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Jimmy L. Mitchell
Editor

Cover Illustration: William H. Wharton of Eagle Island Plantation circa 1827. (Adapted from a painting in the collection of Mrs. L. E. Livingston, Seabrook, Texas, as reproduced in: *A Narrative History of Brazoria County* by J. A. Creighton, Waco, Texas; Texian Press, 1975) - See Johnney Pollan's article, page 2.

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EDITORIAL

PREPARING FOR THE TEXAS REVOLUTION

In 1986, Texas will be celebrating the 150th anniversary of its independence from Mexico. The sesquicentennial celebration should be a remarkable one, and preparations (literary, scientific, and commercial) have already begun.

The archaeological community should be prepared to fully participate in this anniversary celebration. No doubt, the recent years of work at or near the Alamo will receive considerable publicity as we approach the anniversary of the famous battle in 1986. We should perhaps anticipate that we should focus on historic archaeology in terms of the articles we publish that year. Thus, please be thinking of the kinds of articles you might do over the next year to prepare for STAA and *La Tierra*'s role in the sesquicentennial year.

As a first step in that direction, this issue contains an article by Johnney Pollan of the Brazosport Archaeological Society concerning the Wharton cemetery on the Eagle Island Plantation in Brazoria County. This article is a good example of how archaeologists can add to our knowledge about the people involved in the Texas Independence movement.

For more details on the relatively new Brazosport Archaeological Society (founded 1981), see page 13.

The Editor

LOCATION OF THE EARLIEST WHARTON FAMILY CEMETERY AT THE EAGLE ISLAND PLANTATION

Johnney T. Pollan, Jr.

INTRODUCTION

The Brazosport Archaeological Society has located the earliest Wharton family cemetery on the former Eagle Island Plantation (See Figures 1 and 2). This was done in response to the requests by local historical groups making preparations for Texas' sesquicentennial celebrations. This cemetery was used from the late 1830s to the early 1860s. At least three men instrumental in the creation of the Republic of Texas are buried in this place: William H. Wharton, John A. Wharton and Dr. Branch T. Archer. Remnants of marble slabs that once covered the graves were found along with two tombstones. Brick-rubble-filled postholes were found that mark the boundary of the cemetery.

HISTORICAL BACKGROUND

The original owner of the Eagle Island Plantation was Col. Jared E. Groce. He abandoned large plantations in Georgia, Alabama, South Carolina and other areas of the old south to build a new cotton dynasty in Texas. He was granted five leagues (22,140 acres) of land in the Stephen F. Austin colony in 1821 from the Mexican Government. He divided this land into three plantations, the Lake Plantation (later the Lake Jackson Plantation), the Evergreen Plantation and the Eagle Island Plantation. Each of these plantations were run by an overseer and administered by Col. Groce's son, Leonard Groce (Berlet 1971:15).

On December 5, 1827, Col. Groce gave his only daughter, Sarah Ann, the Eagle Island Plantation as a wedding gift. A few weeks after the wedding, Col. Groce told his brother in Mobile, Alabama that he wanted an exact copy of a mansion that he had seen there to be built for his daughter and son-in-law. This house was probably the first "ready cut" frame home to be built in Texas. Every plank was numbered when it was cut and everything needed to build the home was assembled in Mobile. The beautiful stairway, window facings, doors, and trimmings were made from mahogany imported from Cuba. The entire "home kit" was shipped by boat to a landing on the Brazos River as near to Eagle Island as possible. Col. Groce's skilled slaves and overseers supervised the erection of the home. Bricks were made from Brazos River clay and fashioned into foundations, walks and chimneys.

The mansion was enormous for those days' standards (see Figure 3). It was 52 feet wide by 98 feet long and had two floors. The lower floor featured a hall 20 by 40 feet which separated two 20-by-20-foot rooms on each side of the hallway. These four lower rooms were used as parlor, dining room, library, and bedroom, with an ell built on the right rear of the home. This ell had an eight-foot corridor leading toward the separate kitchen built behind the home. Another bedroom, 20 by 24 feet, was in this ell. A 12-by-60-foot gallery ran across the front of the house and a 38-foot gallery ran across the ell on the front side of the house (O'Connel 1959:6). The existing log cabins used by the overseer and slaves since 1823 were replaced with frame buildings. The kitchen in which the fireplace took up an entire end of the log building, was left unchanged. The famous library of Eagle Island Plantation was converted to a bedroom by the time it was occupied by Sarah Ann Groce Berlet in the 1870s.

William H. Wharton sent to Scotland for a landscape gardner to beautify the yard and lake that was near the residence. The beauty of the surroundings were widely known at that time and many prominent people from Texas and abroad were entertained at this exquisite place. The gentle gulf breeze, wide expanse of lawn and the landscaped garden on the lake made it an ideal place to spend the summer.

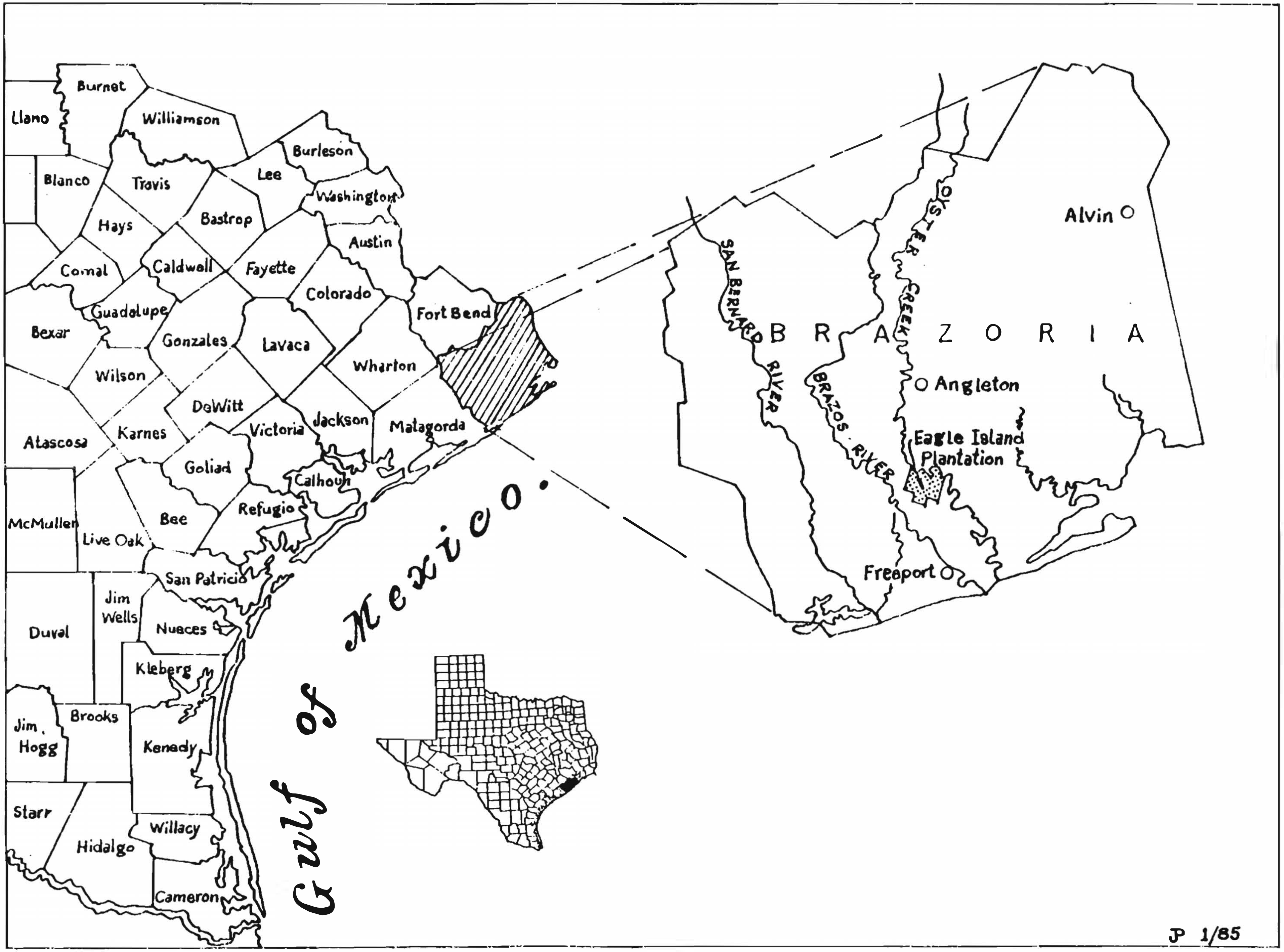

Figure 1. Location of the Eagle Island Plantation (41 BO 143), Brazoria County, Texas.

