing will be directed toward verifying the vertical and horizontal integrity of the site, acquiring reliable radiocarbon and thermoluminescence samples for dating purposes, and recovering interpretable samples of faunal and floral remains. Any of these types of information that can be obtained from the GG site can only help discern the chronological evaluation and subsistence patterns of the Titus phase in the Cypress Creek Basin. Previous investigations in the area noted by Story (1990) and Thurmond (1990) have been biased toward the excavation of cemeteries, so the archeological data from the GG site will provide information needed to broaden our understanding of the Titus phase.

ACKNOWLEDGMENTS

I would like to acknowledge the invaluable assistance of Dr. Timothy K. Perttula of the Texas Historical Commission. Dr. Perttula has been a constant source of encouragement and has served as a reference source during continuous personal communication about the GG site.

REFERENCES

Camp County Extension Office, Pittsburg, TX
1992 Files relating to agri-industry of Northeast Texas.

Perttula, Timothy K., Bob D. Skiles, and Bonnie C. Yates
in press Goldsmith Site (41WD208): Investigations of the Titus Phase in the Upper Sabine River Basin, Wood County, Texas. *Bulletin of the Texas Archeological Society* 61 (for 1990).

Story, Dee Ann
1990 Cultural History of the Native Americans. In *The Archeology and Bioarcheology of the Gulf Coastal Plain,* by Dee Ann Story, J.A. Guy, B.A. Burnett, M. Doty-Freeman, J.C. Rase, D.G. Steele, B.W. Olive, and K.J. Reinhard. Arkansas Archeological Survey Research Series 38. Fayetteville.

Thurmond, J. Peter
1990 *Archeology of the Cypress Creek Drainage Basin, Northeastern Texas and Northwestern Louisiana.* Texas Archeological Research Laboratory, Studies in Archeology 5. The University of Texas at Austin.

Turner, Robert L., Jr.
1978 The Tuck Carpenter Site and its Relation to Other Sites within the Titus Focus. *Bulletin of the Texas Archeological Society* 49:1–110.
1992 *Prehistoric Mortuary Remains at the Tuck Carpenter Site, Camp County, Texas.* Texas Archeological Research Laboratory, Studies in Archeology 10. The University of Texas at Austin.

Utilizing the Playas: The Texas Northern Site (41OC93)

by Doug Wilkens

ABSTRACT: *The Texas Northern site (41OC93) is located on a main drainage of the Peckenpaugh playa lake, a dry lake located in the Texas Panhandle, Ochiltree County. Artifacts collected indicate temporary occupation of the site during the Late Archaic and Late Prehistoric periods.*

INTRODUCTION

Peckenpaugh Lake is a moderate-sized playa lake 1900 m long and 100 m at the widest point. The tear-shaped lake has a typical dune buildup, 883.92 m (2990 ft.) above sea level, on the east–northeast side. A distinct ridge separating two drainage systems lies 1500 m to the east of the lake. Elevation of this ridge is 914.4 m (3000 ft.) above sea level. The ridge runs north and south for 10.5 km, with the southern end of the ridge bending east to form the northernmost edge of Truax Lake, located 4.25 km southeast of Peckenpaugh Lake.

In the spring when rains begin and the lakes begin to take water, the temperature is also beginning to rise. During dry and windy summers that are typical of the Panhandle, these lakes lose water through evaporation. Therefore, steady rains are needed to maintain lake levels adequate for summer grazing of the playa systems by bison and other large fauna. Environmental data indicate that the climate was cooler and wetter during the Late Archaic and Woodland periods, permitting greater utilization of these playas by both animals and humans.

THE SITE

The Texas Northern site (41OC93) is located 1500 m west of the ridge separating the Peckenpaugh and Truax lake drainage systems and 1500 m southeast of the mouth of Peckenpaugh Lake. Elevation at the site is 909.82 m (2985 ft.), the lowest elevation on the drainage with the exception of the mouth itself. The site is located in a sharp bend in the drainage near two depressions, each approximately 15 x 20 m, where flowing water from the drainage tends to puddle. Cultural debris can be seen in the stands of native buffalo and grama grasses. Two clusters of burned rock that appear to be intact hearths occur along either side of the draw inside the tributary banks. However, the bulk of the site, an estimated 90%, is located in broken farm ground and measures 130 m east to west by 100 m north to south.

