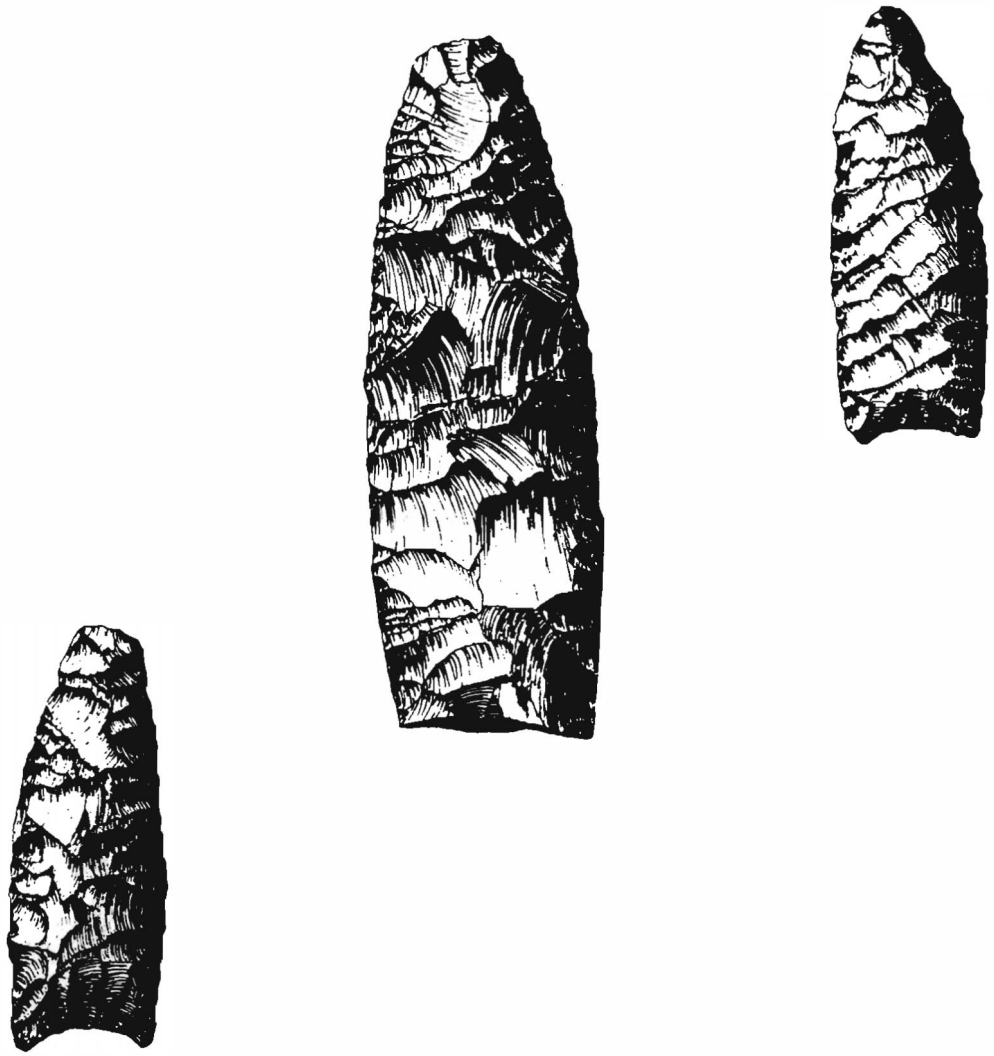
LA TIERRA



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LA TIERRA

Quarterly Journal of the Southern Texas Archaeological Association

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January, 1989 Editor

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About the Cover: Paleo-Indian Artifacts from the Dan Baker Site (41 CM 104)
See article on page 7 of this issue.

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Manuscripts for the Journal should be sent to: Editor, **La Tierra**, Evelyn Lewis, 9219 Lasater, San Antonio, Texas 78250. Copies of past issues of the Journal and Special Publications are available from: Bette Street, 6592 Kings Crown E., San Antonio, Texas 78233.

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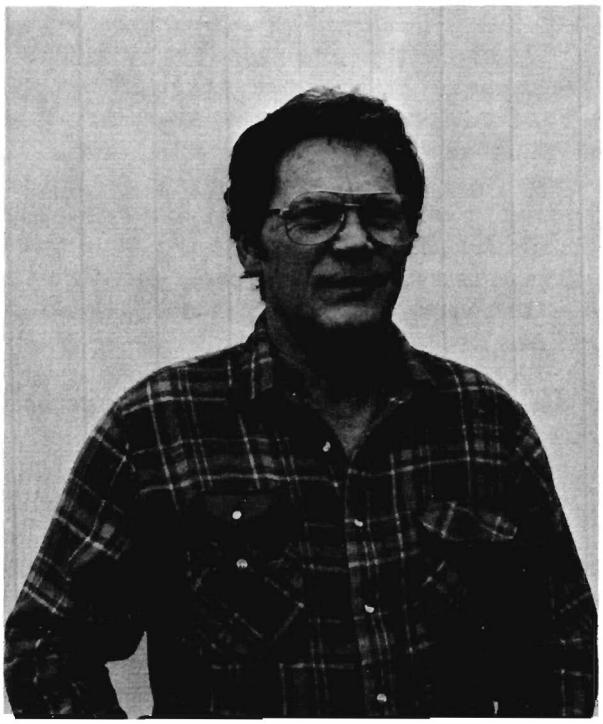
THE 1988 ROBERT F. HEIZER MEMORIAL AWARD



RICHARD L. McREYNOLDS

In recognition of his Outstanding Contributions to the archaeology of Southern Texas, the 1988 Robert F. Heizer Award is presented to Mr. Richard L. McReynolds of San Antonio, Texas. During this last year, Mr. McReynolds has voluntarily devoted many hours of his personal time not only to provide outstanding illustrations for the pages and covers of **La Tierra**, but also to provide drawings and analysis for documenting new collections, to assist various authors and researchers in their work, and to generally enhance our understanding of and empathy for the prehistoric peoples of southern Texas. His extraordinary talent and ability to develop accurate and beautiful illustrations of prehistoric artifacts is itself remarkable; however, his very gracious willingness to provide this service voluntarily to anyone in STAA who needs help marks Richard McReynolds as a most unusual human being. As his interest and capabilities have grown more precise and scientific, he has found other ways to contribute to archaeology as a body of science -- recently he has loaned his extensive collection of wooden artifacts from the Lower Pecos area to the UTSA Center for Archaeological Research for thorough analysis and documentation. In all he does, Richard McReynolds has a thoughtful, very professional approach to archaeological objects, problems, and issues. During 1988 he has done much more than his share toward achieving the goals and objectives of the Southern Texas Archaeological Association.

E D I T O R I A L

During our Southern Texas Archaeological Association meetings I have had the opportunity to chat with members who might be involved with digs or surveys. When I broach the subject of writing a report for publication of the work being done, or the finished project report, a few have said, "I can't write a manuscript." Nonsense! If you can discuss the work with friends, you need only to transfer that discussion to paper. Let the editor worry about phrasing, spelling, and sentence structure.

You had all the fun and excitement of discovery and conjecture concerning an earlier culture at this site. Now it is time to organize your field notes, site forms, artifact lists, sketches, and photos of your day-to-day excavations. It is also time to share this experience through the written word, by submitting it to **La Tierra**, the STAA journal.

If you are concerned about illustrating your artifacts, bear in mind that we have several talented artists and draftsmen among the STAA members. Just send a photo and the measurements of your find; one of our illustrators will do the rest.

The easiest part is a TITLE for your story. You may want to base it on an unusual artifact, refer to your site by the landowner's name, or get fanciful and imaginative. But don't forget to notify the Texas Archeological Research Laboratory in Austin, Texas so that they can assign an official site designation number, i.e., 41 BX 000 (the last three numbers designate the order of new sites in Bexar County).

By now you will find yourself so involved with the writing that it's becoming easier by the page. However, you may want to contact members who are 'old pros' at writing reports, just for reassurance. Any of our authors will be more than happy to lend a hand and offer suggestions. Or you may want to use the STAA library, presently housed at the CAR lab on the UTSA campus. Better still, buy a copy of Roger Hemion's **Field and Laboratory Handbook**," Special Publication No. 2 (Revised), available through the Southern Texas Archaeological Association. It is well designed for the avocational archaeologist and offers considerable help in writing your report, as well as field and lab techniques.

Preserving Texas' past, be it historic or prehistoric, is the primary aim of our organization, and your work, and input, is extremely valuable. So, keep us informed of your archaeological efforts, and share the good word through our publication, **La Tierra.**

Evelyn Lewis
Editor

NOTES ON SOUTH TEXAS ARCHAEOLOGY: 1989-1

Kincaid Rockshelter, the La Jita Site, and the Archaeology of the Sabinal River Revisited

Thomas R. Hester

In recent months, I have had the opportunity to visit several archaeological sites in the Sabinal River area of northeastern Uvalde County. One of the sites, Kincaid Rockshelter, is well known to Texas archaeologists. In the late 1940s, several Folsom points were found there, in the backdirt from a treasure-hunter's pit. Subsequently, scientific excavations were carried out by Glen Evans of the Texas Memorial Museum, and in the early 1950s by T. N. Campbell, with a Department of Anthropology summer field school from the University of Texas, Austin. Since that time, work on a manuscript reporting these excavations has been done by Evans and Campbell, but other tasks and responsibilities precluded its completion. In the last couple of years, Michael B. Collins has resumed work on the manuscript and presented a paper at the 1988 Texas Archeological Society meeting in Houston on the Paleo-Indian materials from Kincaid (Collins, Evans and Campbell 1988). Among the new data emerging from Collins' lithic studies is convincing evidence for a Clovis component, predating the Folsom occupation, at the base of Kincaid Rockshelter. One of the artifacts that was likely associated with that earliest occupation was the obsidian point fragment published by Hester et al. (1985), which derives from a source near Querétero, Mexico.

However, neither Collins nor I had even been to Kincaid Rockshelter and so it was with much anticipation that we went there in October 1988 with a group that included Glen Evans, Ernest Lundelius and Michael Blum. The trip had been arranged and was led by Charles E. (Gene) Mear. Mr. Mear had been the discoverer, along with a brother, of the Folsom materials at Kincaid after World War II. They sifted the treasure-hunters' spoil dump and found the Folsom materials. They first brought these to the attention of the Witte Museum in 1948, and Glen Evans and Dr. E. H. Sellards (then director of the Texas Memorial Museum) were quickly notified. Later, Gene Mear attended the University of Texas, worked with Glen Evans at the Museum, and wrote a Master's Thesis in Geology.

The Kincaid Rockshelter is located on the west bank of the Sabinal River (which is dry at that point) north of the town of Sabinal. The rockshelter deposits were completely excavated by the Evans-Campbell investigations -- so it is, at least, one site in that region that we can today describe as not suffering from the ravages of pothunting. Evans' knowledge of the natural history and geologic setting in the Kincaid area provided all on the trip with a much better perspective of the site and its significance. Gene Mear also knowingly described the local geology and geomorphology, including sites and sediments further up the Sabinal toward the town of Utopia. Having worked at the site of La Jita, near Utopia, in 1967 (Hester 1971), I immediately perked up and began to wonder just how Mear knew so much about Sabinal River geomorphology. With a little prodding we found out that the Master's Thesis noted above was written on the subject, "Quaternary Geology of Upper Sabinal River Valley, Uvalde and Bandera Counties, Texas" (Mear 1953). During my work at La Jita, and the several years of analysis that followed it, I had never learned of this thesis. My embarrassment was only slightly relieved by the fact that this thesis was "news" to some of the others in the group! Immediately after getting back to Austin, I checked out a copy from the UT-Austin library. It is, as I suspected, a tremendous source of information on the geology and

geomorphology of the Sabinal River canyon, as well as containing data on numerous archaeological sites. No more will I venture into the Sabinal River country without a copy of Gene Mears' thesis with me!

On a separate trip to the area recently, I have been able to record several new sites in the Utopia area with the aid of Sheriff Aubrey Smith of Uvalde County. I had known Aubrey when he had worked in the Purchasing Department at UT-San Antonio in the 1970s. In addition to his duties as sheriff. he and his wife, Polly, own the Utopia on the River bed-and-breakfast lodge situated near the Sabinal River. With their help, some sites were recorded on the west side of the Sabinal River, including a site with considerable potential, and which may be tested in future excavations planned in the region.

I also revisited the La Jita site (Hester 1971) located on the Camp La Jita Girl Scout property south of Utopia. The site had been fenced in the 1970s and has been watched over by the Camp La Jita caretakers. Though the site remains much as it was left in 1967, there had been some shallow pothunting and some "enlargement" of our old units, which had been left open at the request of the camp management. However, the caretakers had run off the diggers some time ago, and there was no evidence of any recent vandalism at the site. Walking over the site, however, brought to mind many questions left unresolved, or many questions that have since developed, about the archaeology at La Jita. As professional archaeologists, we often dig a site once and then never go back to it for further work. Yet archaeological knowledge has greatly advanced in Central Texas over the past two decades and it may still be possible for the deposits at La Jita to shed light on specific problems -- especially issues surrounding the interpretation of the Early Archaic and the Late Prehistoric. The San Antonio Area Council of the Girl Scouts has indicated their interest in possible further work at La Jita.

The Southern Texas Archaeological Association may be hosting the Texas Archeological Society summer field school in 1990 and 1991 and it is likely that the work will focus on Uvalde County. Certainly some very useful contributions could be made in the Sabinal River area in the northeastern part of the county. Much of the area needs careful archaeological survey and available sites could yield some new data on specific research problems. One thing to remember -- Gene Mear's Master's thesis: don't leave home without it!