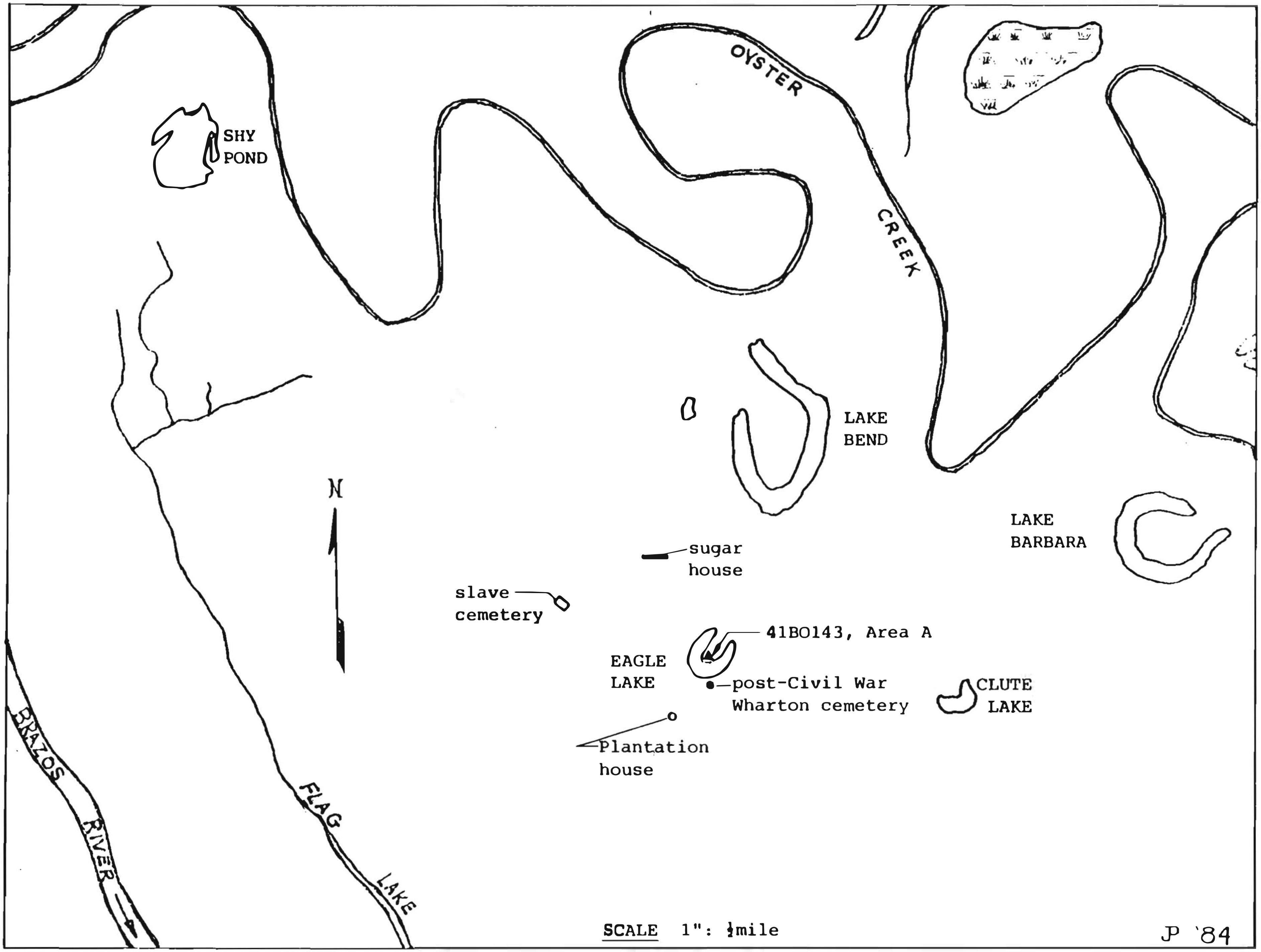

Figure 2. Part of the Eagle Island Plantation showing known locations of buildings and cemeteries.

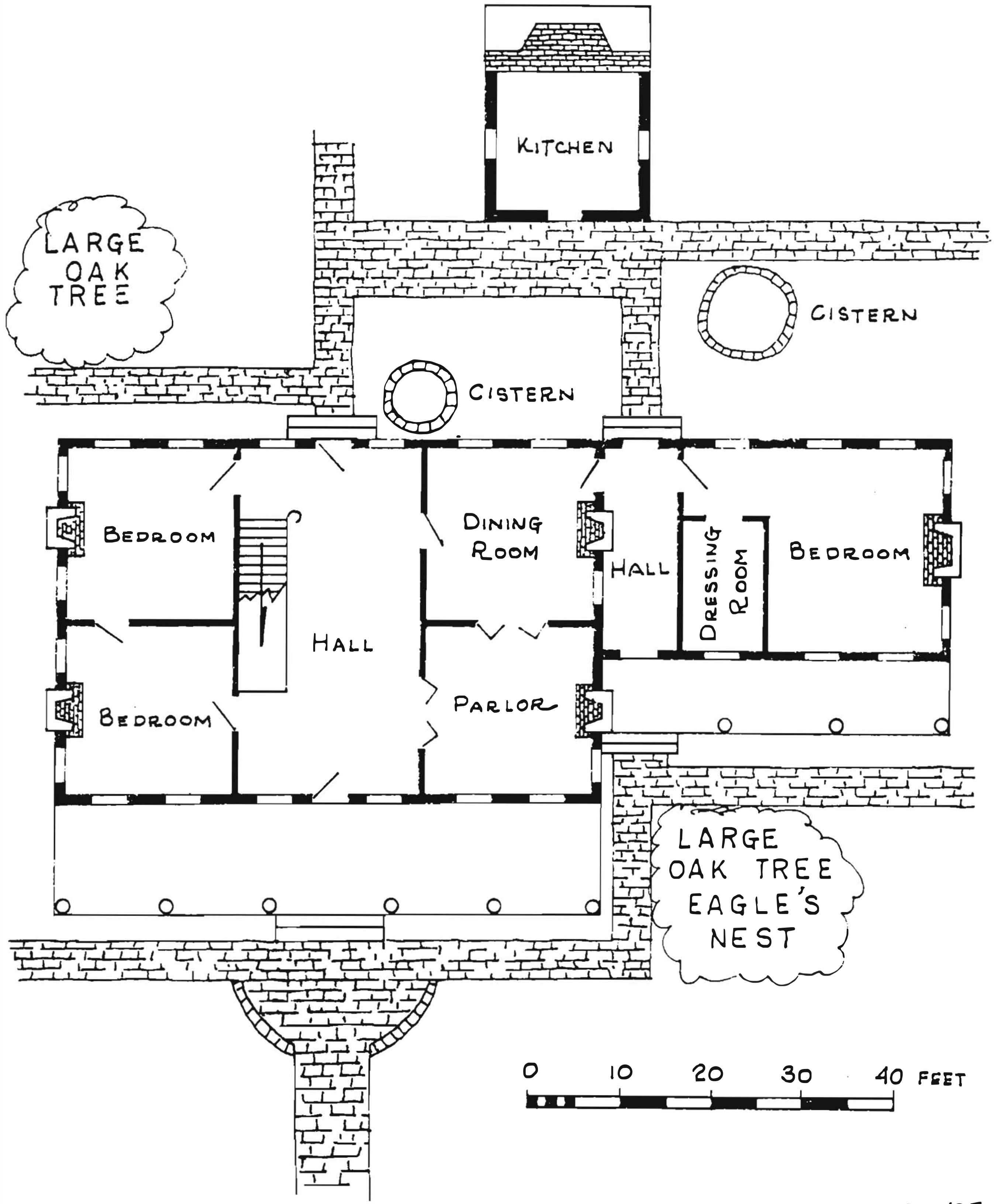

Figure 3. Eagle Island Mansion. Floor Plan as Presented by Sarah Groce Berlet; Ground Floor--second floor similar.