I first found the site in 1981. The amount of cultural material on the surface of the site indicates that it has never been surface collected by others. The bulk of the Texas Northern site is in farmland, and cultivation has caused a certain amount of scattering and breakage of artifacts. However, it is possible to isolate specific intrasite areas where certain categories of tools repeatedly occur. Along the eastern side of the field scrapers were frequently found, possibly indicating the presence of a hide-working area. Projectile points were consistently found in the southern edge of the field, as were broken awl fragments. Also in this southern area I recorded a thin scatter of burned rock in a 5-m concentration with freshwater mussel-shell fragments present. In the center of the site, approximately 50 m from the south and east edges of the field, was found an area of complete and fragmented bifaces, unifaces, and utilized flakes. The flakes had segments of pressure retouch flaking on one or more lateral edges. An association of small chalcedony hammerstones with this material is suggestive of a lithic workshop or a butchering station area in the interior of the site. Interestingly, the site is lacking in bone fragments. However, the native-grass portion of this site has ample rodent activity, which normally produces modern bone material.

ARTIFACTS

Lithics. The Texas Northern site contains multiple components, with the earliest dating to the Late Archaic period. Diagnostics of this time period are represented by Late Archaic bison-kill dart points (Figure 1). These include Ellis, Ensor, Edgewood, and other stemmed and shouldered dart points. The Ellis, Ensor, and Edgewood points are typical of the transitional Archaic to the later Woodland periods (ca. 200 B.C.–A.D. 700). These artifacts are made from a variety of lithic materials, including Alibates agate, Dakota quartzite, Niobrara jasper, chalcedony, and Edwards Plateau chert.

Transitional Woodland to Late Prehistoric points are represented by corner-notched Woodland-style arrowpoints, including Scallorn, Deadman's, Fresno, and the later Washita types (Figure 2). In addition, one Late Prehistoric four-beveled biface, made of Niobrara jasper, was recorded. Approximately 90% of the artifacts collected were made of Alibates agate, although artifacts of Dakota quartzite, chalcedony, and the Niobrara jasper biface mentioned above were also found.

Other tools from the site include biface fragments, end scrapers, side scrapers, end-side scrapers, utility flakes, awl fragments, and gravers. These artifacts are made of Alibates, Kay County flint (heat treated), Potter chert, Tecovas jasper, chalcedony, hornfels,