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CELEBRATING FIFTEEN YEARS OF STAA

Jimmy L. Mitchell

ABSTRACT

The Southern Texas Archaeological Association celebrated its 15th anniversary at the January 1989 annual meeting. The association has an impressive record of accomplishments, but much of the work it has undertaken has yet to be completed. There is still plenty to do.

A NOSTALGIC RETROSPECTIVE

On December 2nd 1973, in response to invitations from Dr. Thomas R. Hester (then in his first semester of teaching at the newly-opened University of Texas at San Antonio), about 40 people attended a meeting to create an association for those interested in the archaeology of southern Texas, defined loosely as anything below "a line from about Del Rio across the lower Plateau to about Houston"..."plus a hunk of adjoining Mexico" (Hill 1974:2-4). Dr. Hester was elected chairman, Anne Fox (Witte Museum) secretary, and M. F. Chadderdon treasurer. T. C. Hill, Jr., of Crystal City, Texas, became newsletter editor (utilizing skills acquired as author, editor, and publisher of the Texas Archeological Society Region 6 newsletter). A coordinating board was composed of the officers, plus C. K. Chandler (constitution committee), Dave Espy, Harvey Smith, Jr., and Dr. Eugene O'Brien (field work and training), Bill Birmingham, Harvey Kohnitz, and Gene Griffin (program), and Jim Mitchell (membership and publicity). The group decided to call itself the Southern Texas Archaeological Association; membership dues were $5.00 per year ($3.00 for students); and quarterly meetings and an annual Bulletin were planned (ibid.:2-3).

By December 5th, the field work committee visited a pair of 19th century lime kilns in northern Bexar County, endangered by a planned housing development; volunteers, working under the direction of Anne Fox, excavated the kilns for structural information and to develop information of how they were used. Some STAA members helped finish a UTSA dig at the Alamo.

In January 1974, STAA members were working, under the direction of Harvey Kohnitz, in a surviving portion of the Granburg Site (known as Granburg II) on Salado Creek at Loop 410. There, under 12 feet of gravel, a cache of Guadalupe tools was recovered, suggestive of a very early occupation (Hester and Kohnitz 1975). **La Tierra** was created by T. C. Hill, with its own unique flavor and fervor (and "Little Flower" -- an Indian Maiden). In its first issue, 106 "paid members" were listed (Hill 1974:6-7. Volume 1, Number 1 contained 36 pages and 6 major articles. Issue No. 2 followed in April with 24 pages, a constitution, establishment of an STAA library, and three contributed papers. By the end of the year, membership totaled 270 individuals plus 10 institutions (Hill 1975:1). The association was clearly off to a quick and energetic start!

The year 1975 included issuance of STAA Special Publication No. 1, **The Payaya Indians of Southern Texas**, by Dr. Tom Campbell, of U.T. Austin. J. B. Sollberger of Dallas knapped flint for one STAA quarterly meeting. We dug at St. Mary's Hall on Salado Creek, recovering Folsom through Late Prehistoric artifacts; a later UTSA CAR field school found a significant Plainview campsite there. Excavations were also undertaken at the Timmeron Rockshelter (41 HY 95) near San Marcos by STAA and TAS members; a corncob, the first documented in southcentral or southern Texas, was recovered and analyzed (Harris 1985).

In subsequent years, field work included the J-2 Ranch (41 VT 6), the Kerlick sites in DeWitt County, and from October 1977 to the present, the Dan

Baker Site (41 CM 104), where we have recovered Clovis, Plainview, and a number of Archaic and Late Prehistoric artifacts. STAA volunteers also participated in most of the projects conducted by the UTSA CAR (the Alamo and other missions, Walker Ranch, Baker Cave, Fairmount Hotel, etc.), as well as TAS field schools (Choke Canyon, Rowe Valley, etc.). STAA members have surveyed, documented sites and collections, done lab work, written reports, and a myriad of other activities. STAA has conducted introductory seminars (with Trinity University Continuing Education), a ceramics workshop (Witte Museum), and other special programs. STAA twice hosted the annual meeting of the Texas Archeological Society (1975, 1985). We have also supported the National Park Service (NPS), and Our Lady of the Lake University Missions Research conferences. We've held STAA meetings in Victoria, San Marcos, Sisterdale, Bulverde, Uvalde, and Ingleside (mini-field school with the Coastal Bend Archeological Society, 1986). In 1987, we assisted the NPS and the Texas Historical Commission with restoration work at Parida Cave on Lake Amistad near Del Rio.

We have done a lot, and can be proud of our accomplishments. Our reputation, statewide, as an energetic and active organization, has been well established. Membership is approaching 500 individuals. Our **Field and Laboratory Handbook** (Hemion 1983, 1988), is highly respected by other societies and actively used in their own new member activities.

But we have a lot yet to do. **La Tierra** needs your reports. Several special publications need to be funded by grants or donations. We must return to J-2 and finish that work. Only our Timmeron Rockshelter work has been fully published; reports of our other excavations have yet to be completed. The work is not finished until the report is written and available to the public. We have much to accomplish in our next 15 years...

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PALEO-INDIAN ARTIFACTS FROM THE DAN BAKER SITE (41 CM 104)

C. K. Chandler

ABSTRACT

The Dan Baker site has been the subject of ongoing excavations by the STAA since late 1977. Evidence of intermittent occupation episodes throughout the Archaic periods is well established by the recovery of projectile point types indicative of the Early, Middle and Late Archaic cultures, as well as the more recent Late Prehistoric. Evidence for a Paleo-Indian component is also indicated.

INTRODUCTION

The Dan Baker site (41 CM 104) in Comal County, Texas (see Figure 1) is a multi-component occupation site with an extensive burned rock midden accumulation. The site is located in a bend of an intermittent drainage near where it enters the Guadalupe River. It is situated between the base of a low hill and the edge of the drainage channel. Extensive excavations over several areas of the site reveal that the major part of the site is made up of more than three meters of stratified accumulation of burned rock with considerable Archaic materials mixed throughout (Mitchell and Van der Veer 1983). During the first six years of work at the site no Late Prehistoric materials were recovered (ibid.) However, Late Prehistoric materials were found in the near vicinity of the site on the surface. Though of fragmentary nature, several of these are identifiable as Edwards, one as a tentative Scallorn and one as probable Perdiz. Late Prehistoric materials in small quantity have recently been recovered off to one side of the site; they are not mixed with the burned rock or Archaic materials. Two complete Plainview points, one fragmentary Angostura, one nearly complete Paleo-Indian biface and one gouge tool associated with the Paleo-Indian biface have been recovered from various parts of the site.

DESCRIPTION OF THE ARTIFACTS

Specimen A (Figure 2, A) is a Plainview point recovered from Unit N108/E100 at a depth of 340-350 cm. It is made of a good quality light grayish tan chert and is complete. There is the beginning of a light patina on both sides. Blade edges are slightly asymmetrical due to more extensive reworking along one blade edge. Flaking is irregular over all surfaces and this point is lenticular in cross section. It has a slightly contracting stem and a concave

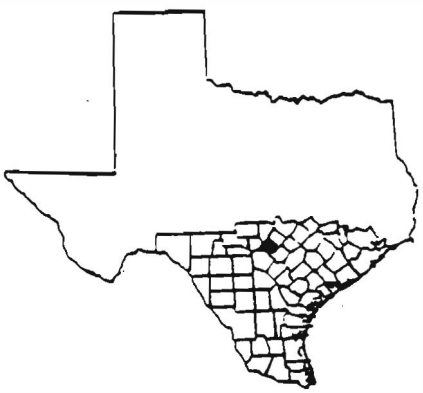


Figure 1. Map of Texas showing Comal County (darkened area).

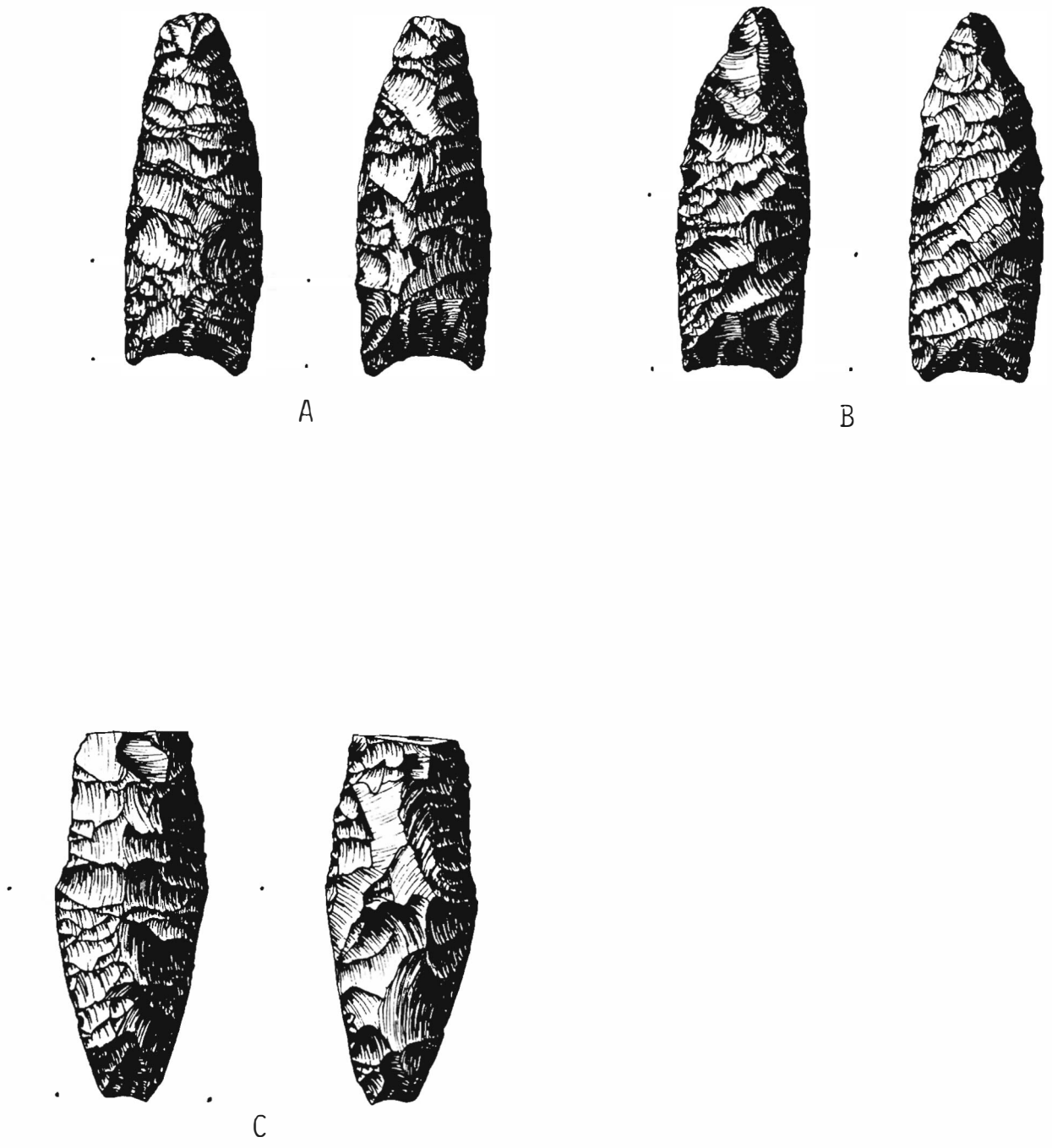


Figure 2. Paleo artifacts from the Dan Baker Site (41 CM 104). A, Plainview point from Pit N108/E100, 340-350 cm; B, Plainview point from Pit N104/E107, 125 cm; C, Angostura point from Pit N108/E100, 250-260 cm level. Drawn by Richard McReynolds.

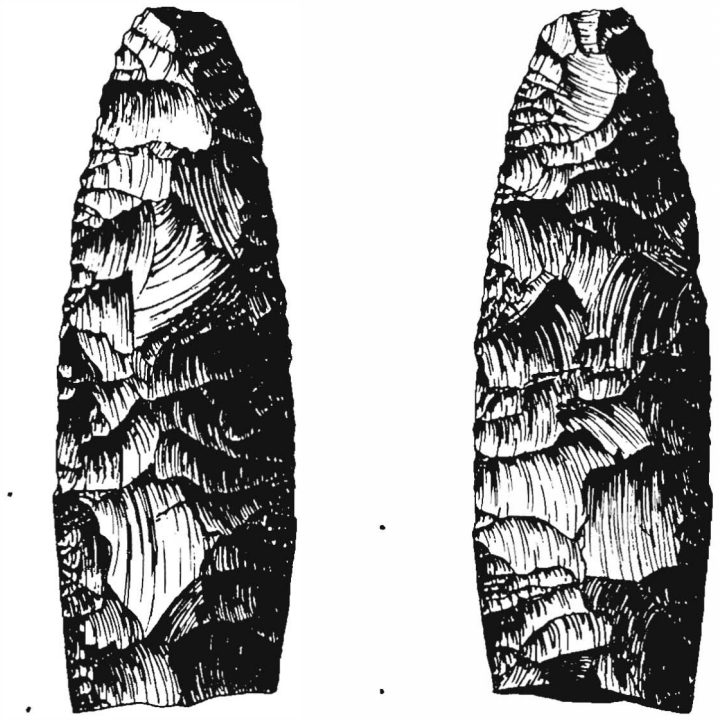
base with both lateral and basal edge smoothing. Lateral smoothing extends along one side for 12 mm and the other, 13 mm. Overall length is 56 mm and maximum width is 21.1 mm at a distance of 15.6 mm above the base. Base width is 19 mm with a basal concavity of 2.3 mm. Maximum thickness is 5.5 mm at 10 mm above base. Weight is 7.8 grams. The distal tip is reworked from one blade side into a convex edge with a slightly scooped out bevel. This convex end and lateral edges are heavily rounded, smoothed and polished for 8 mm from the end terminating at a small shallow notch in each edge. The edges below these notches have been resharpened but they are also lightly rounded and polished. The heavy use rounding and polish on the distal tip extends on the flake scars on both blade faces but is much heavier toward the side from which the convex distal end was beveled. Under 36x magnification there were no visible striations on the heavily polished distal end. It appears obvious this projectile point was reworked and extensively reused, in a manner other than as a projectile point.