Mr. and Mrs. Wharton were ideal hosts. Both of them had fine taste, worldly culture, and income sufficient to entertain on a lavish scale (Strobel 1980:37). Their library was one of the finest in Texas at this time.

William Harris Wharton was born in Albermarle County, Virginia, in 1802. He moved to Nashville, Tennessee while still a child. He was orphaned at the age of fourteen. He attended school in Nashville and was admitted to the bar in 1826. After his marriage to Sarah Ann Groce, the young couple returned to Nashville for business reasons. In 1831, William and his family returned to Eagle Island to start a sugar plantation. He purchased a double set of machinery in Philadelphia for use in the sugar house. The purpose for this redundancy was to have the spare parts necessary should a breakdown occur and so avoid any delay in production (Strobel 1980:37). William fought in the battle at Velasco, June 26, 1832, as a member of Capt. John Austin's company. In 1832 and 1833, he served as a delegate from Victoria to the conventions at San Felipe, holding the office of president in the 1833 convention. He, with Stephen F. Austin and Dr. Branch T. Archer, were commissioners to the United States to seek aid for the struggling Texans in their efforts for independence from Mexico. William was appointed the first Minister of the Republic of Texas to Washington City by President Houston in November, 1836. In 1837, William was elected senator and his brother John A. Wharton was elected representative. The family moved to Houston, then the capitol of the Republic of Texas, and stayed there until the unfortunate accident that took the life of William. It seems that on a visit to Col. Leonard W. Groce, he accidentally shot himself when drawing his holster pistol from its scabbard while dismounting to go in the house.

John Austin Wharton, the brother of William H. Wharton, was born in Nashville, Tennessee, April, 1806. He was orphaned at the age of ten and he and his brother were raised by a wealthy and capable uncle. He was admitted to the bar before he was twenty-one, but found the field overcrowded. He moved to New Orleans in 1830 where he practiced law for three years. In 1833, he joined his brother in Texas. He attended the Consultation of 1835 as a delegate from Columbia, and served briefly as a member of the General Council of the Provisional Government. He joined the Texas army and served as Adjutant General on Houston's staff and participated with valor at San Jacinto. He was elected Representative from Brazoria for the First and Third Congresses. He died in December, 1838, and was buried with military and Masonic rites. His funeral oration was delivered by former President David G. Burnet. President Burnet said of him, that "he was the keenest blade on the field of San Jacinto." He was buried in Houston, but later his remains were removed to Eagle Island (Berlet 1971:35). When Wharton County, Texas, was organized in 1846, it was named in honor of the role of the Wharton Brothers in the building of the Republic of Texas.

Waller Wharton was born to William and Sarah Ann in Nashville, Tennessee, in 1829. William changed his son's name to John A. Wharton shortly after the death of his brother. When William died, Sarah Ann devoted her life to the rearing of her only child. He was sent to South Carolina to attend college, and when he finished, he read law under the Hon. William Preston, the famous lawyer and statesman of Columbia, South Carolina. He married Penelope Johnson, the daughter of the governor of South Carolina. John was elected Attorney of Brazoria County and later Sheriff. When the Civil War started, he raised a company and became a member of the 8th Texas Cavalry, better known as Terry's Rangers. On the death of Col. B. F. Terry, he was elected colonel of the regiment. He finally rose to the rank of Major General, with command of all Cavalry west of the Mississippi River. He survived the war only to be killed by one of his former command, Col. George Baylor, at the old Fannin House in Houston.

With the death of her son, Sarah Ann undertook the task of rearing and educating John's only child, Kate Ross Wharton. In 1871, Kate Ross died at the age of eighteen. In 1876, Penelope Johnson Wharton died leaving Sarah Ann alone. An impoverished Sarah died in 1878 and was buried near her granddaughter and daughter-in-law on the south side of Eagle Lake.

By 1879, only 3,325 acres remained of the original plantation. This property was willed to Sarah Ann's nephew, William Wharton Groce (Deed Vol. T, 1879:92). In 1881, he sold 3,125 acres to Harris Masterson for $983.57 (Deed Vol. T, 1881:342). This money was used to pay off debts incurred by Sarah Ann before her death. William Groce retained the residence including 200 acres of land as a homestead. Masterson sold the 3,125 acres to a northern syndicate who in turn subdivided the property into small farms and sold them. In 1892, Leonard C. Groce, acting as guardian for William Wharton Groce's two daughters, Sarah Ann and Kate Willene, sold the remaining 200 acres including the house to D. R. Pearson for $325.00 (Deed Vol. 17, 1892:177). The 1900 hurricane destroyed the house and the remains were used to repair other damaged homes in the area. Through the years, traces of the home and the family cemeteries by the lake gradually disappeared under silt and vegetation. The property was acquired by the Brazoria Cemetery Association and Restwood Memorial Park was initiated when the first burial lot was sold in January, 1946. The present cemetery has engulfed the site of the residence and its outbuildings. The urban growth of the cities of Lake Jackson and Clute have also taken their toll on the few remaining buildings and occupation areas of the plantation (i.e., the sugar house, slave quarters and slave cemetery).

PRESENT WORK

In December, 1983, members of the Brazosport Archaeological Society located the remains of the earliest Wharton family cemetery (41 BO 143, Area A). From a map drawn by Sarah Ann Groce Berlet, the approximate location of the cemetery was shown to lie on a point of land directly across the small lake from the graves of Sarah Ann Groce Wharton, Penelope Johnson Wharton and Kate Ross Wharton. Using probes, a number of pieces of flat marble were found. These pieces were approximately 1 1/2 inches thick and were remnants of larger slabs.

A datum was established near a large pecan tree and an area of 50 feet by 90 feet was laid out into 10-foot grids. Continual probing located 38 pieces of marble and 26 brick-rubble-filled postholes that once supported the wooden fence that formerly marked the cemetery boundary. The cemetery is rectangular, 40 feet 6 inches by 73 feet 10 inches and oriented north to south along its longitudinal axis (see Figure 4). Two 16-foot openings existed at the north and south ends. At the southeast corner, a five-foot space between postholes may indicate a gateway. Generally, the posts were set eight to nine feet apart (center to center) and buried two feet deep. Posts were three to four inches square and located either in the center of the posthole or placed against the wall of the posthole. A remnant of one of the posts was found still in its posthole. This remnant appears to be oak.

A collection of 13 marble fragments was discovered in the northwest section of the cemetery. Nine pieces were one and one-half inches thick, which, when fitted together, formed one end of a large slab. The original slab had been two feet wide, but its length could not be determined from the remaining pieces. The edge of this slab is lipped, possibly indicating its use as a lid. The remaining four marble slabs are each nearly one and one-half feet long, two inches thick and six inches high, with one edge carefully dressed to a flat surface. These slabs seem to have formed the side walls of the grave on which the slab that served as a lid could have rested.