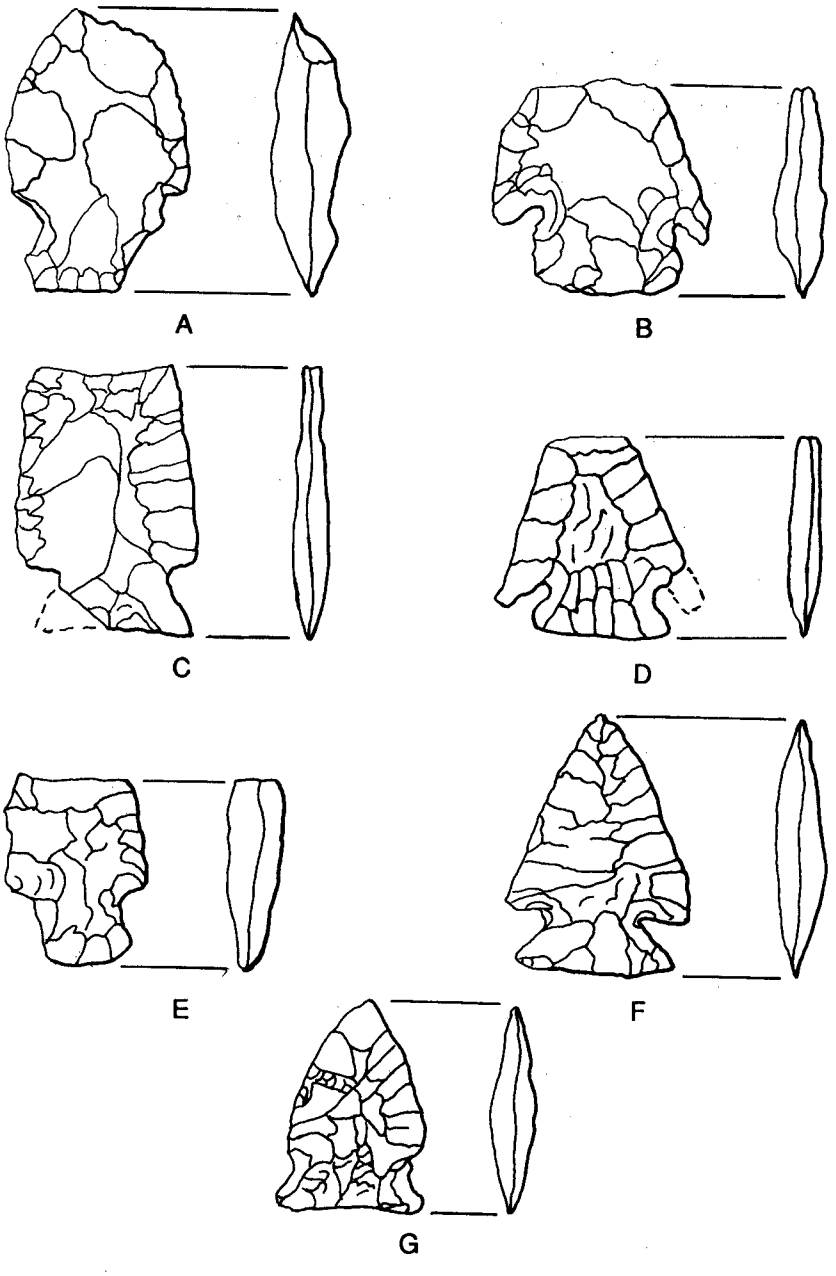


Figure 1. Late Archaic diagnostics recovered from 41OC93. (A) Unidentified, purple quartzite, (B) Ellis, banded Alibates, (C) Unidentified, purple Alibates, (D) Edgewood, quartzite, (E) Unidentified, Alibates, (F) Ellis, banded Alibates, (G) Ensor-like, heat-treated Kay County chert. All artifacts shown actual size.