Specimen B (Figure 2, B) is a Plainview point recovered from Unit N104/E107 at a depth of 125 cm. It is made of a light tan chert with lighter speckled inclusions and is basically complete. The distal tip has been broken by an impact fracture and both blade edges have been reworked, but not sufficiently to completely restore the distal tip. Blade edges are asymmetrical due to more extensive reworking along one blade edge. The more curving blade edge has been flaked onto one side with very short blade scars creating a fairly steep bevel. One side has oblique parallel flaking at 35 to 40 degrees and the other side has irregular flaking. Lateral edges are heavily ground and contract slightly to a concave base that is lightly ground. Lateral edge grinding extends along one side 22 mm and the other 20 mm. Overall length is 57 mm with a maximum width of 20.4 mm at 23 mm above base. Maximum thickness is 6.3 mm at 37 mm above base. Base width is 17.2 mm with a basal concavity of 1.4 mm. Weight is 9.3 grams. All flake scars are polished and all flake ridges are rounded and polished. All blade edges, including the distal tip, are crushed, rounded and polished. This point has been reworked and extensively reused.

Specimen C (Figure 2, C) is a fragmentary Angostura recovered from Unit N108/E100 in the 250-260 cm level. It is light pinkish tan with extensive white inclusions. At first glance this white appears to be patina, but closer examination reveals it occurs throughout the body of the specimen and is not a surface coating. It is 57 mm long and appears to be about two-thirds the original length. Maximum width is 23.2 mm with a thickness of 8.6 mm. Base width is 6.8 mm with a basal concavity of 1 mm. Weight is 12.6 grams. Flaking is parallel to irregular. The blade is steeply beveled along both edges and is broken by a snap fracture. Lateral edges are heavily ground and polished for 33 mm one side and 35 mm on the other. The shallow basal concavity is lightly ground. This specimen is lenticular in cross section, is slightly curved, and appears to have been made on a flake.

This specimen was recovered from an extensive Early Archaic occupation level that began at 240 cm and extended to 290 cm below the surface. Considerable occupational debris was recovered, including Early Side Notched points, core tools, hammerstones, mano and metate fragments, bifaces, utilized flakes, **rabdotus** shell and bone.

Specimen D (Figure 3, A) is a large biface with attributes of a Paleo-Indian dart point. It was recovered from Unit N98/E108 at a depth of 270 to 280 cm. The base is snap-fractured and an unknown portion of the stem is missing. Both face edges of this fracture are lightly rounded and well polished, indicating reuse after breakage. Base lateral edges are heavily ground 27.5 mm on one side and 24 mm on the opposite side. Blade edges are symmetrical and have been reworked, reducing the original blade width and producing shallow alternate bevels. These reworked edges are comparatively sharp but have light rounding and polish. The distal end is reworked from one side producing a steeply beveled convex end. Flaking is irregular to parallel.



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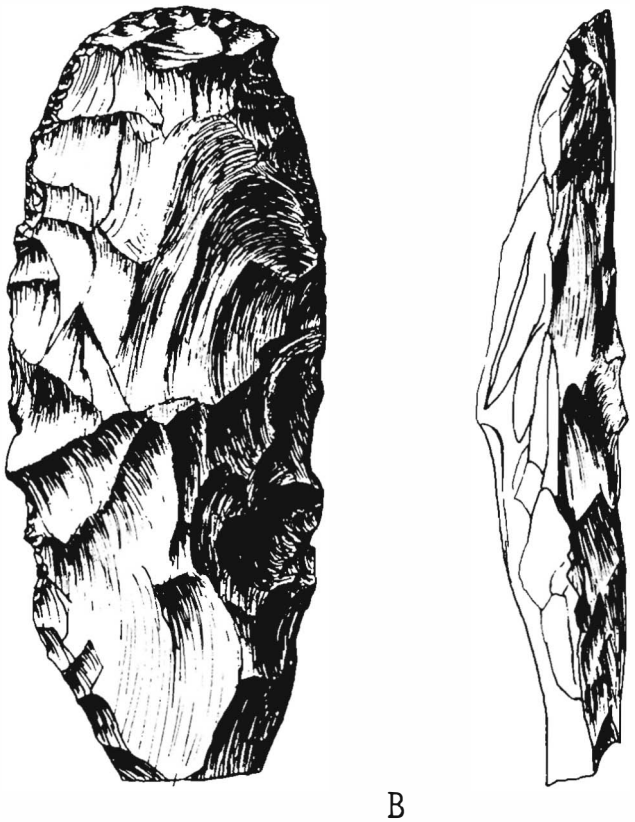

B

Figure 3. Paleo artifacts from the Dan Baker Site (41 CM 104). A, Clovis specimen from Pit N98/E108, 270-280 cm; B, bifacial gouge found in association with Clovis point (same pit and level). Drawn by Richard McReynolds.

This specimen is made of fairly good quality chert. It is a light grayish tan with light gray banding. Its present length is 92.8 mm and maximum width is 32.9 mm at 29 mm above the base with a maximum thickness of 9 mm. Present base width is 26.5 mm and weight is 32.1 grams. Lateral edges contract slightly and original base width was probably less. One face exhibits 5 mm of the terminating end of a flute. The length of the missing basal portion is unknown but it appears possible it could have had a short flute on one or both sides. Its size, shape and overall appearance fits well within the attributes of a Clovis.

Specimen E (Figure 3, B) is a bifacial gouge found in association with the Clovis biface. Dimensions are: length 102 mm, width 39 mm, thickness 20 mm and weight 75 grams. The maximum thickness of 20 mm is near center where a hump rises on the dorsal side and tapers toward the base as a decreasingly prominent ridge. The distal one-third of this specimen is thinned and well finished with pressure flaking along the edge. This distal end curves slightly toward the ventral side and the convex distal tip is worked from the ventral side producing a fairly steep bevel that aligns the leading edge with the ventral surface. While the distal one-third is lenticular in cross section the realignment of the leading edge produces a very functional gouge or scraper. It does not have the morphology of a Clear Fork or a Guadalupe gouge, but it is apparently a tool used for very similar purposes. The convex distal edge is well rounded and polished with this wear pattern extending for 30 mm along the left edge and 35 mm on the right edge. Heavy polish and flake ridge rounding extends on to the dorsal surface 15 mm. This extensive wear pattern is displayed on the ventral surface about 50 mm. There is a shallow 8 mm-wide notch on the right edge just below the distal end. Wear here is very light and not to the extent of edge rounding.

This gouge tool is very near the same color of the Clovis biface, being a light gray to tan with tan and gray banding in a circular pattern. There are white inclusions that are primarly visible on the dorsal side. These two specimens appear to be made of the same material.

DISCUSSION

The ongoing excavations at the Dan Baker site since 1977 have produced a copious amount of, as yet, unanalyzed materials and data. At present the lithic artifacts from this site are identifiable almost exclusively as belonging to the Archaic period. However, the occurrence of Late Paleo-Indian points in an almost exclusive Archaic collection is not surprising (Hammatt 1976). Identifiable Paleo-Indian point styles have been noted and frequently documented in South Texas surface collections (Hester 1978).

The St. Mary's Hall site (41 BX 229) dug by STAA and UTSA in the 1970s, and Pavo Real (41 BX 52) excavated by the State Department of Highways and Public Transportation, are the excavated Paleo-Indian sites in closest proximity to the Dan Baker site.

Both Plainview and Folsom materials were recovered at St. Mary's Hall, and Clovis and Folsom materials were recovered in the same level at Pavo Real (Henderson 1988). All of the excavated St. Mary's Hall specimens were fragmentary (Hester 1979) but at least one was identified as having extensive blade edge grinding and crushing as a result of it being used as a knife (Hester, personal communication). The Plainview specimens from the Dan Baker site also show considerable use-wear suggestive of their being used as a knife. Johnson (1980) states that Plainview points from the Lubbock Lake site and the Bonfire Shelter site (Dibble and Lorrain 1968) were multipurpose tools with many of them being resharpened and showing scalloped or serrated edges that show crushing and some wear polish. These Plainview points were recovered from massive bone beds indicative of kill and butchering sites, while the St. Mary's Hall

site has been identified by Hester (1979:33) as a camping and tool-making locality, a type of site not previously documented for the Plainview complex.

The Plainview point from Unit N108/E100 (Figure 2, A) at the Dan Baker site was recovered at a depth of 340-350 cm in a gummy red clay with considerable other cultural material consisting of two freshwater mussel shell, 3 **rabdota** shells, eight bone fragments, seven small chert flakes and a small amount of charcoal. The other Plainview from Unit N104/E107 (Figure 2, B) at a depth of 125 cm was also associated with other cultural material. There was fire fractured limestone, dark burned soil, bone fragments, and one Archaic period dart point in the same level. A charcoal sample was recovered from this level but has not yet been submitted for testing.

There is considerable evidence throughout the site of lithic tool manufacturing, but nothing has been identified to indicate the Plainview points or other Paleo materials were manufactured there. Most of the bone in the site occurs in the Archaic levels mixed with other cultural debris, but bone is almost non-existent in the lower levels of the dense red clay. There is insufficient bone in any excavated level to call it a bone bed of the type identified at Bonfire Shelter or the Plainview site.

Greco (n.d.) compared the St. Mary's Hall Plainview specimens with those from the Lubbock Lake site and Bonfire Shelter and found a range of size variability within the three assemblages. The St. Mary's Hall specimens have a basal width averaging 20 mm which is smaller than the type site, with averages of 22-24 mm. However, the basal concavities of the type site are on the average smaller, 2 mm as compared to 4 mm. The Bonfire Shelter Plainview points have a basal width ranging from 17-19 mm as do the Baker site Plainviews.

The Paleo-Indian biface from the Dan Baker site has the classic Clovis outline as defined by Meltzer (1986) and its present dimensions fall well within those recorded for the 205 Texas specimens analyzed in his survey, but is larger than the mean for this group. Its present length is 92.8 mm, width at the break is 26.5 mm and there is a 5 mm remnant of a basal flute on one face. While the size range of Clovis flutes is not presently available, this author's examination of several complete specimens and illustrations of many more show that some flutes are no more than 14 mm in length. If the flute on the Dan Baker specimen was no more than this, then the missing basal portion is 9 to 11 mm, assuming a shallow basal concavity. With this estimate for the missing portion this specimen would be about 114 mm long. Its overall size and shortness of flute are virtually identical to the largest of the Clovis specimens recovered in association with mammoth remains at the Dent site (Wormington 1957:45) near Dent, Colorado. This is the first generally accepted discovery of a fluted point unmistakably associated with articulated mammoth remains.

The illustrated Clovis points (Wormington 1957:54, 57) from the Naco site in Arizona and the Lehner site, also in Arizona, show a considerable size range but most have the symmetrical converging blade edges toward the distal end with bases narrower than the central area and heavy lateral edge grinding. The Baker site specimen has all of these characteristics and in size is very nearly like the larger specimens from these two sites.

The Paleo-Indian artifacts documented here all have evidence of considerable modification and extensive reuse. Their occurrence in an almost exclusive Archaic context does not unequivocably support a Paleo-Indian occupation at the Dan Baker site. It is highly probable they are intrusive as artifacts recovered and reused by later peoples during Early Archaic times.

Since the entire lithic collection from this site has not been reviewed and analyzed, there may be other Paleo-Indian materials as yet unidentified that could substantiate a Paleo-Indian presence at this site. In addition, excavation of the site continues with at least three units now in, or approaching, the earlier levels of the site.

ACKNOWLEDGEMENTS

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ARCHAEOLOGICAL APPLICATIONS OF GEOCHRONOLOGICAL TECHNIQUES IN SOUTHERN TEXAS

Michael B. Collins, Grant D. Hall and C. Britt Bousman

ABSTRACT

Development of reliable archaeological chronology in southern Texas, particularly south of the Nueces River, has been hampered by scarcities of stratified sites, suitable materials for traditional techniques of absolute dating, and time-diagnostic artifacts suitable for cross-dating. Relatively new techniques of geochronology, particularly radiocarbon and thermoluminescent dating of natural deposits or soils, provide useful alternatives with application to the kinds of geological deposits which commonly host archaeological materials in southern Texas. These are discussed in reference to recent archaeological work in Willacy and Hidalgo counties.

INTRODUCTION

The western portion of the Gulf Coastal Plain of northern Tamaulipas and southern Texas, centered on the Rio Grande Delta (Figure 1), consists of Quaternary surface geology dominated by modern and fossil coastal, lagunal, limnic, estuarial, fluviodeltaic, and dune-train environments. It is a region of low relief, sluggish drainages, and a near absence of resistant landforms.