Just south of this mass of marble, three human skull fragments were found. Two of the fragments were portions of a cranium and the third was part of a mandible. Three short, square nails, one and one-half inches long, were found among the marble fragments. There is no doubt that the skull fragments and nails come

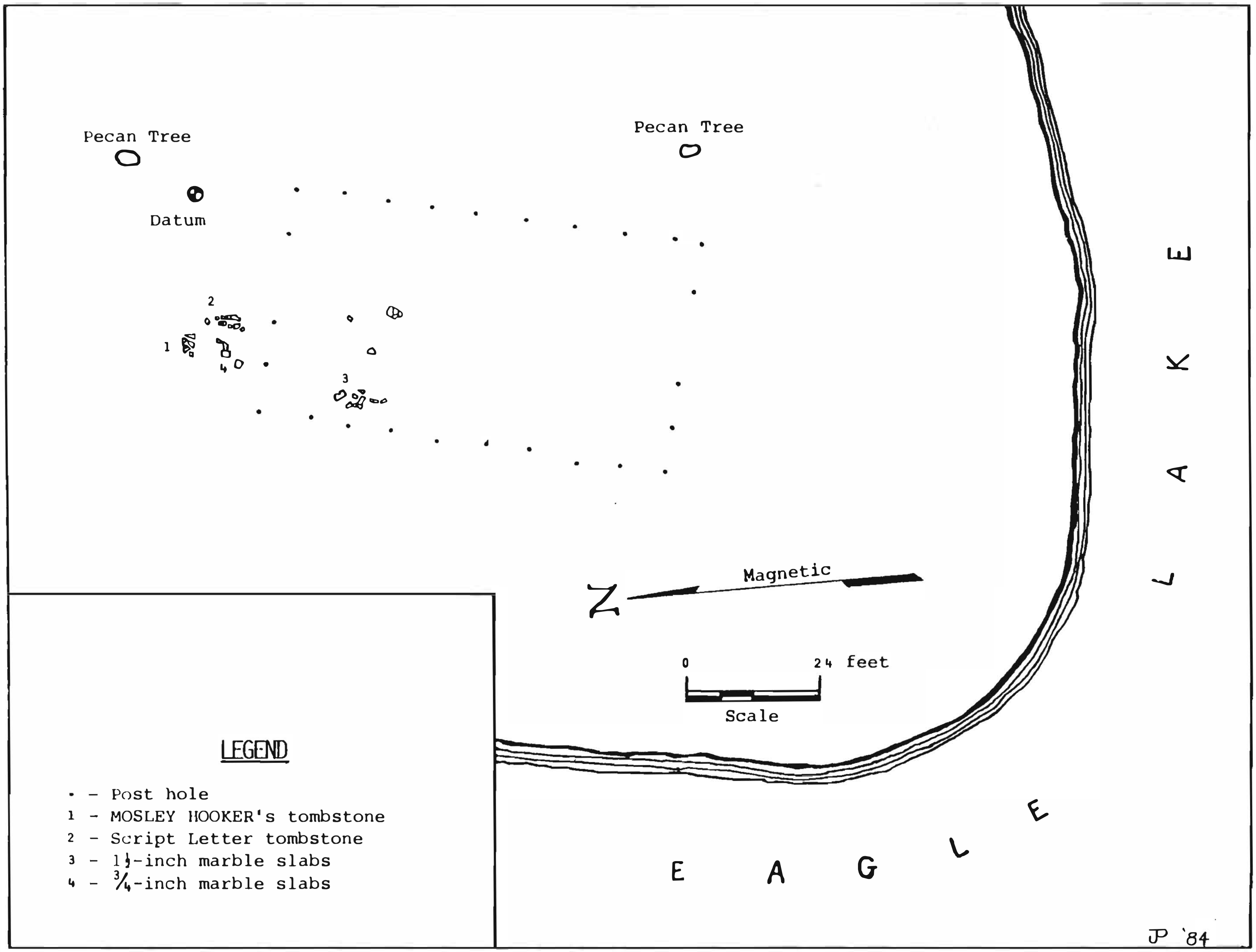

Figure 4. Eagle Island Cemetery (41 BO 143, Area 'A')

Figure 5. The tombstone of Mosley Hooker, *in situ*.

Figure 6. The six pieces of Mosley Hooker's tombstone arranged in their proper location.

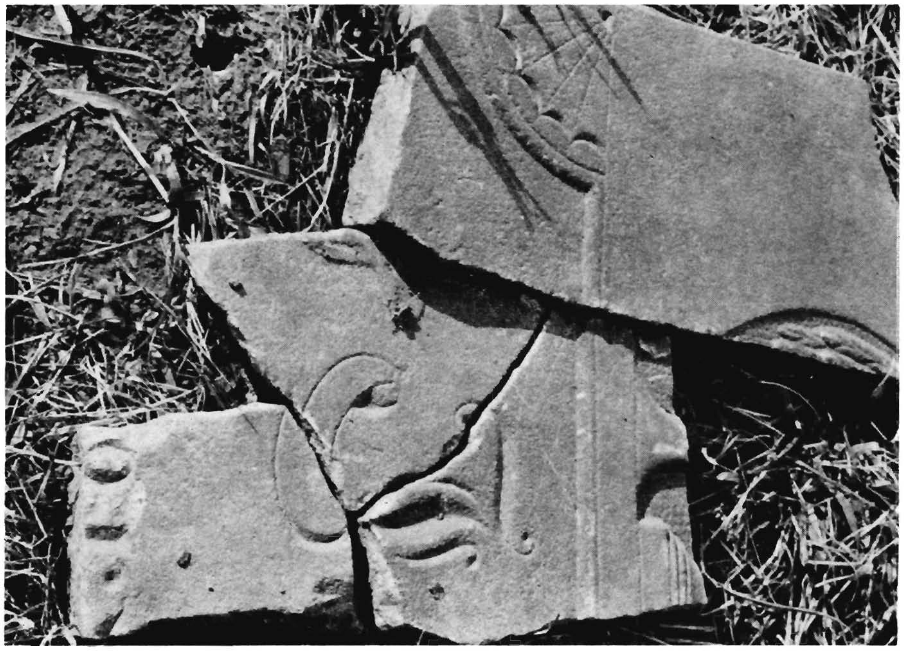

Figure 7. A close-up view of the script letter on the second tombstone.

Figure 8. Looking south toward the vaults of Kate Ross Wharton and Sarah Ann Groce Wharton. The lake appears as the dark area in the center of the photograph.

from these burials. How these objects traveled to the surface is not known for certain, but speculation would support two possibilities: the first is that looters looking for valuables buried with the deceased may have desecrated the cemetery sometime after the turn of the century; or the second, and most likely, is that animal activities such as burrowing and den-building disturbed the burials.

Two tombstones were found outside and just north of the cemetery boundary. Only one of the tombstones contained the name of the person for whom it was made. This stone had marked the grave of Moseley Hooker, who died August 19, 1840 and was 44 years old. The stone was approximately one inch thick and broken into six pieces (Figures 5 and 6). The second tombstone was only a fragment of a larger and more ornate stone. When fitted together (10 pieces), the tombstone appears to be decorated at the top with a sheaf of wheat. Below this is a large script letter which may be an "F", a "J" or a "T" (Figure 7). However, nothing could be derived from the faint etching which indicated a text below the script letter.

CONCLUSIONS

This cemetery, located on the former Eagle Island Plantation, was used by the Wharton family and by their neighbors. The earliest known burial made in the cemetery may have been John Austin Wharton's in December, 1838. His brother's, William H. Wharton, followed shortly thereafter in March, 1839. One of the last recorded burials was that of their friend, Dr. Branch T. Archer, in September, 1856. After the Civil War, the Wharton family buried their dead across the lake nearer to the residence (see Figure 8). William W. Groce stated that the graves of William H. Wharton and John A. Wharton were covered with flat marble slabs and in good condition when he sold the property (Berlet 1971:75). However, the cemetery fell into ruin and when Abner J. Strobel visited the site in the 1920s, he made this observation: "I suppose there are a hundred people buried there, and I am sorry to say the graves have been desecrated. Many of the marble slabs have been removed that marked their last resting place, and now you cannot tell the graves of any--all were formerly plainly marked so one could find them in after-years. They must be ghouls indeed who could thus invade the City of the Dead" (Strobel 1980:37-38). The site was rediscovered in 1946, when S. G. Marshall, manager and part owner of the Restwood property, stumbled onto one of the lost gravestones. He found that a tall marble tombstone, bearing a wheat sheaf design, had fallen and broken into three pieces (O'Connell 1959:5).

It is impossible to identify the graves of individuals without excavating the burials. Although this might render some information, it most likely would not help to identify whose burial they are. Depressions abound throughout the cemetery terrain, and all of these depressions are potential burial sites.

RECOMMENDATIONS

In consideration of the fact that this cemetery contains the remains of several prominent citizens of the early Republic of Texas, and since the main boundaries of this cemetery have been found, I recommend that this site be added to the list of historical places in Texas and preserved for its historical value. Consequently, should this property be developed, special care should be taken to the north of the cemetery's present boundary since there are indications of possible burials outside these clearly delineated boundaries, such as the two above-mentioned tombstones.