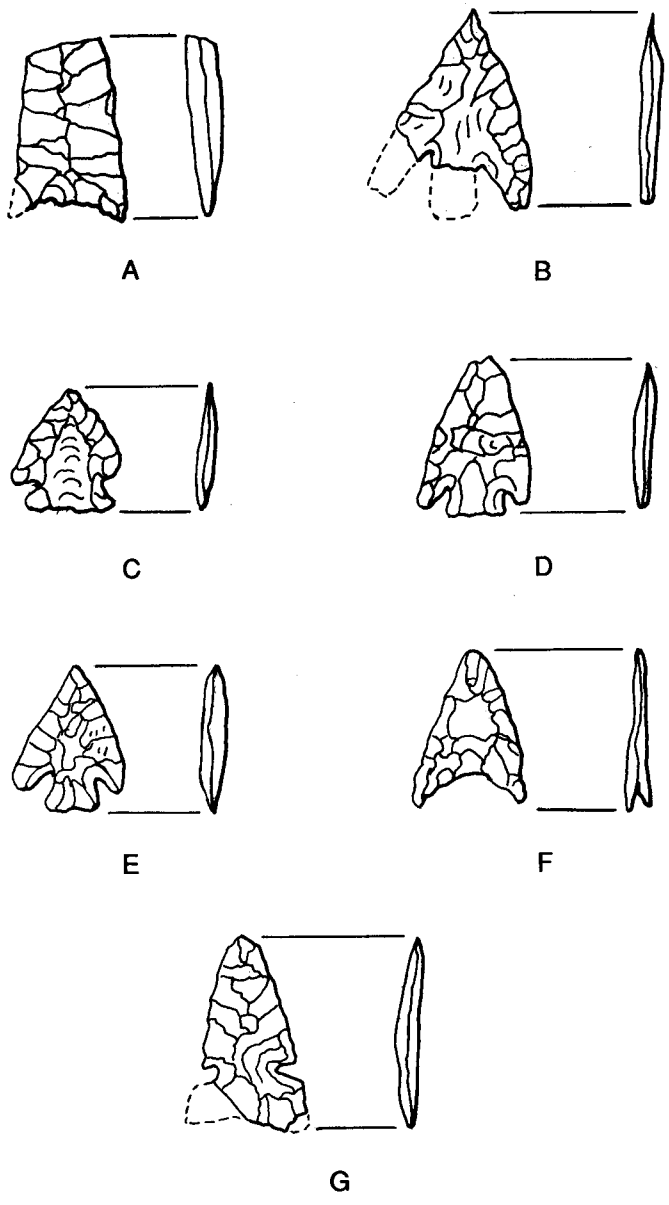


Figure 2. Late Prehistoric artifacts recovered from 41OC93. (A) Possible preform, Edwards chert, (B) Deadman-type, Alibates, (C) Scallorn, Alibates, (D) Scallorn-type, Alibates, (E) Woodland corner notched, chalcedony, (F) Fresno, chalcedony, (G) Washita, Alibates. All artifacts shown actual size.

and Edwards Plateau chert. Fired rock, fire-cracked rock, manos, sandstone, and hammerstones also are present. Chalcedony seems to be the preferred material used for hammerstones, in contrast to the more common quartz river cobbles found on most sites in this region.

Ceramics. Two pottery sherds have been collected and recorded. These sherds, typical of Woodland-period pottery, are blackened thoroughly, thick walled, smooth textured, and scoria tempered.

DISCUSSION

Were these prehistoric populations who utilized the playa lakes permanent to the area, or did they simply use the resources of the area as part of their seasonal movements? The Texas Northern site lies north of the Canadian River approximately 48 km (30 mi.), and northwest of Wolf Creek approximately 24 km (15 mi.). The site also lies 13 km (8 mi.) west of Palo Duro Creek. In any direction from these spring-fed rivers and creeks lie playa system after playa system, generally 2 to 3 km apart. These hydrological systems provided natural highways across the open plains for man and beast during wet years.

Archaic and Woodland sites on the Canadian River to the south generally contain artifacts similar to those found at the Texas Northern site. There are, however, significant differences in terms of artifact densities—with densities being much higher in sites along the Canadian River. This seems to suggest that the Texas Northern site represents a seasonal camp where meat was dried and hides processed. Springs with plentiful vegetation for foraging were located only a short distance away from the Texas Northern site, and it was a good place to be in the heat of summer, or for protection from the freezing temperatures of winter.

A comparision of the Texas Northern site materials with later Plains Village sites along the Canadian River and Wolf Creek leaves much the same impression of seasonality. There is a paucity of artifacts of this late time period at the Texas Northern site. The Texas Northern site probably was a temporary camp used only until sufficient food, hides, and general supplies had been acquired, or perhaps until such supplies in the area had been exhausted. However, Late Prehistoric people of the Plains relied to some extent on agriculture, in addition to hunting big game. Therefore, it is possible that these people did not range far in following the bison, relying less on meat than earlier peoples.

The playa systems as we know them today are depressions of lake grass and generally nonproductive land. Cattle seem to be the greatest benefactor of these systems, with the exception of farmland where irrigation from other water sources is feasible. Wildlife, on the other hand, are utilizing these lakes as they have

for centuries. Much of this country on the high plains could not have been used by either humans or animals without the playas. In order to survive on the high plains, the early inhabitants had to know where the water sources were located. Whether by choice, or just by following the bison and other game, these playa lakes provided passageways across otherwise waterless lands. The passageways can still be traced by the remains left behind. We can gain knowledge of why and how long these people were here by studying these remains. I believe that early man was an explorer as well as a survivor. Not contained by boundaries, he was at home wherever he was. Time and distance were measured on the basis of his next source of water, shelter, and food.

Tiptoe Through the Oxides!

by Jay C. Blaine

ABSTRACT: *Using two metal parts from an eighteenth-century flintlock gun as examples, the author makes a plea for proper treatment of metal artifacts in the field and in the lab.*

During investigation of one of the "Spanish Fort" locales on the Red River, a heavily corroded, wrought-iron frizzen and frizzen bridle (brace) were recovered. The frizzen and frizzen bridle are parts of the firing mechanism of a flintlock gun, typical in form to those found on the Hispanic *miguelet* version of the flintlock gunlock (Figure 1A).