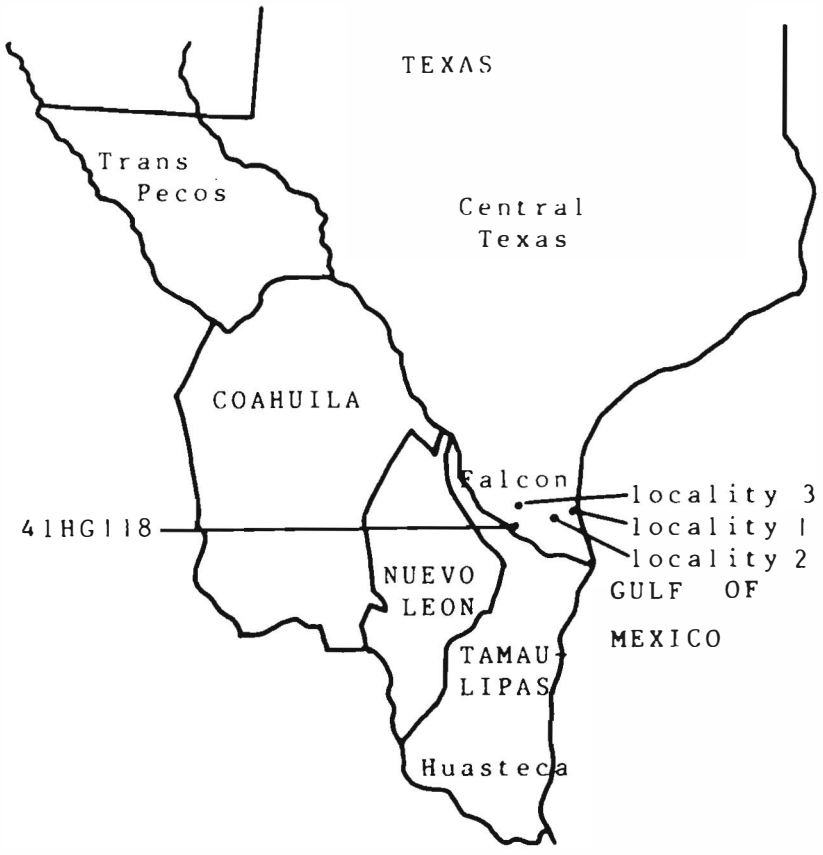

Figure 1. The western Gulf Coastal Plain of Texas and Tamaulipas, investigated localities, and archeological areas mentioned in text.

Much of the area is geologically active with deposition occuring in semi-permanent ponds, certain dune areas, in estuaries and lagoons, at intervals along the streams, and on the Rio Grande Delta; erosion is active in other dune areas, along some of the margins of the estuaries and lagoons, and at intervals along stream courses (Mallouf et al. 1977; Brown et al. 1980; Hester 1980).

Archaeological investigations to date have recognized a Late Prehistoric Brownsville Complex (poorly dated but estimated to fall in the interval A.D. 1000-1500) and an earlier Archaic manifestation that is locally not dated (Anderson 1932; Sayles 1935; MacNeish 1947; Campbell and Frizzell 1949; Suhm et al. 1954; Collins et al. 1969; Prewitt 1974; Mallouf et al. 1977; Day et al. 1981; Hester 1980; Day 1981; Mercado-Allinger 1983; Hall et al. 1987;). To the extent that a more comprehensive cultural sequence for this region can be perceived, it is extrapolated from findings in adjacent areas, particularly the interior of northern Mexico (e.g., MacNeish 1958; Epstein 1969), the Rio Grande valley above the coastal plain (e.g., Krieger and Hughes 1950; Hartle and Stephenson 1951; Cason 1952; Weir 1956), and in inland portions of South Texas (e.g., Hester 1980; Hall et al. 1986). Further afield, better established chronologies in Central and Trans-Pecos Texas and in the Huastecan area of northeastern Mexico are invoked as establishing general trends that might be expected in the Rio Grande Delta area and as being sources of diagnostic artifacts used in cross-dating (see Hester 1980). Use of these indirect dating techniques has been necessary because local sites investigated to date have generally been poorly stratified and deficient in suitable material, such as hearth charcoal, for archaeological dating (e.g., Hester and Hill 1973; Hall et al. 1986:577-591). However, the results have not been entirely satisfactory due in large part to the nature of the local archaeological cultures. The local Archaic and Brownsville cultural manifestations are distinct from the presumably contemporaneous cultural manifestations in adjacent areas. Also, the occurrence of time-diagnostic, exotic artifacts is relatively uncommon, particularly in the Archaic.

There is a clear need for improving archaeological dating capabilities for the Rio Grande Delta and immediately adjacent areas of the western Gulf Coastal Plain. Use of the geochronological techniques of thermoluminescent and radiocarbon dating of earth materials can contribute to this much-needed improvement.

GEOCHRONOLOGICAL TECHNIQUES

Organic constituents of natural geologic deposits and soils are suitable material for radiocarbon age determination (Haas et al. 1986). This provides the archaeologist with a means for estimating the age of cultural materials found in stratigraphic association with deposits or soils containing sufficient organic material for age determination (Bousman et al. 1988). An obvious advantage geologic deposits and soils offer over many archaeological radiocarbon samples is the opportunity to collect samples of ample size to overcome low organic concentrations.

It is critical to demonstrate valid association between the organic material being dated and the cultural phenomenon for which an age estimate is sought, although this is not as different from normal archaeological sample evaluation as it might appear. Soil formation alters earth materials that are already in place. An age determination on the organic constituents of a soil containing cultural materials is the average age of the organic residue resulting from active pedogenesis (Haas et al. 1986). Thus, a soil that actively formed between 1000 and 2000 years ago might be expected to yield radiocarbon determinations of ca. 1500 years ago. Cultural materials found in such a soil may have been deposited before or during the deposition of the earth materials on which the later soil formation process acted. In that case, they are older than the soil. Alternatively, the cultural activities may have transpired on

the surface where soil formation was active, and the two are roughly contemporaneous. In the case of certain kinds of soils (such as those formed in very loose material or those subject to vertical cracking), cultural materials may intrude from above and actually be younger than the soil. Detailed and experienced evaluation of the evidence for these alternative conditions is necessary in interpreting the cultural significance of any radiocarbon date determined on a soil. These are not significantly different from the considerations that must go into evaluating the cultural information in radiocarbon dates on such material as wood charcoal from a hearth where the determination is an estimate of the average of the dates of each tree-ring included in the sample (cf. Black 1986).

Deposits laid down by the action of streams (fluvial) or in the quiet waters of ponds and lakes (limnic) may contain considerable amounts of organic material. These deposits are often well stratified and their abundant organic content makes them particularly suitable for radiocarbon age determination. In contrast to the formation of soils where the organic content is introduced after the earth materials are in place, the organic content of fluvial and limnic deposits accumulates along with the inorganic deposits, although there is the possibility that older organic material can also be included (Haas et al. 1986; Collins in press). These deposits often retain clear stratification, and the contemporaneity of included cultural materials may be determined easily. The best opportunities for cultural materials to be included in stratified fluvial deposits are in settings where overbank flooding occurs intermittently and in limnic deposits where water level fluctuates significantly. In these instances, the materials left behind by peoples utilizing the near-water areas in times of low water may become buried in deposits produced by the next interval of high water.

Radiocarbon dating of soils and of organic-rich deposits is a routine procedure differing from the familiar archaeological one only in a certain amount of additional sample preparation required to eliminate extraneous carbon (such as soil calcium carbonate) and to extract the datable humic acids and/or humates from the inorganic bulk of the sample. These additional laboratory steps increase the cost of each sample run, but not greatly (usually between 50 and 75% over normal sample charges).

Less routine than radiocarbon dating is thermoluminescent dating. This technique depends on a physical property of certain minerals wherein energy accumulates in the molecular structure of the material. The process continues at a constant rate over time. Under certain conditions, this energy is released in the form of light. If the conditions triggering this energy release are sufficiently intense, the total accumulated energy is lost and the material begins again from "zero" to accumulate energy in its molecular structure. By artificially triggering this release of energy in the laboratory and carefully measuring the quantity of light energy emitted, it is possible to estimate the length of time over which that amount of energy accumulated. Theoretically, this should be an estimate of the time since the mineral specimen first formed in the earth if nothing has triggered the release of its energy since it was formed; in those instances where such releases of energy have been triggered, the estimate of age refers only to the interval since the specimen was last "zeroed." Fortunately for archaeology, it is common for materials suitable for thermoluminescent dating to become zeroed by a process correlatable to some past human event and the technique applied to estimate the time of occurrence of that human event. As implied by the root, "thermo," heat is a trigger in releasing the stored energy of luminescence. For this reason, thermoluminescent dating in archaeology has been almost exclusively applied to objects thought to have been zeroed by fires associated with human activity. Burned stone (Göksu et al. 1974; Aitken 1985) and pottery (Michels 1973; Aitken 1985) are the materials most commonly dated using this technique. An advantage to this technique is that it can be applied to very small samples, and it is often

obvious that the specimen has been heated, as in the case of well-fired pottery or a piece of burned chert from a hearth.

In all applications of this dating technique, steps have to be taken to eliminate sources of error. The level of natural radiation in the environment where the sample was collected must be determined and used in the age calculations. It is important to determine if the specimen was completely purged of its stored energy at the time of the event to be dated. A partially zeroed sample will yield an age determination that is too great as a result of the contribution of the older energy to the total released in the laboratory. Care is needed to determine that the specimen has not been stimulated to the point that energy has been lost since the event to be dated. Also, samples must be protected from exposure to light, heat and radiation after collection. These are technical matters that vary according to the circumstances of each sample and each sample context.

Certain geologic processes also are capable of zeroing thermoluminescent materials. Obviously, natural sources of heat, like lava flows or relatively hot fires (such as a burning stump), produce the same effect as human fires. The trick in these instances is relating suitable sample materials to the cultural event to be dated. In recent developments, thermoluminescent techniques show promise for dating the kinds of geologic phenomena with which cultural materials are more commonly associated. The thermoluminescent energy of silt-sized particles of certain minerals is zeroed by exposure to light, which may happen during the transport of those particles by wind or water. Thus, the silt in eolian or stream deposits is potentially datable using the technique of thermoluminescent dating (Aitken 1985).

In principle, this technique has the same advantage noted above for radiocarbon dating of organic-rich deposits where the process relates to the accumulation of the deposit rather than to a subsequent event. There is also the advantage that samples are easy to collect and soil moisture is the only background measurement needed in some cases. However, there are some practical drawbacks to this technique. It is still in a relatively early developmental stage and its reliability is not yet established by a large number of paired, independent dates, especially for ages less than 10,000 years. Also, only a few laboratories perform thermoluminescent analyses of geologic samples, and those that do are often unable to quote a standard price because their costs vary widely between samples.

GEOLOGIC RADIOCARBON AND THERMOLUMINESCENT DATING APPLICATIONS IN SOUTH TEXAS ARCHAEOLOGY

In the western Gulf Coastal Plain are found abundant natural deposits and soils suitable for age determinations by either radiocarbon or thermoluminescent techniques, and, importantly, cultural materials often occur in primary association with these deposits and soils. These circumstances should provide the basis for a concerted effort by archaeologists and to apply geochronology to the development of a local archaeological chronology.

As of this time, no application of thermoluminescent dating to Late Quaternary geologic deposits in South Texas has been reported. However, elsewhere, encouraging results have been obtained. For example, in an eolian setting on the southern Llano Estacado, two thermoluminescent dates were obtained on wind-transported silts and the results generally agree with independent chronological evidence from stratigraphy and radiocarbon dates (Meltzer and Collins 1987); also, in much of eastern Europe, Pleistocene loess glacial tills, and stream deposits are being dated using this technique (Dreimanis et al. 1978). The Llano Estacado thermoluminescent samples are analogous to many that could be collected from sites in the eolian deposits of South Texas. Also, the successful dating of stream sediments in Europe may indicate promise in dating flood deposits of the Rio Grande.

Assessment of the potential for using thermoluminescent- and radiocarbon-based geochronology for archaeological dating was made by two of us (Collins and Bousman) as part of recent archaeological investigations conducted along drainage improvement ditches in Willacy and Hidalgo counties (Hall et al. 1987:36-40). In this effort, only field inspections were conducted, and no samples have been dated. Three localities, as described below, were considered. At each, cultural materials were observed in stratified contexts (greater detail on these can be found in Hall et al. 1987:38-40).

The first locality is in Willacy County on the edge of Laguna Madre. At this locality, archaeological remains (site 41 WY 60) are eroding out of the seaward face of a clay dune rising five meters above a wind-tidal flat which surrounds the dune with water at times of high tide or strong wind. Wave, and possibly wind action, are cutting the seaward edge of the dune, and wind-borne materials are being dropped on its lee side. In this manner, the dune is migrating landward and a stratified depositional sequence is being formed on the backside of the dune. There are cultural materials present in at least one place in this sequence. The silt-sized particles in these deposits should be datable using thermoluminescence. Additionally, buried soils suitable for radiocarbon dating occur in this sequence. The combined presence of discernible, silt-rich eolian strata, superimposed soils, and cultural materials appear ideal for chronology building using geochronometric techniques on the natural strata and soils and archaeological techniques on the cultural materials.

The second locality consists of an archaeological site (41 HG 128) in the sloping edge of an ephemeral pond adjacent to a dune field near Edcouch in eastern Hidalgo County. Here, cultural materials occur in stratified deposits exposed in the north side of an existing east-west drainage ditch. The basal deposit is light-colored Pleistocene clay. Overlying this is a broad, shallow basin filled with dark. clay-rich pond deposits. Burned clay lumps, bones, shells. chipped stones, and other cultural debris are exposed in portions of this sequence of pond deposits. At the western edge of the basin is a low dune, partially exposed in section by the ditch. There seems to be interbedding of the pond margin and the dune deposits with some dune material clearly overlying some pond sediment. In the dune is evidence of two soils. Contributions to prehistoric chronology could be made at this locality by pursuing both archaeological dating (radiocarbon analysis of charcoal and bone and possibly by thermoluminescent dating of the burned clay lumps) and geological dating (radiocarbon analysis of the soils and pond deposits and thermoluminescent dating of the eolian deposits).