ACKNOWLEDGEMENTS

My thanks to Restwood Memorial Park, Inc. for their willingness to work with the Brazosport Archaeological Society and for giving permission to search their property for the cemetery. Their interest led to the 1984 study of a number of plantation-related structures on their property. I would also like to thank James Smith for his ability to continually supply reference material, which was used to develop the historical portion of this paper. Finally, a sincere thanks to Anne Fox of San Antonio who took the time to provide constructive criticism of the earliest form of this report and for giving much-needed words of encouragement to complete the work.

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August 23: Eagle Island--A Gift to a Bride
August 24: Eagle Island--Life on the Plantation.
August 25: Eagle Island--Gracious Way of Life Begins
August 26: Eagle Island--Texas Revolt Begins
August 27: Eagle Island--Tragedy Strikes
August 28: Eagle Island--Civil War, Aftermath
August 29: Eagle Island--Conclusion

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Brazoria County Deed Records

1879 Volume S
1881 Volume T
1892 Volume 17

BRAZOSPORT ARCHAEOLOGICAL SOCIETY

400 College Drive
Lake Jackson, Texas 77566

The Brazosport Archaeological Society is a non-profit organization created to stimulate an active interest in the discovery, conservation and salvage of archaeological sites and the recording and preserving of archaeological remains using scientific procedures. Its objectives include: 1. To preserve and protect prehistoric and historic remains of Brazoria County and the region; 2. To educate members and the public in archaeological and ethnological fields; 3. To conduct archaeological studies, research, surveys and excavations; 4. To publish data obtained from research studies; and 5. To cooperate with other scientific institutions or organizations. The B.A.S. also publishes a periodic newsletter.

President - James Smith
Vice-President - Jerry Slagle
Secretary - Johnney Pollan
Treasurer - Chris Kneupper

Regular meetings are held on the second Tuesday of each month at the Brazosport Museum of Natural Science, 400 College Drive, Lake Jackson, Texas. Laboratory sessions are held on scheduled Saturdays at the museum from 9 AM until 1 PM. The Brazosport Archaeological Society is an affiliate of the Brazosport Museum of Natural Science and works within its stated objectives, rules, and by-laws.

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A STATISTICAL ANALYSIS OF ARCHAIC PROJECTILE POINTS FROM THE NUECES RIVER AREA OF CENTRAL SOUTH TEXAS: THE BROM COOPER COLLECTION

Paul M. Ward

ABSTRACT

The late Brom Cooper systematically collected artifacts from selected ranch sites on both sides of the Nueces River in Duval, La Salle, Webb, and McMullen Counties; his efforts have resulted in a very comprehensive data base for evaluating archaeological constructs in the southern Texas region. Analysis of 2213 Archaic projectile points from sites north and south of the Nueces River revealed substantial differences in the relative occurrence of Central and South Texas point types. Thus, the Nueces River seems to represent some type of cultural boundary during the Archaic period.

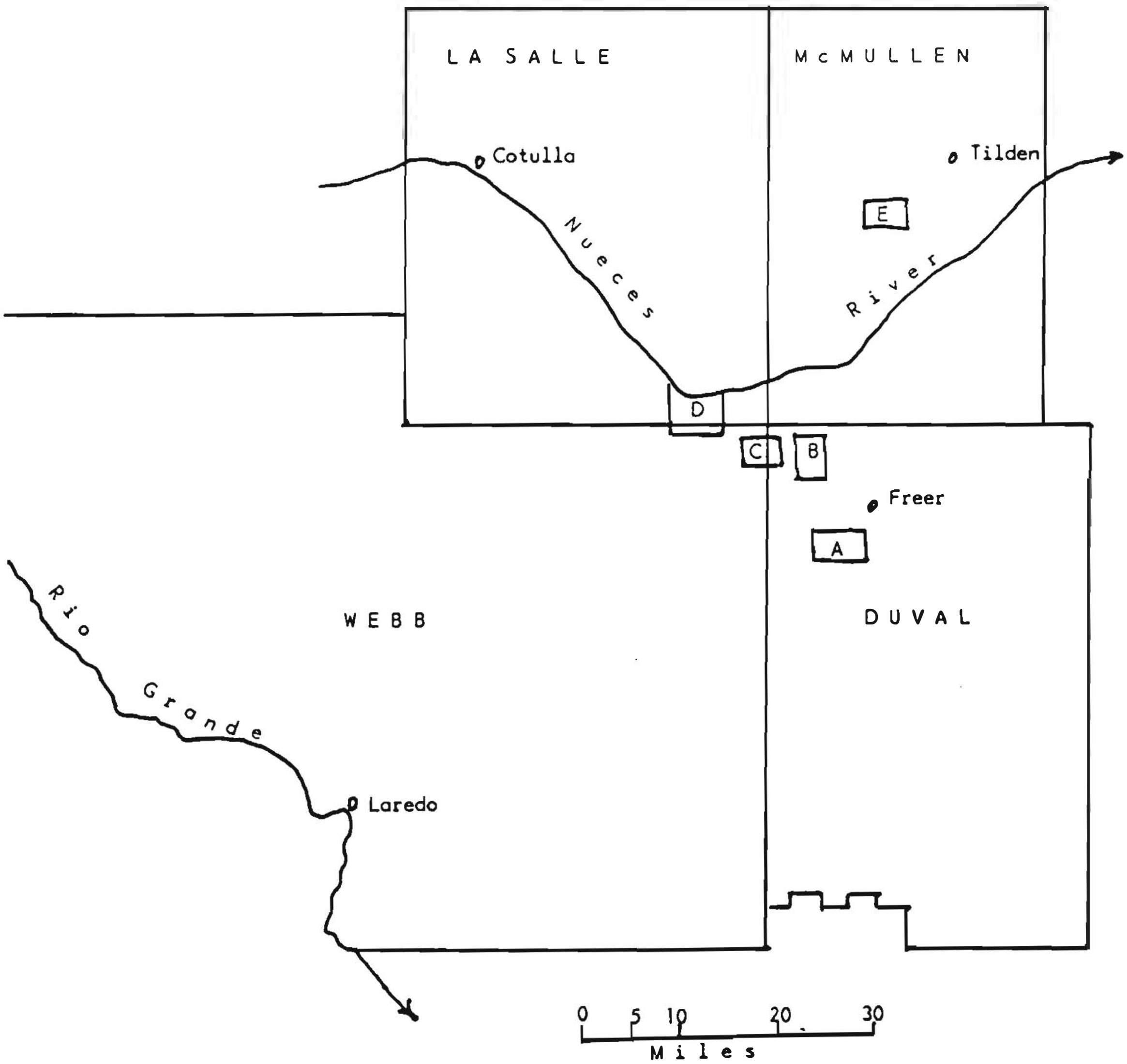
INTRODUCTION

Several years ago, Bromley (or "Brom") Cooper of Kingsville, Texas loaned his extensive collections of prehistoric artifacts to the Southern Texas Archaeological Association for documentation and research. Several thousand artifacts were collected systematically over a 15-year period and their provenience documented as to county, ranch, and in many cases, to specific site. Most of the McMullen County artifacts have been analyzed and reported previously (Hemion 1980 a & b; Jones 1981; Woerner and Highley 1983; and Kelly 1983) as has a metal point from Victoria County (Mitchell and Highley 1982). This article summarizes most of the remainder of the Brom Cooper Collection including Archaic projectile points from Duval, La Salle, and Webb Counties, and contrasts the materials from south of the Nueces River with data from central McMullen County north of the Nueces reported earlier by Woerner and Highley (1983).

DATA

The 2213 Archaic projectile points in the Brom Cooper collection were recovered from various ranches in a four-county area. Most of the points in the collection (1437 specimens) come from sites south of the Nueces River in La Salle, Webb, and Duval Counties (see Figure 1, A-D); Collection Area A is in central northwest Duval County, just southwest of Freer, Texas. Area B is northwest of Freer in far northwestern Duval County, while Area C includes ranches in both northeastern Webb County and northwestern Duval County. Area D is just south of the Nueces River, primarily in La Salle County but also includes a small part of northeastern Webb County. The 876 Archaic points reported earlier (Woerner and Highley 1983) are from central McMullen County southwest of Tilden, Texas (Figure 1,E).