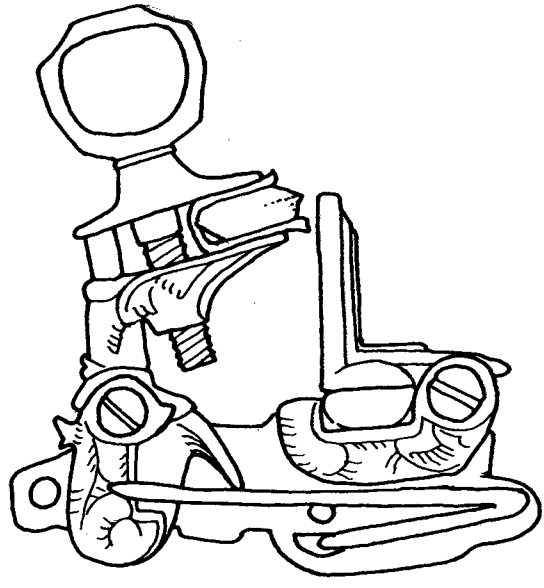
Careful conservation of these two artifacts revealed a vernacular- or domestic-style decorative motif. The *miguelet* frizzen is engraved with the word "Mexico" (probably indicating the manufacturing locale—Mexico City), and a design suggestive of a pineapple plant and fruit is engraved on the frizzen face (Figure 1B). This latter design interpretation is not firm—it seems equally possible that the design represents the leaves and berries of a strawberry pattern seen on the barrel of an English blunderbuss from the late 1600s. The frizzen bridle is engraved with basic rococo elements (Figure 1C).

The combination and execution of the decorative motifs virtually rule out a military production for the gun, as well as importation from Europe, while the rococo elements on the frizzen bridle indicate a date of origin probably no earlier than ca. 1740 for this firearm of ordinary grade (Blaine 1973:143–145). Both artifacts are probably relics of the 1759 Parilla battle on the Red River and appear consistent for use on the relatively light *escopeta* (shoulder gun) favored by Hispanic horsemen on the frontiers.

The information gained from these two small gun parts is an excellent example of the value of careful conservation techniques. If it can be held that the real value of artifacts is in the clues they may provide concerning behavior, then the possible recovery of additional data at the conservation level should not be lost by default.

PRESERVING MAXIMUM INFORMATION

I have been receiving an increasing number of inquiries about the conservation (and curation) of metals, principally those from excavations. Apparently because of budget and other constraints, relatively inexperienced personnel are attempting to meet these



A

B

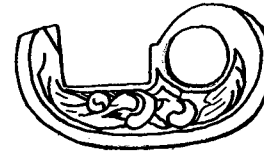


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Figure 1. (A) Gunlock showing frizzen and frizzen bridle, (B) Frizzen from Spanish Fort site (shown actual size) (C) Frizzen bridle from Spanish Fort site (shown actual size).

needs. Because of these factors we may be at increasing risk for salvaging useful data from metal artifacts. However, a few simple steps can greatly improve our chances of preserving potentially invaluable data.

Prior to the fieldwork. Prior to going into the field, the historical archeologist should make sure that funds for conservation work are included in the scope of work and the research design is expanded to include a list of metal artifacts that experience indicates are likely to contain hidden, but potentially useful, attributes. If conservation funds are not available, this list should accompany the excavated artifacts to the curation facility. Unfortunately, a considerable delay all too often occurs before the artifacts are conserved, and a list of priority artifacts will greatly aid the conservator in the future.

In the field. Special handling of metal artifacts in the field can be of real benefit. After a length of time, buried metals will reach a state of equilibrium with their immediate environment, barring exposure to corrosive materials such as some fertilizers and, I have reason to suspect, acid rains. Excavation destroys the equilibrium achieved in the ground and yields newly increased access to atmospheric oxygen and moisture, resulting in rapidly accelerated corrosion.