The third locality is a conical dune near a large ephemeral pond in southwestern Hidalgo County, near Alton. Cultural materials are present in the upper deposits of the dune. The site is severely disrupted by roads and fields, but it is possible to determine that a soil once capped at least a portion of the archaeological materials. Nothing suitable for archaeological dating was observed here. However, radiocarbon dating of the soil as well as thermoluminescent dating of the dune deposits could provide a working chronology of the site.

In each of these settings are eolian deposits potentially datable using thermoluminescent techniques and paleosols suitable for radiocarbon dating. Organic-rich fills of the freshwater ponds at the second locality are also suitable for radiocarbon dating. The contrasts in these localities serve to illustrate important considerations in any program attempting to develop a local chronological framework. At one of the three sites, the one near Alton, there appears to be no potential for absolute dating using traditional archaeological materials, which represents a common dilemma faced in this area. At the site near Edcouch, both archaeological and geological dating potential seems to exist. The amount of datable cultural material in the site on Laguna Madre is unknown, but bone present in the site might be datable (c.f., Prewitt

1981). Importantly, at all three sites, thermoluminescent as well as radiocarbon dating of natural deposits and soils appears to be practical. In building a local chronology, as many different kinds of dating methods as possible should be employed at any given site. This provides cross-checks and will be the basis for evaluating dates from sites where intra-site cross-checks are not possible.

In a separate effort, as part of the investigations of the prehistoric Sárdinas Resaca Site (41 HG 118) south of Mission in Hidalgo County, radiocarbon determinations were employed in the dating of two soils and an organically-enriched deposit (Hall et al. 1987:53-60). Cross-dating of diagnostic chipped stone artifacts (Olmos and Clear Fork gouges, Tortugas, Abasolo, Matamoros, and Catan projectile points) found on the surface of the site indicate Late Archaic and possibly Late Prehistoric utilizations of the site; unfortunately, no diagnostic artifacts were found in the subsurface (Hall et al. 1987:61).

The site occupies a low ridge along the outer edge of a four-meter high terrace of Sárdinas Resaca. The ridge roughly parallels the resaca and is about 200 meters north of it. The valley of the Rio Grande lies slightly more than three kilometers south of the site. The entire area is under cultivation, and the site was originally detected on the basis of cultural materials distributed widely in plowed and terraced fields and orchards. The site was defined on the basis of these surface observations as extending more than 400 meters north from the edge of the terrace. The east-west dimensions of the site have not been determined, but the site is at least 1.2 km long.

Backhoe trenches and hand excavations at the site revealed a stratigraphy made up of four zones (see Figure 2). These are a basal deposit of the Pleistocene Beaumont Formation (Zone I), an overlying Holocene loam containing the in-place but non-diagnostic cultural materials of the site (Zone II), late Holocene fill in a shallow basin north of the ridge (Zone III), and a pervasive plow zone containing displaced Late Archaic cultural materials (Zone IV).

Zone I consists of clay to sandy clay with small pebbles and ranges in color from moderate brown to grayish orange. Calcium carbonate nodules occur in the upper meter or so of this zone. In places, large **Rabdotus** tests are present. The upper contact of Zone I is sharp and irregular in all observed exposures. Zone I is overlain by Zone II. The entire upper contact of Zone I is unconformable and reflects erosion of an elevated feature, probably a levee. One backhoe trench exposed a gully that had eroded 1.3 meters into the surface of Zone I and was later filled by sediments of Zone II. In every regard, Zone I conforms to the definition of the Beaumont Formation (Sellards et al. 1932; Price 1958; Barnes 1976; Brown et al. 1980) which is considered to be Sangamon- or Peorian-age fluvio-deltaic deposition during one or more marine highstands. No direct evidence of the age of Zone I was obtained, but the Beaumont is considered to be greater than 50,000 years old (Brown et al. 1980).

Zone II rests unconformably on Zone I and consists of loam to clay loam. Zone II is moderate brown to moderate yellowish brown in color and contains in-place cultural materials in an area much more restricted than that of the distribution of artifacts at the surface. Calcium carbonate is present in Zone II as small filaments to very small nodules. Tests of **Rabdotus** are present in Zone II. The Zone I-Zone II contact is wavy to irregular and includes the above-mentioned filled gully. This contact configuration and the degree to which Zone I is weathered indicates a considerable period during which the surface of Zone I was exposed. A sample of soil from the base of the Zone II fill of the gully was collected and submitted for radiocarbon dating of the included humates. The resultant date between 5256 and 5059 B.P. [corrected using tree ring calibration program calib 2.0 (Stuiver and Reimer 1986); uncorrected date 4500 ± 130 B.P. (Beta-17434)] is considered indicative of the time when the shift from erosion to deposition occurred on the Beaumont promontory at this locality.

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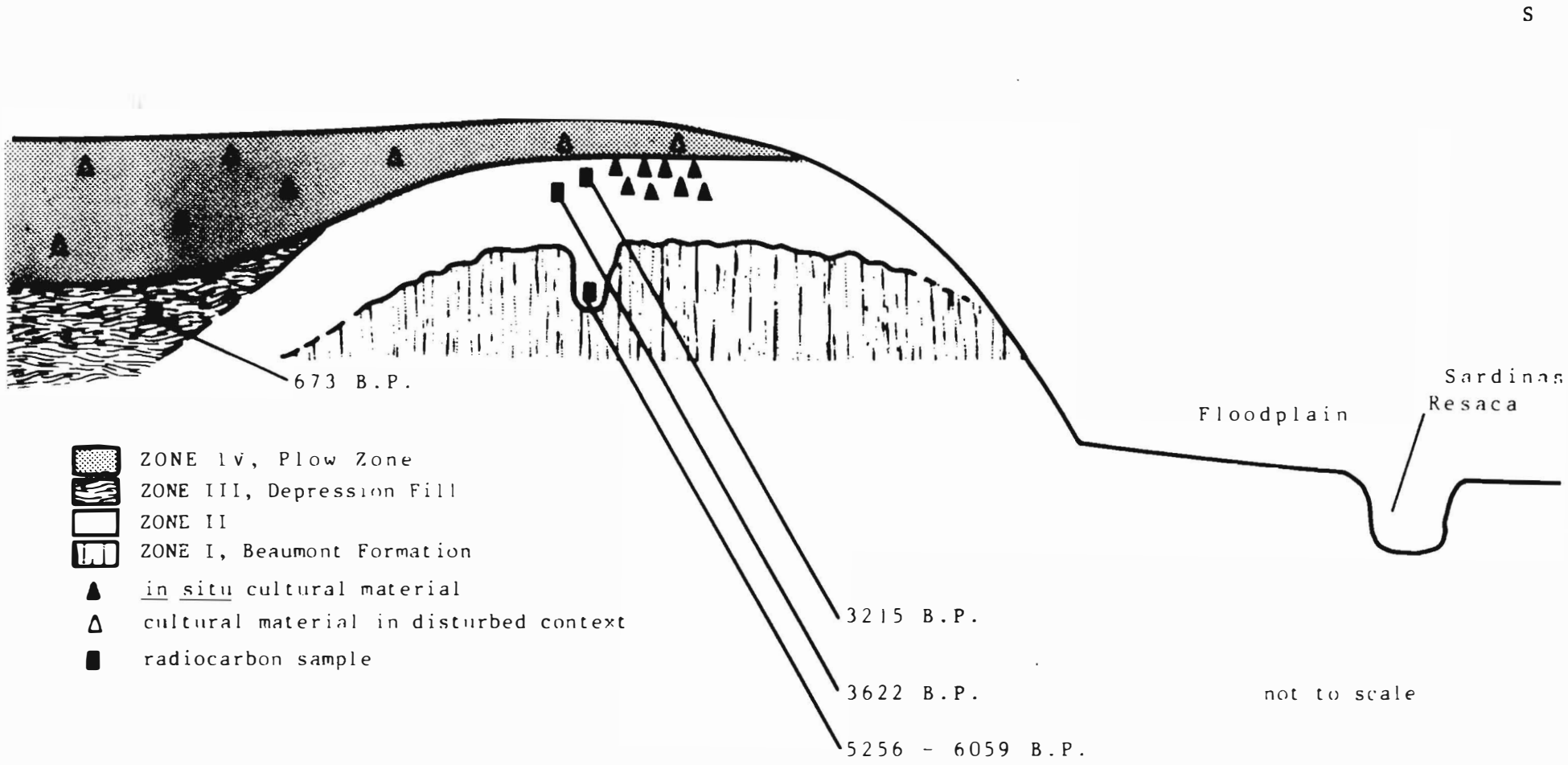

Figure 2. Schematic geologic section of 41 HG 118 illustrating natural stratigraphy, cultural materials, and position of radiocarbon samples.

Stratigraphically higher in Zone II is a weakly expressed, buried A soil horizon. This soil is structurally expressed and could not be readily distinguished on the basis of color, that is, there was no visible organic enrichment. Cultural material occur in this soil, but the relationship between the human activities and the pedogenesis is unclear. Two alternative interpretations are discussed here.

In the first interpretation it is assumed that 41 HG 118 is a single-component, Late Archaic site. The artifact distributions lack any vertical concentrations indicative of a living surface, and no features were discovered. Two radiocarbon dates were obtained on humate samples from the buried soil. When corrected to tree ring calibrations (Stuiver and Reimer 1986), these dates are 3622 B.P. from the lower part of the soil [uncorrected date: 3350 ± 90 B.P. (Beta-17435) and 3215 B.P. from the upper part of the soil uncorrected date 3010 ± 160 (Beta-17437)]. These dates seem to be as much as a millenium older than those obtained for similar assemblages elsewhere (cf. Shafer and Hester 1971; Turner and Hester 1985; Hall et al. 1986). If these cross-dates apply to the entire assemblage from 41 HG 118, this would indicate that human activities transpired on a relatively stable surface and resulted in cultural materials becoming part of a soil horizon that formed prior to, during, and probably after the cultural episode(s). The radiocarbon dates are estimates of the average age of the humates comprising the samples. The vertical position of these two humate samples in relationship to the cultural materials is such that, in all probability, considerable humate from soil formation prior to the human presence is included (Figure 3). Given the vertisolic tendency of Zone II, some downward movement of cultural materials is also expectable. Thus an age somewhat greater than 3000 years for a soil which hosts cultural materials that appear to cross-date closer to 2000 years is entirely reasonable.

Alternatively, the assemblage of Late Archaic diagnostic artifacts acquired from the surface of the disturbed plow zone may represent the younger of two components. In this interpretation, the earlier component occurs in Zone II at the level of the buried soil as encountered in the southern part of the site. As no diagnostic artifacts were recovered from this horizon, no evidence for cross-dating is at hand. Therefore, two possible relationships exist between the buried soil and the cultural remains. The cultural component could have accrued during the formation of the soil and, therefore, be roughly contemporaneous, that is, about 3200 to 3600 years old; or, the soil may overprint an earlier geologic deposit that accrued as cultural materials were being deposited. In that event, the soil would be younger than the deposit as well as the cultural materials it hosts. A time interval for this process would fall between the stratigraphically lower date of ca. 5200 B.P. and the soil dates of 3200-3600 B.P.

In the absence of time-diagnostic artifacts or other means of dating, these alternative interpretations for the age of the cultural deposits must remain unresolved. However, Zone II is rather securely dated as beginning to form around 5200 B.P., to have achieved a rather stable surface on which a soil formed around 3200 to 3600 B.P., and to have continued to thicken for an undetermined length of time afterward.

The position and configuration of Zone II could be construed as a levee resulting from high floods along Sárdinas Resaca, but this interpretation seems extremely unlikely given its height above the Resaca and the width of the Resaca valley at this point. This leaves eolian transport of floodplain deposits as the most probable process by which Zone II accrued. In this interpretation, Zone II is a dune forming down the prevailing wind direction from the nearby floodplain of Sárdinas Resaca and the more extensive and more distant floodplain of the Rio Grande.