Table 1 summarizes the relative distribution of Central and South Texas projectile point types for each of the collection areas. The specimens for Collection Areas A - D were classified by Charles K. Chandler; data for Area E are based on information reported in Woerner and Highley (1983, Chart 1). They reported the actual number of specimens of each type recovered. For the present study, the actual frequencies have been translated into relative proportions (percentage of occurrence) for each area. Since the total number of specimens recovered varies by collection area, the only valid comparison among the areas is in the relative proportion of types for each locality. Corbin used a similar methodology in comparing dart point styles of the central Texas coast to highlight differences north and south of Corpus Christi Bay (Corbin 1974:Figure 6).



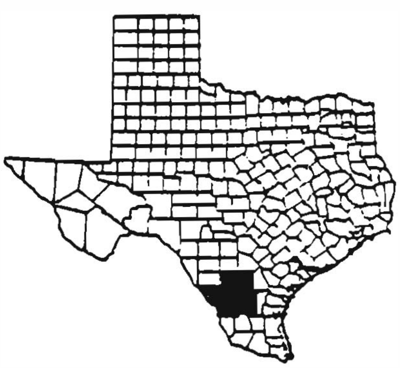


Figure 1. Area of collection of Archaic points by Brom Cooper. See text for description of Areas A-D.

TABLE 1

Percentage of Points Found in Each Area*

POINT TYPES	Column 1 Area A	Column 2 Area B	Column 3 Area C	Column 4 Area D	Column 5 Area E	Column 6 Areas A-D	Column 7 Areas A-E
Abasolo	22.00	14.20	7.90	15.80	5.60	14.20	11.80
Andice	0	0	0	0	0	-	-
Bell	0	0	-	-	-	-	0.10
Bulverde	0	1.40	0.90	-	1.50	0.50	0.90
Carrizo	-	0	0.40	0	0.30	0.20	0.30
Catan	13.10	21.30	15.20	18.20	9.00	15.60	13.00
Darl	0	-	0.40	0	4.30	0.20	1.80
Desmuke	22.50	18.40	20.90	22.50	13.60	21.80	18.70
Edgewood	-	0	0.90	0	1.50	0.40	0.80
Ellis	-	1.40	0	0	0.30	0.20	0.30
Ensor	0.90	2.80	0.40	1.40	8.80	1.00	4.00
Fairland	0.60	-	0	0	2.30	0.30	1.00
Fresno	0	0	-	-	-	0.10	-
Frio	1.10	1.40	1.30	0	2.30	1.00	1.50
Gary	0	0	1.10	0	-	0.30	0.20
Gower	0	0	0	0	0.70	0	0.30
Kinney	0	0	0.70	0	-	0.20	0.10
Kent	1.50	0	0.70	0	1.50	0.80	1.00
Lange	0	0	0	0	-	0	-
Langtry	2.00	-	3.50	2.40	4.50	2.40	3.20
Lerma	3.30	-	2.90	3.10	6.00	2.90	4.00
Marcos	0.60	0	0	-	0.60	0.30	0.40
Martindale	0	0	0	0	-	0	-
Matamoros	17.50	18.40	18.70	15.80	9.00	17.60	14.30
Paisano	0.60	0	0.70	-	0.50	0.50	0.50
Palmillas	1.10	0	0.40	-	4.00	0.60	1.80
Pandora	0.40	-	0	0	0.60	0.20	0.30
Pedernales	0	0	0.40	-	2.20	0.20	1.00
Refugio	0	4.30	3.10	4.50	6.20	2.30	3.80
San Patrice	0	0	0	0	0.50	0	0.20
Tortugas	12.20	12.80	18.20	13.70	13.60	14.50	14.10
Travis	0	0	0	0	-	0	-
Wells	0	0	0	0	1.10	0	0.40
Yarbrough	0.40	0	0.70	0	0	0.40	0.20
TOTAL POINTS	550	141	455	291	876	1437	2213

* A dash indicates that only one specimen of the type was found.

Columns 1 through 5 show the percentages of points found in each area. A zero ("0") means that no specimen of that type was found, where a dash ("-") indicates that only one point of the type was recovered. Column 6 is a weighted average of Columns 1 - 4 (Areas A - D), which characterizes the region south of the Nueces River. These data can be compared directly with Column 5 (Area E) which represents central McMullen County north of the Nueces. Note that the typical South Texas types (*Abasolo*, *Catan*, *Desmuke*, *Matamoros*, and *Tortugas*) are the predominate types in both samples (that is, both north and south of the river). This pattern is also seen in Column 7, which summarizes the entire collection (n = 2213); only these typical South Texas types occur as 10 percent of the total sample or higher. By being based on such a large collection, Column 7 gives a very good picture of the relative distribution of the various types for this entire big bend area of the Nueces River in South Texas. Although the stemless South Texas types are predominate, the relative occurrence of types from other areas may yield some information about the cultural dynamics of this region of the state.

ANALYSIS

If we compare the Area E data (Column 5) with that from south of the river (Column 6, Areas A - D), we can see that there are some substantial differences. For example, *Abasolo* points make up 14.2 percent of the sample for Areas A - D but only 5.6 percent among the projectile points from central McMullen County. Thus, there appear to be some systematic differences in the relative occurrence of the various types north and south of the river.

The differences are quantified in Table 2 to show the relative increase or decrease in proportion of any type as we move from south to north across the Nueces River (the data in Table 1, Column 5 divided by Column 6.) A greater percentage north of the river is shown as an increase (Column 1 in Table 2) where a negative product is shown in Column 2 as a decrease in frequency north of the river. These data can be read as the relative probability of occurrence of a type north of the river. For example, *Abasolo* points are two-and-a-half times less likely to be found at sites north of the Nueces River than on sites south of the river. Yet *Pedernales* points are eleven times more likely to be found north of the Nueces River. Certainly, differences of this magnitude are statistically significant (since the expected value would be equal distribution across the area for any given type). Since the difference values are based on such a large sample, they indicate a very real effect. Nor are the differences random; they fall into a specific pattern.

Note the clear indication that unstemmed point types (*Abasolo*, *Catan*, *Desmuke*, *Matamoros*, and *Tortugas*) are less likely to be found north of the river. Such forms are considered typical South Texas points (Hester 1980; Woerner and Highley 1983). There is also a complementary pattern in that Central Texas stemmed forms (*Bulverde*, *Darl*, *Edgewood*, *Ensor*, *Fairland*, *Frio*, *Palmillas*, *Pedernales*, *Refugio*, and *Wells*) are all at least twice as probable north of the river. In the most extreme case, *Darl* points are twenty-one times more likely north of the river. These results suggest there is some validity to these groupings of types as characteristic of South Texas or Central Texas during the Archaic period, although obviously there is some overlapping.

CONCLUSIONS

This study was begun as a documentation of a major collection but as the work progressed, distributional trends were noted that warranted closer examination. This led to combining the Duval, La Salle, and Webb County data with that of the Woerner and Highley study of central McMullen County, to determine if the trends were valid. The larger sample showed a significant difference in the occurrence of certain points north of the Nueces River in comparison with those found south

TABLE 2

Magnitudes of Increase/Decrease in Point Percentage
from South to North of the Nueces River

	Increase	Decrease
Abasolo		2.53
Andice	-	-
Bell	-	-
Bulverde	3.00	
Carrizo	-	-
Catan		1.73
Darl	21.50	
Desmuke		1.53
Edgewood	3.75	
Ellis	-	-
Ensor	8.80	
Fairland	7.66	
Fresno	-	-
Frio	2.30	
Gary	-	-
Gower	-	-
Kinney	-	-
Kent	1.88	
Lange	-	-
Langtry	1.88	
Lerma	2.07	
Marcos	-	-
Martindale	-	-
Matamoros		1.96
Paisano	-	-
Palmillas	6.66	
Pandora	-	-
Pedernales	11.00	
Refugio	2.70	
San Patrice	-	-
Tortugas		1.06
Travis	-	-
Wells	11.00	
Yarbrough	-	-

NOTES:

1. Only when number collected constituted 1 percent of total collection was magnitude shown.
2. Total in collection - 2,213.
3. May be skewed due to classification variance.
4. Example: *Abasolo* from 14.2 percent of the collection south of the Nueces to 5.60 percent north of the Nueces.
   Pedernales from 2.20 percent of the collection north of the Nueces to 0.20 percent south of the Nueces.

of the river. Typical Central Texas point types appear to phase out at the Nueces River, and certain South Texas types are less frequent north of the river.