The most practical approaches to any such anticipated problems in the field are to limit access to new oxygen and moisture. This can be accomplished by enclosing the artifacts in such relatively airtight enclosures as ziploc-type bags containing a dessicant such as silica gel. The dessicant should be separated from the artifact by a layer of acid-free tissue paper or by enclosing the dessicant in a bag with tiny holes punched into it. By maintaining the absorption level of the dessicant, I have experimentally stored several vulnerable artifacts for a considerable period (now over six years) without any visible evidence of further deterioration. I believe this procedure, combined with exposure to vacuum treatment in the presence of the dessicant, is economical and practical and can also offset temporary delays in conservation beyond the field level.

An additional and practical field procedure would be to further enclose potentially vulnerable metal artifacts within styrofoam-type coolers (dry, of course!). This should also help reduce the effects of the sudden atmospheric and temperature changes that are known to accelerate chemical instability (Plenderleith and Werner 1971:1–3).

It should be noted that these observations are confined to terrestrial sites only. In the past Hamilton (1976:96) has believed artifacts from most terrestrial sites in the United States did not need conservation. Certainly metals from such sites can be expected to present a lesser range of challenges than those from the marine en

vironments Hamilton has so capably addressed. However, my experiences with metals excavated from Central Texas eastward have taught me to utilize much of the admirable guidance Hamilton offers for dealing with marine-derived artifacts.

In the conservation laboratory. Once the artifacts are returned to the conservation laboratory, the archeologist should develop an informal order of treatment priorities, especially for newly excavated metals. Key artifacts possibly bearing on site interpretation should be isolated first. The remaining artifacts should be evaluated for their conservation needs, and note should be made of artifacts that can only be stabilized because any reduction of oxides would cause serious loss of even external form. This kind of general guidance on a site-by-site basis can be of value to less-experienced museum personnel or conservators as they select their conservation method.

During the conservation process, extreme care should be taken when selecting the technique to be used. Typically, initial inspection of the oxidized surfaces of the frizzen and frizzen bridle discussed above gave no hint of any engraving hidden within or below the corrosion layers. Such data, particularly when engraved—as opposed to stamped—on iron surfaces can easily be unobserved and lost without notice during some of the more convenient techniques for iron-oxide reduction. There is no single technique or method of treatment that can ensure against loss in most cases, but there are rules of procedure that are critical in such efforts. Foremost, I believe is the observation by Plenderleith and Werner (1971:17) about such work: "It should never be hurried."

Whenever possible, one should avoid techniques that do not allow easy inspection at very frequent intervals without detriment to the observed artifact and without penalties for a reasonable period of observation during recording. These factors should be held critical in the initial stages of oxides reduction. Only when it can be seen that there is no evidence suggesting loss of useful detail should other, more convenient, methods be considered.

In closing, I would urge all archeologists to familiarize themselves with the publications of Hamilton (1976) and Plenderleith and Werner (1971). Hamilton (1976:92–96) offers an excellent overview of the value of a cooperative relationship between archeologist and conservator.

REFERENCES

Blaine, Jay C.
1973 Gun Parts, Gunflints, Ball, and Shot. In Bernard De La Harpe and the Nassonite Post, by M.P. Miroir, R. King Harris, Jay C. Blaine, and Janson McVay. *Bulletin of the Texas Archeological Society* 44:113–167.

Hamilton, D.L.
1976 *Conservation of Metal Objects from Underwater Sites: A Study in Methods.* Texas Memorial Museum Miscellaneous Papers 4 and Texas Antiquities Committee Publication 1, Austin.

Plenderleith, H.J., and A.E.A. Werner
1979 *The Conservation of Antiquities and Works of Art.* Revised edition, Oxford University Press, London.

Vegetation Indicators of Archaic and Historic Sites in Victoria and Surrounding Counties

by E.H. ("Smitty") Schmiedlin

ABSTRACT: *Anaqua trees, tropical evergreens native to South Texas, frequently grow on archeological sites. The characteristics of these trees and their potential as archeological-site indicators are discussed.*

Professionals who are doing archeological assessments of river drainages, proposed impoundments, and general archeological-site surveys in this area are usually relying on the more common archeological-site indicators such as flint debitage, burned-rock fragments, bone fragments, mussel or other shell, and other materials found eroding out of the soil. This brief note will offer some other indicators that have been used by the author and other avocationals, as well as the local pot-hunters, to narrow this process down.