The massive loam to clay loam comprising Zone II is characteristic of silt- to clay-rich dunes in the Gulf Coastal Plain (Price 1958). Two factors

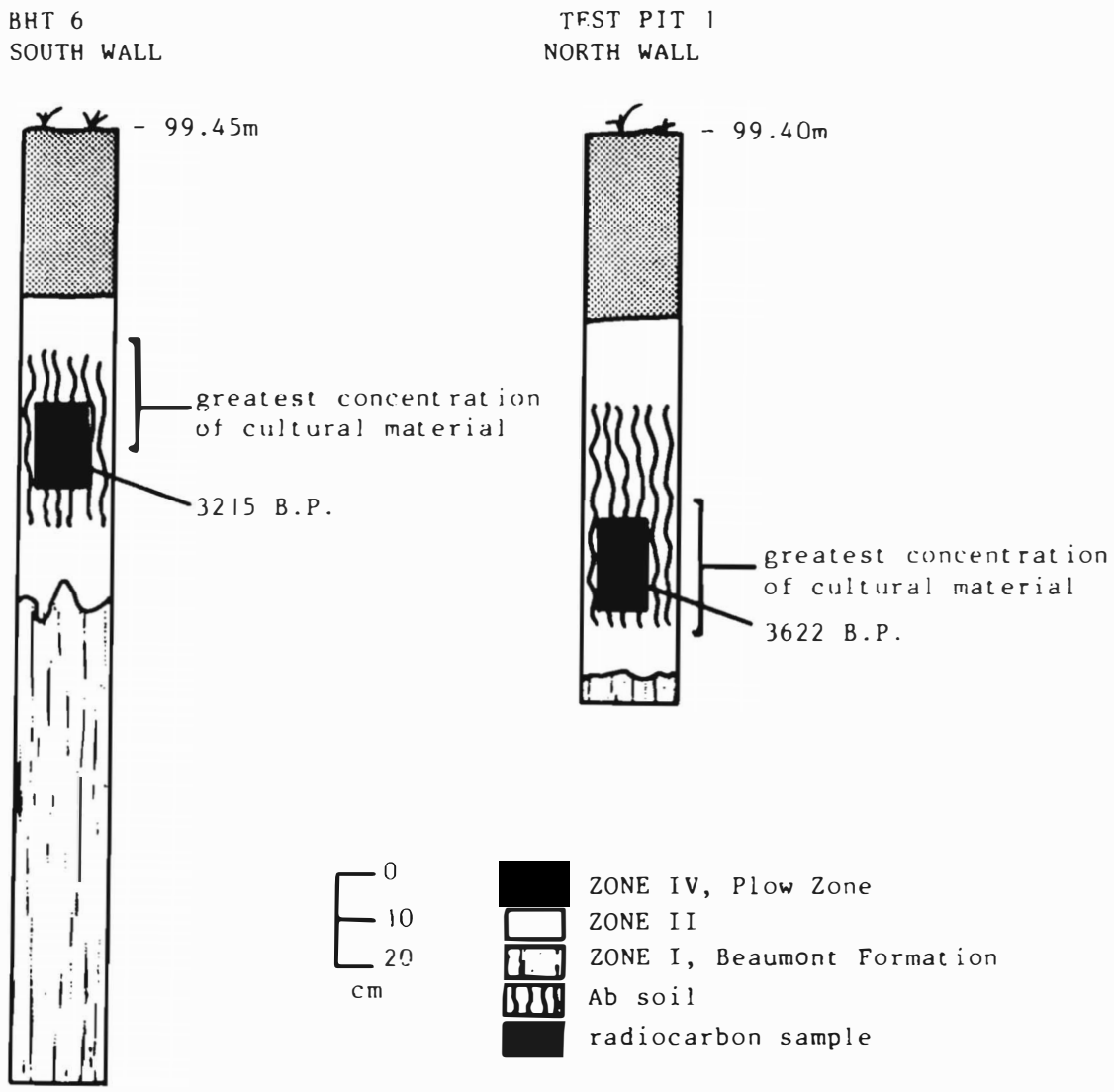

Figure 3. Vertical position of soil humate samples, buried soil, and cultural materials, southern part of 41 HG 118.

favoring dune formation can be identified at the 41 HG 118 locality. First is its position just above and back from the edge of the valley wall. Eolian load is dropped where silt- and clay-bearing winds crossing the floodplain and rising against the valley wall sweep over the abrupt juncture of this slope with more level ground beyond. Second is vegetation, a primary factor in dune formation. Vegetation on this rise since 5200 years ago cannot be directly observed, but its presence is indicated by the abundant tests of **Rabdotus**, a snail genus which prefers open scrub habitats (Raymond Neck, personal communication 1986), and by the buried soil horizons of 5200 and 3200 to 3600 B.P.

Zone III consists of a grayish brown clay to sandy clay loam accumulated in a low-lying area north of the elevated site area. This laps onto a low, sloping surface of Zone II. The contact between Zones II and III is diffuse and bioturbated. Zone III appears to be the result of intermittent ponding and is rich in organic content. A single radiocarbon date of 673 B.P. [uncorrected date: 710 ± 70 B.P. (Beta-17436)] was obtained on a sample collected approximately mid-depth in Zone III. This indicates that the topography of this locality during its occupation by humans included a substantial depression in this area. Deeper in Zone III may be pond deposits contemporary with human utilization of the nearby site, but this is not demonstrated. An age of 700 years ago for a zone lapping onto Zone II is consistent with the overall chronology developed for this locality.

Zone IV is a plow zone of loam extending over the entire locality. Cultural materials in this zone extend northward from the edge of the terrace for over 400 meters. Plowing, leveling, and terracing have removed deposits from the elevated part of the locality and redistributed them in lower parts. The resulting plow zone is relatively thin (25-37 cm) in those areas where leveling involved cutting, and relatively thick (50-95 cm) in those areas where filling occurred. Lateral transport of volumes of earth has been extensive, and it is apparent that a prehistoric site that was once confined to a narrow rise between the edge of the terrace on the south and the low area on the north has been disrupted and its material evidence spread over a much greater area.

In summary, the 41 HG 118 locality has been surficially disturbed by agricultural activities, but significant subsurface data were found in place. Geologically, a dissected and weathered Beaumont promontory began about 5200 years ago to be draped with silt and clay dropped by winds sweeping up from the Sárdinas Resaca and Rio Grande floodplains to the southeast. These eolian deposits filled gullies and other depressions and thickened over the entire promontory. The topographic break at the valley margin and vegetative wind barriers fostered the growth of a low conical dune along the crest of the valley wall. Humans utilized the crest of the dune, probably beginning around 3500 years ago, as the dune surface stabilized and a soil began to form. The dune continued to grow slowly, and intermittent human activity recurred. A low area north of the site held water at times and gradually filled with sediment. The lack of artifacts unquestionably from the post-Archaic indicates that human use of the site tapered off during the Late Archaic. An unknown height was reached by the dune before its crest and included cultural materials were stripped off and used as fill in the lower areas in the course of modern land leveling. This activity scattered cultural materials over an area several times larger than the original site.

Archaeologically, the investigation of this site encountered an all-too-common site character in southern Texas. Conditions necessary for traditional methods of dating prehistoric sites are rarely met in this region, and 41 HG 118 is no exception. Organic cultural materials, including charcoal, are generally lacking in quantities or in contexts suitable for radiocarbon dating. Requirements for other chronometric methods (e. g., archaeomagnetism or thermoluminescent dating) are generally not satisfied. Relative dating by seriation and cross-dating of material culture are used but are not especially refined in the lower Rio Grande Valley.

In an effort to explore alternative approaches to archaeological dating in these circumstances, four geologic samples from the site were assayed and provided internally consistent dates for Zones II and III. The dates are also reasonable in light of the limited independent evidence from cultural cross-dating. These results are encouraging and suggest that, in the future, judicious use and thoughtful interpretation of geologic radiocarbon dating in the lower Rio Grande Valley may prove valuable in archaeological as well as geological inquiry.

CONCLUSIONS

The prehistoric cultural record of South Texas is intimately related to dynamic Quaternary geologic processes. Cultural materials occur in limnic, eolian, fluvial, and other sediments. Soil formation has altered many of these deposits. There has been limited success in establishing a local cultural chronology using traditional archaeological dating techniques in this area. The recent studies at four localities discussed above indicate, at least to us, that geochronological techniques could be enlisted by archaeologists to considerable benefit. We would caution, however, that, as with any dating technique, adequate familiarity with the dating process and its sample requirements are essential, as is a clear understanding of how the natural material dated relates to the cultural event in question. We would propose that a comprehensive program of collecting and processing radiocarbon and thermoluminescent samples from natural deposits and soils in good stratigraphic association with diagnostic cultural materials be considered a high priority in future research into Quaternary human ecology in South Texas. The extensive cuts afforded by the irrigation canals and drainage ditches in the Rio Grande delta area provide ample stratigraphic exposures and ready access to a large number of suitable sites for sample collection. In addition to the direct archaeological benefits, such an effort could contribute significantly to refining thermoluminescent dating procedures.

ACKNOWLEDGEMENTS

We wish to thank Vona Walker of Hidalgo County Drainage District No. 1 and Jim Riggan of Willacy County Drainage District No. 1 for facilitating this study. Funding provided by the Hidalgo County Drainage District No. 1 is gratefully acknowledged. We also appreciate comments from T. R. Hester of the Texas Archeological Research Laboratory at the University of Texas at Austin and Elton R. Prewitt of Prewitt and Associates of Austin; Elton also assisted in many ways during all phases of the original research as well as the production of this report.

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EARLY DATES FOR THE PEDERNALES POINT

Leland W. Patterson

ABSTRACT

Using the Pedernales projectile point type as a precise time period border in archaeological sites may be in question, as recent radiocarbon dates for this point indicate that the Pedernales point may have started in use at an earlier date than previously believed.

INTRODUCTION

Since many projectile point types are known to occur within general time ranges. there is a tendency to develop time ranges with precise borders for projectile point types for use as time markers. There are difficulties, however, in using projectile point types to establish precise chronological sequences for archaeological time periods. Some projectile point types were manufactured for periods of several thousand years and overlap time periods of other point types. The Gary-Kent dart point series in southeast Texas is a good example of manufacture of the same point types for a very long time period (Patterson 1983:257). In this case, these point types were manufactured during much of the Archaic period and during the Early Ceramic and Late Prehistoric periods.

This article discusses some radiocarbon dates from southeast Texas that indicate that the published time range for the Pedernales point may be too narrow. Prewitt (1983:Table 1) gives a radiocarbon date range of 3470 ± 80 B.P. for the Round Rock Phase in Central Texas that is associated with the Pedernales point. Two early radiocarbon dates associated with the Pedernales point on the western side of southeast Texas indicate that the Pedernales point type may have started at a significantly earlier time.

DATES ASSOCIATED WITH PEDERNALES POINTS IN SOUTHEAST TEXAS

Hall (1981:49) has published radiocarbon dates of 3270 ± 70 B.P. and 4120 ± 100 B.P. for the stratum associated with Pedernales points at the Allens Creek Site in Austin County. The oldest of these dates is 650 years before Prewitt's (1983:Table 1) earliest date for the Pedernales point in Central Texas.

A radiocarbon date that relates to the Pedernales point has been obtained for a freshwater shellfish sample from site 41 FB 34 in Fort Bend County. This is an excavated site (Patterson and Hudgins 1986) with results showing a deeply buried undisturbed freshwater shell midden. A radiocarbon date of 5210 ± 110 years B.P. (I-15,510) was obtained on a shell sample from the 145-170 cm level of Pit 3. This represents a minimal date for a Pedernales point that was found at 170 cm in this test pit. This date is 1650 years earlier than Prewitt's (1983:Table1) earliest date for the Pedernales point in Central Texas.

If a correction is made for dendrochronologic calibration, the site 41 FB 34 date is 6009 B.P. (Damon, et al. 1974). All comparisons in this article have been made with uncorrected radiocarbon dates, however.

The Pedernales point found at 170 cm at site 41 FB 34 is shown in Figure 1. It has the usual morphology of this point type, but also has ground stem edges which is not common for the Pedernales point (Suhm and Jelks 1962:25). A Pedernales point stem with ground edges was also found at the 120-130 cm level of Pit 1 at this site. Another Pedernales point stem with ground edges was found at nearby site 41 FB 32 (Patterson and Hudgins 1987:13). Pedernales points with ground stem edges are occasionally found in Central Texas. The

earliest Pedernales points at the McCann Site (Preston 1969) in Lampasas County in Central Texas had ground stem edges.

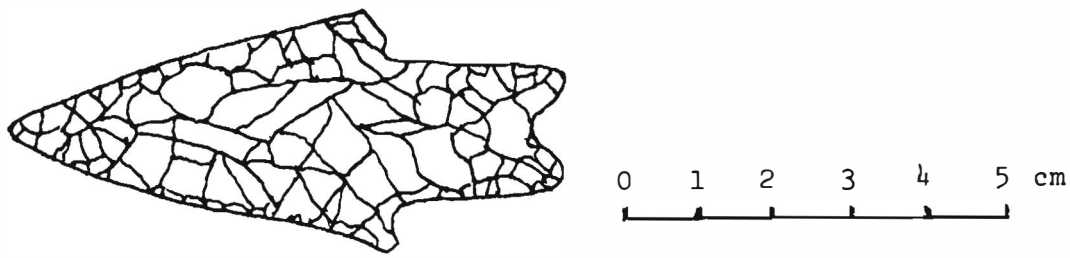

Figure 1. Pedernales point, found at Site 41 FB 34.

DISCUSSION AND SUMMARY

The two early radiocarbon dates associated with Pedernales points from southeast Texas that have been noted here indicate that the Pedernales point may start significantly earlier than Prewitt (1983) has published. It should not be surprising that the Pedernales point may have a longer time range, as some dart point styles do have long time ranges. The radiocarbon dates from southeast Texas would more than double the time range for the Pedernales point of about 900 years given by Prewitt for the Round Rock Phase in Central Texas.