The distributional patterns documented in this paper appear significant. The major differences which occur as a local inconformity within an area twenty miles either side the southern bend of the Nueces River lead to several speculations. Was the environment of the area just north of the Nueces more like that of Central Texas during Archaic times? Was the Nueces a social or cultural boundary that marked the southern end of the Central Texas Archaic cultural area? Previous researchers have speculated that the Nueces River might be such a cultural boundary during the Late Archaic (Mitchell 1974; Hall 1982). The results of the present analysis tend to reinforce their finds and confirm that such a boundary did exist during at least the middle and late Texas Archaic.

There is still more valuable information in Brom Cooper's collection that warrants future study. The collection is particularly important because of its significant size, its collection by one experienced avocational archaeologist (thus controlling for sampling bias), and the systematic recording of provenience. Because of Brom Cooper's very dedicated approach to archaeology, we can have confidence in the data and faith in the results of this analysis. The evidence is highly persuasive that the Nueces River was an important cultural influence during the Archaic period in this area of Texas.

[EDITORIAL DISCUSSION - The results reported in the foregoing study seem to clearly document the difference in relative frequency of South and Central Texas types north to south across the Nueces River during the Archaic period, although there is obviously some overlapping in both time and space. Secondly, the findings are very similar to those of Corbin along the Central Texas coast where he demonstrated that unstemmed forms (such as *Abasolo*) predominate south of the Nueces River and Corpus Christi Bay, where stemmed forms (such as *Darl* and *Bulverde*) occur mainly north of the Bay (Corbin 1974:34).

A few minor inconsistencies between Corbin's data from the coast and the Brom Cooper collection data from along the large southern bend of the Nueces River require attention. For example, Corbin's data suggests that *Refugio* points are found only south of Corpus Christi Bay, which would infer they are a South Texas type. In the Cooper collection, however, more *Refugio* points are found north of the river (about two-and-a-half times more likely to be found there). On the coast, *Abasolo* points are twice as likely to be found north of the bay, yet in the Cooper collection, such points are two-and-a-half times less likely to be found north of the river. These seemingly contradictory results are possibly a function of a relatively small sample in Corbin's coastal synthesis.

Lerma points are also about twice as likely to be found north of the Nueces in the Cooper collection from the interior where they are not reported at all in Corbin's study of the central Texas coast. Yet *Lerma* points are often reported further north near the coast in Victoria County along the lower San Antonio - Guadalupe drainage. Again, this may be a function of limited sampling in those studies from which Corbin assembled his data, or it may suggest an actual absence of such points south of Corpus Christi Bay and thus may be a cultural phenomenon.

These kinds of problems and discrepancies involving individual types of artifacts need further analysis, particularly since they have implications for the cultural relationships which existed among Archaic groups within the region. Overall, however, the pattern of findings is remarkably similar between Corbin's work on the coast and Ward's analysis of Cooper's collections from the interior. Further study is needed to document and highlight the differences between the distributions of coastal and interior South Texas types south of the Nueces River.]

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COMMENTS ON MORPHOLOGICAL RELATIONSHIPS OF CORNER TANG ARTIFACTS BASED ON EXPERIMENTAL REPLICATION

C. D. Weber

ABSTRACT

A flintknapping technique that produces large pressure flake scars like those observed on prehistoric corner tang artifacts, *Marcos* projectile points and *Ensor* projectile points is described. Characteristics of large pressure scars are discussed. Proposed resharpening sequences of corner tang artifacts based on experimentation are presented, and criteria for further study of corner tang artifacts are suggested.

INTRODUCTION

Over a three-year period the author examined corner tang artifacts, as well as *Marcos* and *Ensor* projectile points, in private collections from Bastrop, Bell, Gillespie and Williamson Counties. During this time period 19 corner tang bifaces, 22 *Marcos* projectile points and 40 *Ensor* projectile points were replicated with the objective of duplicating flake scar characteristics exhibited by the prehistoric artifacts. This report discusses observations made as a result of the replication experiments.

LEG-ASSISTED PRESSURE FLAKING

Weir (1976:64,136) placed corner tang artifacts in the Twin Sisters Phase of Central Texas prehistory, in which the most frequently occurring diagnostic is *Ensor* projectile points. Prewitt (1981:76,81) further refined Weir's chronology, but he did not include corner tang artifacts in his trait list for the Twin Sisters Phase. Mitchell, Chandler and Kelly (1984:12-39) have reported the association of corner tang artifacts with *Marcos* projectile points at the Rudy Haiduk Site (41 KA 23). W. B. Carrol and J. B. Sollberger have noted shape and flake scar similarities between some *Marcos* and *Ensor* projectile points (personal communication).

A flake scar analysis of *Marcos* and *Ensor* projectile points and corner tang artifacts indicates that the three biface types often share some distinctive flake scars which separate them technologically from earlier, as well as contemporary, diagnostic projectile point types. As indicated by flake scar sequencing on the prehistoric artifacts, these scars were executed after the completion of percussion thinning, but prior to final edge alignment. During replication experiments it was determined that the removal of these flakes was intended to improve facial contours, although some accomplished basal thinning. It was also determined that the most reliable way of producing these flake scars is by leg-assisted pressure.

In the leg-assisted pressure technique, a pressure flaking tool is held in the hand against the inside of the leg just above the knee while the craftsman is in a sitting position. Thigh force is exerted to remove large (10mm to 50mm length) pressure flakes from the preform, which is held in the opposite hand in a position similar to that of the flaking tool. This technique was first demonstrated to the author by J. B. Sollberger (personal communication), and it is illustrated in Figure 1. While a long, unhafted antler tine may be used, a smaller tine hafted to an 18-inch to 20-inch wood handle allows more control and requires less wrist support. Such a tool is commonly referred to by some flintknappers as an "Ishi stick." Experiments have shown that antler tips are unnecessary when flaking platforms are isolated and relieved from the surrounding material mass (Weber 1981:10).

Flake scars resulting from the leg-assisted pressure technique have distinctive characteristics that can be used to distinguish them from scars produced by other techniques, such as hand pressure, percussion and indirect percussion. Figure 2 shows large pressure scars on three prehistoric artifact specimens, as well

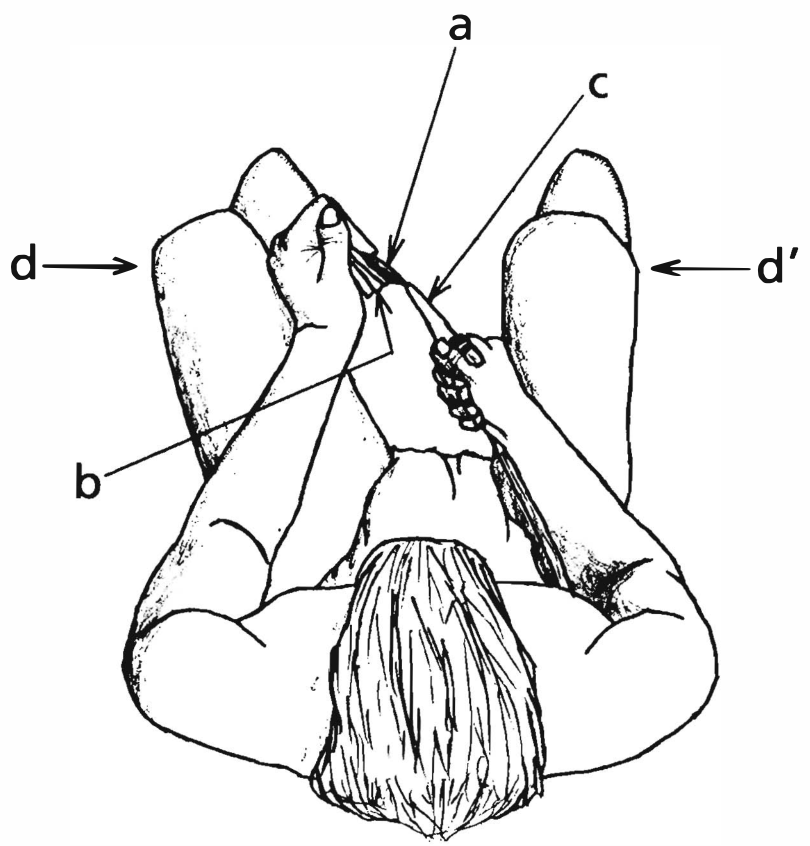

Figure 1. Leg-assisted pressure flaking. a, bifacial preform. b, tanned hide support. C, antler-tipped Ishi stick. d-d', direction of applied thigh force.