Most of the larger sites in this area are on the major drainages that run into the San Antonio or Guadalupe rivers, and therefore I will discuss these first. A trip down either river is an enjoyable outing, but it is very unlikely to yield much in the way of sites. There are some sites located on the very high bluffs, usually at a bend in the river, but these are generally subject to frequent sluffing-off when the river rises and are usually known by local collectors or pot-hunters. Therefore, the materials found there often are picked through and not representative of the entire site. If a survey is made by water, a more productive method would be to locate drainages that enter the river and then to explore upstream. These drainages are often larger than they may seem at the rivers edge, due to trees and limbs that block the entrance. Once away from the normal flood zone of the river, the banks of the drainage may reveal some of the more common site indicators, but usually this part of the river bottom is choked by a variety of underbrush as well as massive cypress, pecan, and hackberry trees that make evaluation almost impossible. A better method of locating sites is by recognizing the anaqua tree and its affinity for growing on an archeological site.

The anaqua (*Ehretia elliptica D.C.*) is a tropical evergreen having more than 40 species. The trees are native to much of Texas, from the upper San Marcos River to the Rio Grande valley. The trees grow to a height of 40 to 50 feet, with a trunk diameter up to 3 feet. The bark is rough and soft, while the wood is hard and heavy but not strong when dry. The leaves are small and dark green, and the underside has a rough sandpapery feel. The tree blooms profusely

from March to April, bearing clusters of small, white, fragrant flowers that develop into large quantities of very tasty berries in June and July. The fruit starts out as small green clusters the size of BB's, then the color quickly changes to bright yellow and, finally to golden brown when the now-marble-size fruit are mature. The seeds not consumed by animals and birds fall to the ground and are eaten by various insects; the seeds that remain are round and hard when dry. The anaqua is not one of the more common trees in any wooded area; rather, it is in the minority. However, it does happen to grow in large motts almost without exception in any place where man has lived. It is my opinion, based on personal investigation, that 85% of the sites in this area will have the anaqua as the predominate tree on the site. There may be several reasons for this, one being that mockingbirds are very fond of this fruit, and mockingbirds like people. Anaqua trees are found at almost every old farmhouse in the surrounding counties and very likely can be attributed to a mockingbird's droppings.

Another interesting thing about the anaqua tree is that it has very straight limbs, especially in the new growth if a limb is cut off or if the tree is cut down. I have experimented on several anaqua trees, and it is very easy to groom new shoots to produce very straight limbs that grow to 6 to 8 ft. in length. These could be used as arrow shafts or even atlatl shafts with little modification. Whether this was the practice of the Indians or not is a matter of conjecture, as is the mockingbird theory. Nevertheless, the anaqua trees are out there on the sites and usually will be easy to spot, even in dense undergrowth. You can save valuable time during a survey if you learn to recognize them. Not every anaqua tree grows on a site, but the anaqua will certainly be an indicator to look for.

Once an archeological survey gets away from the river and creek bottoms, another anaqua characteristic can be used to locate sites. Many fields located some distance from the drainages will have a site hidden in a mott of anaqua trees growing in the middle or edge of the field. Because of the anaqua's ability to sprout new growth from any wounded part of the plant, farmers often leave the mott unmolested to prevent the trees from spreading. These motts will stick out like a sore thumb but often are ignored by the investigator because other undergrowth will grow up under the canopy and hide the site from the untrained observer. Close investigation will often reveal a sizable midden area that would be easily missed, since there is no apparent reason for a site to be this far from a drainage.

One last word about sites in plowed fields. During the period of time when crops are just coming up until they begin to mature, the vegetation on an archeological site will be very yellow (but you

knew that didn't you?). This can be spotted from the air or by driving down roadways. A word of warning—badly eroded soils will cause the same yellowing, but it would be wise to make a quick closeup check before going on, since from a distance there is no difference in appearance.