Prewitt's time range for the Pedernales point is based on eight radiocarbon dates, which is not a statistically large sample. It should be noted that the frequency distribution of point specimens versus radiocarbon dates given by Prewitt for the Round Rock Phase forms an open-ended skewed curve (Figure 2, plotted in 200-year intervals). The frequency distribution of points versus

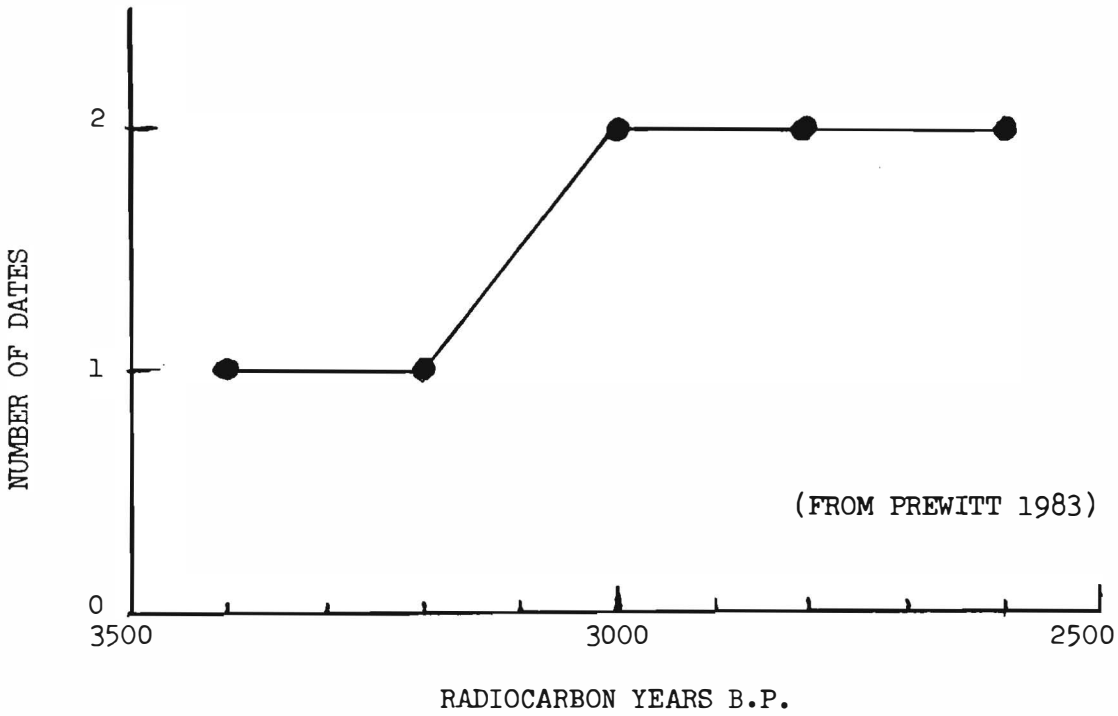

Figure 2. Pedernales projectile point date distribution.

radiocarbon dates for a projectile point type would usually be expected to be bell-shaped, with a low frequency at the start of use, a peak frequency near mid-range of the time period, and a decline in frequency at the end of the use period. The shape of the frequency distribution curve for Prewitt's data (Figure 2) is another indication that the sample size may be too small for use in making firm conclusions on the time range for the Pedernales point.

From the radiocarbon dates given here, it could be argued that the Pedernales point may have started earlier in southeast Texas than in Central Texas. This would not be a very conclusive argument with presently available data, however, as the center of concentration of the Pedernales point is in Central Texas (Turner and Hester 1985:139).

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WRAPPED LIMESTONE FLAKES FROM SHUMLA: A PHYSICAL ANALYSIS OF VEGETAL REMAINS AND POSSIBLE RELATIONSHIP TO OTHER ARTIFACTS

Shaun M. Heavey

ABSTRACT

The identification of leafy material and fibrous binding present on four shaped limestone flakes is discussed. Similar objects from other sites in the region are cited and compared. A connection between wrapped or bound objects in general is suggested, and a relation between painted pebbles and wrapped stones is specifically explored.

INTRODUCTION

In the possession of the Witte Museum are five ovate-shaped limestone flakes from the Milo Canyon and Rio Grande River area of the Lower Pecos River region (see Figure 1). They came to the Museum as part of a larger assemblage of artifacts collected by the George C. Martin Expedition of 1933. Named for a nearby town, a series of shelters comprising the "Shumla" district were surveyed or excavated by the party.

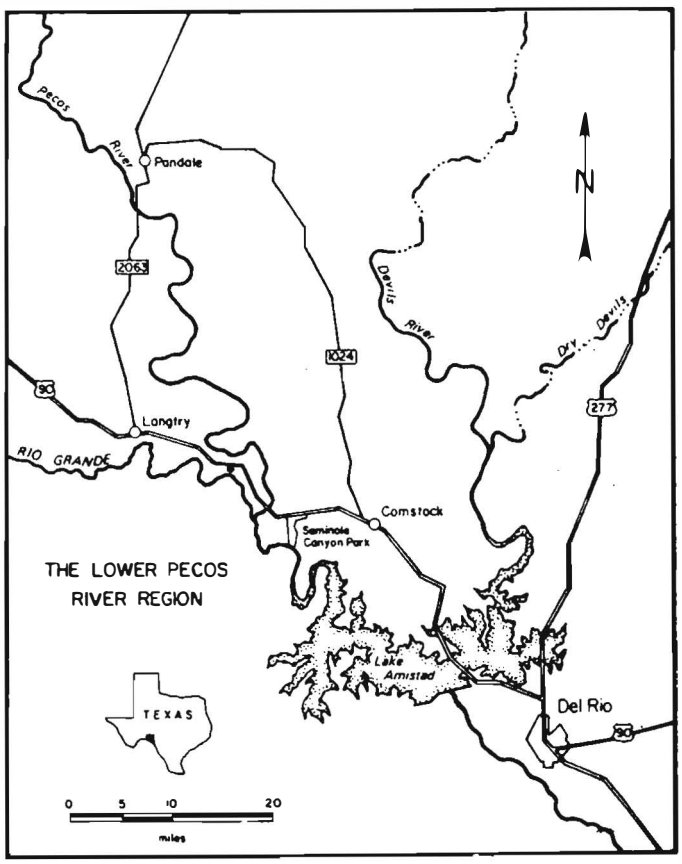

Figure 1. Lower Pecos area of Texas. Small Texas map indicates area of map. Dot indicates Shumla area.

BACKGROUND

Referred to in Martin (1933) under the heading "Grass Tied Stones," four of the limestone flakes represented in Figure 2 exhibit remnants of leaves and plant fiber binding. Prior to November 1987, the perishable material had not been subjected to informed analysis. With gratitude to Dr. Donald McLain, professor of Biology at Incarnate Word College, the leaves have been positively identified as Mountain Laurel (**Sophora secundiflora**), and the binding as sotol (**Dasylirion texanum**). The limestone body of the object may be ceiling or wall spalls from the shelter. One specimen, lacking vegetative remains but included because of similarities in shape and composition, is discolored on one surface in a manner consistent with smoke soot. No spatial or temporal reference is applied to these specimens by Martin in his report, but he does note that they were found in pairs with the exception of one found singly.

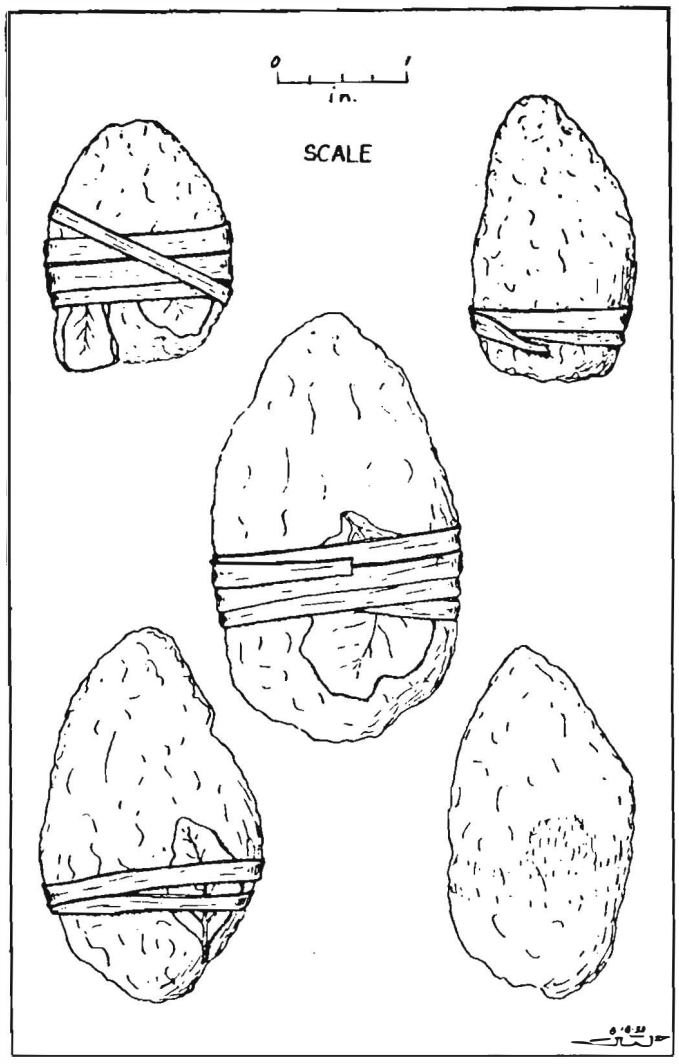

Figure 2. Shaped limestone flakes bound with leaves and grasses. Figure adapted from Martin (1933).

The practice of binding objects is not unique to the Shumla district. In Seminole Canyon, Pearce and Jackson (1933) reported the discovery of fifteen wrapped specimens. Three of the objects were of unworked stone (Figure 3)

varying from 2 1/2 to 3 1/2 inches in length. One of these had a cocklebur (**Xanthium echinatum**) leaf attached to one end with an unnamed "grass" binding. The remaining two stones were similarly wound with plant fiber but lacked leaves. Also included with Pearce and Jackson's "Problematical Tied Objects" are bound bones, small branches, and a prickly pear (**Opuntia**) leaf split by a small stone held in place by a sacahuista (**Nolina texana**) wrapping.

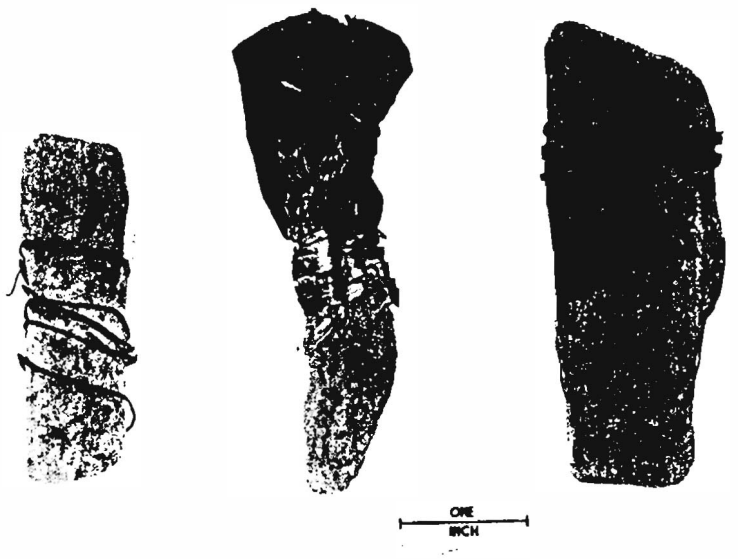

Figure 3. Unworked stone objects wrapped with fiber found in Seminole Canyon. Figure adapted from Pearce and Jackson (1933).

In Brewster County, Coffin (1932) also reports the finding of small unworked stones wrapped in "grass" (Figure 4). Four specimens, 2.6 inches in maximum length. appear to have "thin pieces of some vegetable substance" (ibid.:24) under the bindings. Coffin also notes an unfired clay figurine wrapped with unnamed tree leaves and sotol binding.

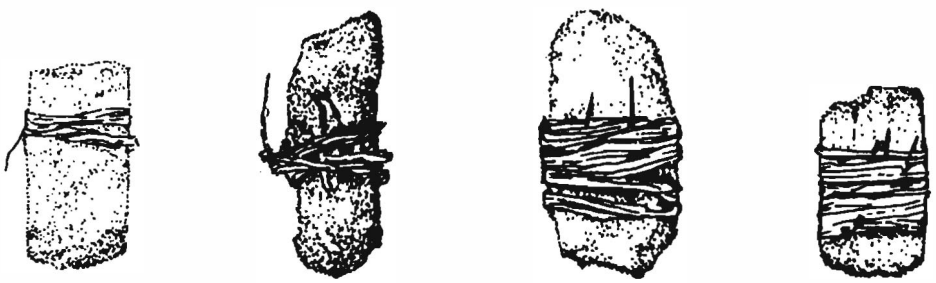

Figure 4. Unworked stones wrapped in fiber, found in Brewster County. Figure adapted from Coffin (1932. Caption indicates "maximum length 2.6 inches.). Drawing by Frances Meskill.

Chelf and Davenport (1941) illustrate five painted pebble specimens from the Trans-Pecos region that exhibit bindings and/or leafy material under sotol wrappings. One specimen (Figure 5) from Val Verde County shows "remains of the proximal and distal ends of a leaf" on both sides of the pebble, held by a sotol binding.

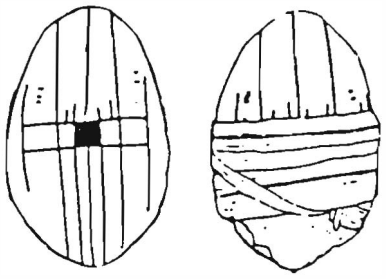

Figure 5. Painted pebble from Val Verde County showing "remains of the proximal and distal ends of a leaf" on both sides of the pebble, held by a sotol binding. Figure shows obverse and reverse sides.

DISCUSSION

The association of sophora with the Shumla specimens and similarities between them and other bound artifacts lends credence to an argument for a ritual/ceremonial context. Their exact use or significance is still speculative, but a closer vegetal analysis of all the objects listed may help show a clearer connection. In particular, I believe there exists a close relationship with painted pebbles and wrapped stones. This belief stems from the occurrence in the region of painted shelter wall flakes (Coffin 1932), unpainted bound flakes, painted pebbles, and the bound painted pebbles described previously. The limestone flakes also generally exhibit the same rectangular, triangular, or ovate shape as the painted pebbles (Parsons 1986).

CONCLUSION

If the bound flakes are found to predate the painted pebbles, one could argue their existence prior to the Painted Pebble tradition. Perhaps they are merely contemporary. The discovery of a painted bound flake would help illustrate a possible sequence of development.