Various field reports by professionals (for example, see Ricklis 1990) have mentioned that anaqua trees commonly occur on sites, but I believe no one has previously used them as an indicator for locating a site. I have heard of only one Paleoindian site where anaqua trees grew, and that was a site on the Sabinal River investigated by Glen Evans (personal communication). I am sure there are many others, and I would appreciate a response from those readers who have observed anaqua trees on sites in other parts of Texas.

REFERENCE

Ricklis, Roberts

1990 *A Historical Cultural Ecology of the Karankawan Indians of the Central Texas Coast: A Case Study in the Roots of Adaptive Change.* Unpublished Ph.D. dissertation, University of Texas at Austin.

NOTES ON CONTRIBUTORS

David Alloway, a Texas Parks and Wildlife naturalist who supervises the Barton Warnock Environmental Education Center in Lajitas, became interested in Texas archeology at a young age while exploring Indian sites and petroglyphs in the El Paso area. After attending college in Alpine, he became seriously interested in studying the region's past and preserving its archeological resources. David has been a member of the TASN for 3 years.

Jay C. Blaine is a retired postal supervisor well known for his work in archeological metals conservation and his numerous publications on Texas archeology. Jay has served as president of the Dallas and Texas archeological societies, has served as a book reviewer for the Society for Historical Archeology, and is currently serving as a metals conservation consultant for several museums in Texas and Louisiana. Jay has been a member of the TASN since 1992.

C.K. Chandler is a retired railroad management official and engineering consultant who has made many contributions to Texas archeology through his publications, archeological site recording, and artifact documentation. C.K. has served as president of the Texas Archeological Society and is active in the Southern Texas Archaeological Association and the Coastal Bend Archeological Society. C.K. has been a member of the TASN since 1987.

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Joe D. Hudgins is a rancher in Wharton County, where his family has ranched since 1839. Joe has pursued his interest in archeology for over 30 years, recording sites in Wharton and Fort Bend counties and publishing numerous articles in the *Journal of the Houston Archeological Society, Bulletin of the Texas Archeological Society,* and *La Tierra.* Joe has been a member of the TASN since 1990.

Enrique Madrid managed his family's combined grocery store, gas station, and town library for over 20 years. He has conducted a major oral history project in the Redford area and was instrumental in

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Laurie Moseley III, director of instructional services for the Springtown Independent School District, has been an active member of the Texas Archeological Society for over 27 years. Laurie is particularly interested in the educational aspect of archeology and presents an annual teachers' workshop titled "Stones and Bones: Enhancing Science and Social Studies through Archeology." Laurie has been a member of the TASN since 1992.

Bo Nelson, a departmental manager with a grocery store chain, is currently serving as president of the Northeast Texas Archeological Society (NETAS) and is an active member of the Texas Archeological Society. Bo, with the assistance of NETAS members, is conducting a large-scale survey of archeological sites in the Northeast Texas area. Bo has been a member of the TASN since 1992.

Johnney T. Pollan, Jr., an engineer with Dow Chemical in Lake Jackson, is an active member of the Texas Archeological Society and the Brazosport Archaeological Society and serves as Curator of Archeology for the Brazosport Museum of Natural Science. Johnney's interest in historical archeology has resulted in the publication of several articles, including a report on investigations at Eagle Island Plantation in Brazoria County. Johnney has been a member of the TASN since 1990.

Leon Pope, President of Universal Treating Company, Inc., serves as a regional vice-president for the Texas Archeological Society and is very active in the South Plains Archeological Society. He recorded the first 100 sites in Terry County and is currently writing a book about the archeology of the area. His 10 years of experience as a public school educator has made Leon particularly effective in public-outreach activities. Leon has been a member of the TASN since 1990.

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E.H. Schmiedlin is a power distribution maintenance supervisor in Victoria. He has been an active member of the South Texas Archaeological Association and the Texas Archeological Society for many years. His archeological experience includes extensive site survey, evaluation, and documentation. Smitty has been a member of the TASN since 1984.

Doug Wilkens works for the MAXUS Exploration Company as a gas measurement technician. He became involved in archeology when David Hughes invited him to participate in the investigation of the Buried City site in Ochiltree County. Since then Doug has taken every opportunity to work on a variety of projects. Doug has been a member of the TASN since 1991.

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