Another possible example of this sequence is Mock's (1987) notice of the similarity between the design on one water-worn pebble (Figure 6) and the sotol

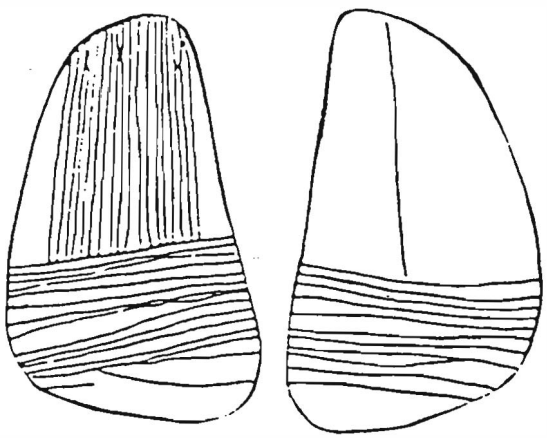

Figure 6. Painted pebble from the Lower Pecos region of Texas (see Parsons, 1986). Figure shows obverse and reverse sides.

bindings on painted pebbles first illustrated by Chelf and Davenport. Is this design imitative of an earlier tradition of ritual binding, or coincidental? A larger sampling of artifacts, new finds, and more research may substantiate this and other possibilities explored.

ACKNOWLEDGMENTS

My thanks to Roberta McGregor of the Witte Museum for the use of the reference material cited, for making available the artifacts which are the subject of this paper, and for the original suggestion to research this topic. To Dr. Donald McLain, special thanks again for his analysis which was the impetus for the report.

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A FOLSOM POINT FROM LIVE OAK COUNTY, TEXAS

Floyd B. Largent, Jr. and Elinore Stewart

ABSTRACT

This brief note documents the recovery of a Folsom fluted projectile point from Live Oak County in South Texas.

INTRODUCTION

The Folsom projectile point described herein was discovered near Choke Canyon Dam, five kilometers from the city of Three Rivers, in Live Oak County, Texas (see Figure 1). Folsom finds (and Paleo-Indian finds in general) seem to be rare from this particular county, although House (1974) reported a "Folsomoid" point near Three Rivers. Folsom finds have also been documented from neighboring McMullen and Atascosa counties (Cooper 1973; Chandler, personal communication, 1988) and are more common in other areas of South Texas (Largent and Waters n.d.)

The specimen recorded here was recovered by Elinore Stewart (of Three Rivers) on a caliche hill overlooking the Frio River, at a site where Choke Canyon Dam now stands. An archaeological research team had recently completed a two-year survey of the area. The thin, gravelly soil on the south side of the river, in the vicinity of the find, had been slightly disturbed by the passage of heavy machinery, and a good deal of lithic material was scattered along the crest and slope of the hill. The Folsom point was recovered from the surface near the top of the hill and was found in association with various other artifacts and debitage.

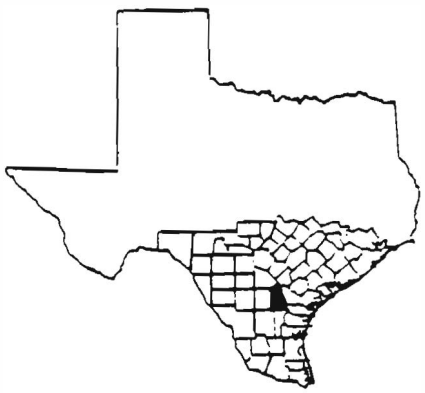

Figure 1. Texas map showing Live Oak County (darkened area).

ARTIFACT DESCRIPTION

The Folsom point from the Choke Canyon Dam site (Figure 2) is classic Folsom made of a pinkish-white agatized wood common to the region. It is small, obviously reworked, and smoothing is present along both lateral edges as well as at the base of the point. The length is 28 mm, maximum width is 20.5 mm, and basal width is 20 mm. The point is thin (approximately 2 mm maximum thickness) and exhibits fine, delicate pressure retouch. It is bifacially fluted, though only the slightest vestige of a nipple-like striking projection is retained at the base. Lengths of the two flute scars are 13 and 16 mm, while their respective widths are 9.5 and 12.5 mm.

Figure 2. Folsom Point found in Live Oak County, Texas. Drawing by E. Stewart.

SUMMARY

This isolated surface find provides Texas archaeologists with yet another piece of the archaeological jigsaw puzzle that represents the Paleo-Indian occupation of South Texas. While Folsom finds are not unknown in this portion of the state, such finds are rare in Live Oak County at least, possibly due to lack of attention from researchers. Though this site is irretrievably lost, increased attention, if focussed upon this area, might eventually help us to better understand the lifeways and range of the early Amerinds who lived there. The author would appreciate any additional information on undocumented Folsom points from this region or other areas of Texas.

ACKNOWLEDGEMENT

I am very grateful to Dr. Michael R. Waters of the Department of Anthropology, Texas A & M University, for his aid in the proofreading and preparation of this manuscript.

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AUTHORS

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C. K. CHANDLER, Secretary of the Texas Archeological Society, 1988-1989, is a retired railroad management official and engineering consultant with an insatiable interest in Texas archaeology. He is Past President of the Texas Archeological Society, a member of STAA, the Coastal Bend Archeological Society, and the Houston Archeological Society. C. K. was the 1985 Robert F. Heizer Award winner for his extensive work in South Texas archaeology (see Vol. 13, No. 1). Also, in 1985, he recorded more archaeological sites with the Texas Archeological Research Laboratory (TARL) than any other individual. C. K. is a valued contributor of manuscripts for La Tierra and the TAS Bulletin covering such varied subjects as metal points, rock art, and hearth field sites in Terrell County. The Chandlers live in northern San Antonio.

MICHAEL B. COLLINS is Senior Staff Archeologist with Prewitt and Associates, Inc. of Austin, Texas. He received his B.A. and M.A. degrees in Anthropology from the University of Texas (Austin) in 1965 and 1968, respectively, and earned a Ph.D. at the University of Arizona in 1974. He retired as Associate Professor from the University of Kentucky in 1982 to pursue research in the archaeology and Quaternary geology of Texas. His research interests include lithic technology, archaeological method and theory, and geoarchaeology; he has conducted investigations in the Near East, Europe, Central America, South America, and the Southwest, Plains, and Southeast areas of the United States as well as all areas of Texas.

GRANT D. HALL is a doctoral student in archaeology at Harvard University, having completed requirements for his A.B.D. and A.M. degrees in 1987. He is a research associate with the Center for Archaeological Research at the University of Texas at San Antonio. His most recent supervisory position was as Co-Director with R. E. W. Adams, investigating the ancient Maya site of Rio Azul in Guatamala. During his work at this site he discovered a 1500-year-old royal Maya tomb, widely reported on national TV and the press and labeled by one of the New York papers as "Grant's tomb." Mr. Hall has numerous publications to his credit, and has lectured to a dozen different organizations in the past ten years. Grant is immediate past prestident of the Texas Archeological Society. His most recent teaching assignment at Harvard in Anthropology 132, New World Civilizations.

SHAUN M. HEAVEY is a native San Antonian who first became interested in archaeology as a teenager while visiting El Paso. During a hike in the Davis Mountains he found some pueblo pottery sherds on the surface. This sparked an avocational interest, leading to a Batchelor of Arts degree from Incarnate Word College, in the field of Native American Studies. Shaun interned at the Witte Museum for one school year and participated in the UTSA field school at the Alamo during the summer of 1988. He has been a member of the STAA for three years.

THOMAS R. HESTER is Professor of Anthropology and Director, Texas Archeological Research Laboratory (TARL) at the University of Texas at Austin. Dr. Hester taught at the University of Texas at San Antonio from the time the University opened in 1973. He created the Center for Archaeological Research and was responsible for developing the B.A. and M.A. programs now available to students of Anthropology. He has done field work in Texas, the Western United States, Belize and Egypt, and is the author of numerous books and papers on archaeology including "Digging into South Texas Prehistory" (1980) and "A Field Guide to Stone Artifacts of Texas Indians" (with Sue Ellen Turner, 1985). As Professor in the Department of Anthropology he teaches both undergraduate and graduate courses, and works with students in the archaeology Ph.D. program.

FLOYD B. LARGENT, JR. was born in Conroe, Texas in 1966, and was raised in that portion of the state except for a few brief periods spent in Arkansas, Louisiana, and Wyoming. In 1984, he graduated as valedictorian of his high school class in Willis, Texas, and went on that fall to begin his undergraduate career at Texas A&M University as a President's Endowed Scholar. After two misdirected semesters as a major in physics, a discipline for which he had absolutely no talent, he decided to pursue his first love--the study of what makes people tick--and transferred into the field of history. This led to a Bachelor of Arts degree in that field in 1988. A passion for understanding the human mysteries of the past led to an intense interest in archaeology, and anthropology in general. He began his graduate work in that field in the fall of 1988, and hasn't looked back since.

JIM MITCHELL is a behavioral scientist with McDonnell Douglas Astronautics Company. He holds a Ph.D. in I/O Psychology from Purdue University and is a retired U.S. Air Force Lt. Colonel. He is the author of a number of publications, including many papers on the archaeology of South Texas and the Texas Panhndle. He is a Steward for Bexar County with the Office of the State Archeologist and the editor of the Texas Archeological Society Bulletin.

LELAND W. PATTERSON has been active in several areas of archaeological research. Subjects of current interest include general lithic technology, the archaeology of southcentral and southeastern Texas, patterns of cultural change, and Asiatic influences on North American lithic technologies. Lee has published over 220 articles and reports in local, state, regional and national journals and has received the Golden Pen award from the Texas Archeological Society for achievement in archaeological publication. He has recorded over 150 prehistoric sites in Texas, Louisiana and Ohio. The current professional position held by Patterson is Manager of Environmental Affairs, Engineering for Tenneco, Inc. His position involves coordination of the technical areas of environmental matters for the business interests of Tenneco, Inc., including cultural resource studies for environmental impact studies and any subsequent mitigation, including the general overview of any archaeological work required.

ELINORE R. STEWART. Born over 70 years ago in Kingsville, Texas, she is intimately acquainted with the South Texas "Brush Country" having lived from the Rio Grande Valley to present Live Oak County. Educated at A&I at Kingsville, she has been a grade school teacher, and for 20 years, a Social Worker for the State of Texas, retiring in 1978. Anthropology and Archaeology have always been of great interest to her, and although never formally educated in those fields, she has made it one of her main hobbies, studying on her own, and joining STAA for continuing information. She and her husband, Lonnie, live in Three Rivers, and he shares her interest in Archaeology.

INFORMATION FOR CONTRIBUTORS

La Tierra publishes original papers and selected reprints of articles involving the historic and prehistoric archaeology of southern Texas and adjacent regions. Original manuscripts are preferred. Articles involving archaeological techniques, methods, and theories are also considered.

Articles may be submitted in any form, although double-spaced typed copy is naturally preferred. However, we will review and work with material in any form to encourage those not comfortable with typewritten or other formal methods; we are more concerned that you submit your ideas and document your materials than the form of materials with which we have to work.

Figure 1 of any manuscript should normally be a county or regional map to show the location of your sites. If you choose not to disclose the specific location of the site, show at least the county with its major river or creek drainages. A small Texas map showing the location of the county in Texas will be added, to provide our readers, who are not familiar with the area, some idea of the general location. Other figures can be line drawings or photographs; line drawings are preferred if they are good quality, since every photograph used costs an extra $50-60 for a metal plate and set-up charges. If you need assistance with illustrations, please let us know--there are several STAA members who have volunteered to help with illustrations. For examples of good maps and artifact illustrations, see the McReynolds article in Vol. 9, No. 4, or the C. K. Chandler article in Vol. 9, No. 3.

All figures should contain an appropriate caption and, where necessary, identification of each specimen (a, b, ... or 1, 2, ...) to aid referencing individual specimens in the text. The suggested procedure is to photocopy your original drawing and write in captions and identification letters on the photocopy. This saves the original for our use in final preparation of camera-ready copy.

Citations of references should be embodied in the text, giving the author, date, and page (e.g., Hester 1980:33). All references cited should be included in a References list using normal archaeological form (see articles in this issue for examples). The Reference list should not include publications not referred to in the text. Personal communications are cited in the text (e.g., Anne Fox, personal communication 1977) but need not be included in the Reference list.

The main objective of this quarterly journal is to provide a way for STAA members and others interested in the archaeology of southern Texas to share the information they have with others. We encourage your full participation through submission of your information for publication; we are particularly interested in receiving manuscripts from those in the less well-known counties of our region, to document even surface finds and old collections. Only through such total member participation can we, as a group, build up a comprehensive picture of the archaeology of our area!

Be sure to indicate the author's name (or names, if more than one author) on the manuscript. Make a photocopy of the submitted material for your records before mailing to the Editor. Each author is mailed two "author copies" upon publication.

Manuscripts or other information may be submitted to: Evelyn Lewis, Editor, **La Tierra**, 9219 Lasater, San Antonio TX 78250. Let me hear from you soon.

THE SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION

The Southern Texas Archaeological Association brings together persons interested in the prehistory of south-central and southern Texas. The organization has several major objectives: To further communication among avocational and professional archaeologists working in the region; To develop a coordinated program of site survey and site documentation; To preserve the archaeological record of the region through a concerted effort to reach all persons interested in the prehistory of the region; To initiate problem-oriented research activities which will help us to better understand the prehistoric inhabitants of this area; To conduct emergency surveys or salvage archaeology where it is necessary because of imminent site destruction; To publish a quarterly journal, newsletters, and special publications to meet the needs of the membership; To assist those desiring to learn proper archaeological field and laboratory techniques; and To develop a library for members' use of all the published material dealing with southern Texas.

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