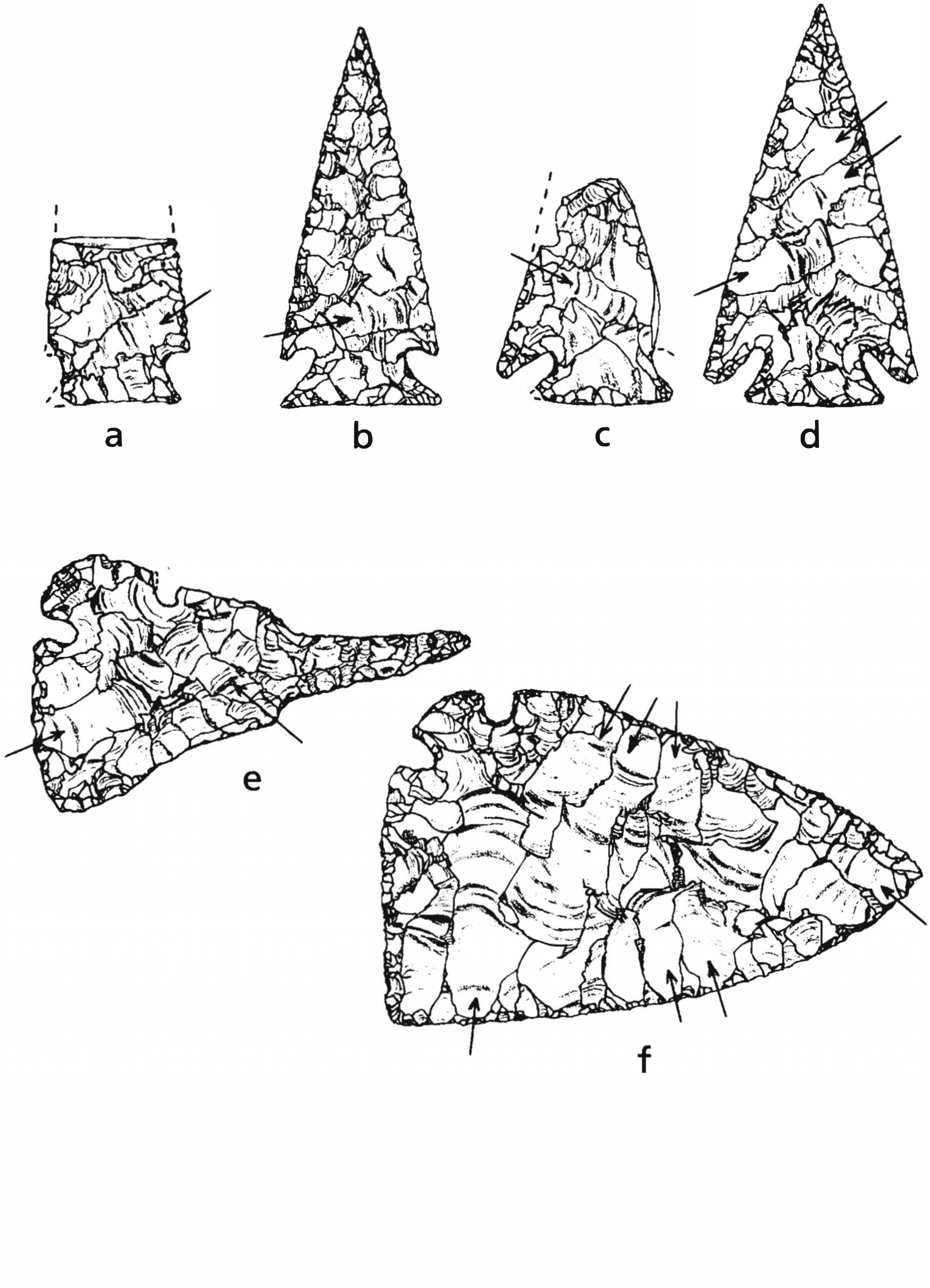

Figure 2. Large pressure scars. a, c, e, aboriginal specimens. b, d, f, replicate bifaces.

as large pressure scars on replicate bifaces. Large pressure scars are usually rather long relative to width, with approximately parallel ridges. Identifiable large pressure scars observed on prehistoric specimens are usually in excess of 10mm in length, and an example on one *Marcos* projectile point was 35mm in length. Large pressure scars typically terminate in snap fractures, although these terminations are often removed by subsequent flaking. A longitudinal section of a large pressure scar reveals a subtle arc from origin to termination. The snap termination and the arc are a result of perpetuation of the fracture front by outward bending of the flake mass being removed. Large pressure scars frequently cross the preform centerline, especially when the biface is symmetrical with a lenticular cross-section. Often the scars terminate just short of the opposing edge. These characteristics are illustrated in Figure 3.

In comparison to average percussion scars of the same length range, large pressure scars exhibit a greater length-to-width ratio, the cross-sectional area of the flake removed is smaller, the snap termination frequency is greater, and the pressure scars may be executed in directions or areas in which comparable flake scars would be extremely difficult to consistently achieve with percussion. While indirect percussion allows more directioning and positioning than direct percussion, this technique does not allow the gradual loading of force and control of outward bending which result in the long, narrow scars produced by leg-assisted pressure.

It should be noted that the characteristics described above are the usual results of the techniques mentioned. The characteristics of flakes produced by leg-assisted pressure can overlap with those of flakes produced by other techniques, especially if the preform is not well contoured or the craftsman is unskilled with the technique. Furthermore, not all corner tang artifacts or *Ensor* and *Marcos* projectile points observed exhibit large pressure scars. However, in a Bastrop County sample, 15 out of 19 fragmentary *Marcos* specimens had at least one identifiable large pressure scar, and 10 of the 15 had more than one large pressure scar. Thirty-two out of 60 *Ensor* projectile points from Williamson County exhibited large pressure scars, and 14 out of 18 corner tang artifacts from Williamson County exhibited large pressure scars. Comparatively, large pressure scars are rare, if not absent, on *Nolan*, *Bulverde*, *Pedernales*, *Marshall*, *Castroville* and *Montell* projectile points. In contrast, large pressure scars frequently occur on Late Paleo-Indian and early Archaic Central Texas projectile points, such as *Golondrina*, *Andice* and *Bell*.

The presence of large pressure scars on corner tang artifacts, *Marcos* projectile points and *Ensor* projectile points suggests a reintroduction or rediscovery of the leg-assisted pressure technique during the Uvalde Phase (Prewitt 1981:76) of the Late Archaic in Central Texas. Also, the continuance of the technique into the Twin Sisters Phase may represent a cultural tie between *Marcos* and *Ensor* projectile points.

RESHARPENING PROCESSES

When J. T. Patterson (1936:13-14) originally identified variations of corner tang artifacts, the effects of resharpening processes on size and shape were largely overlooked except in the case of corner tang "drills." This is not surprising since almost no replication and utilization studies are known from that period. More recently, Mitchell, Chandler and Kelly (1984:21,23) and McReynolds (1984:7-8) have also noted the resharpening of corner tang artifacts into "drills." It is very likely that this process has received attention because of the obvious alteration of the assumed original form and function of the artifacts. Mitchell and Orchard (1984:3) noted some resharpening and "evidence of some use and retouching" on the edge opposite the tang of a mid-back tang artifact from Bexar County, Texas, but few other researchers have noted resharpening processes of corner tang artifacts that result in size reduction but do not alter the original function.

Sollberger (1971:209-218) has previously identified resharpening processes

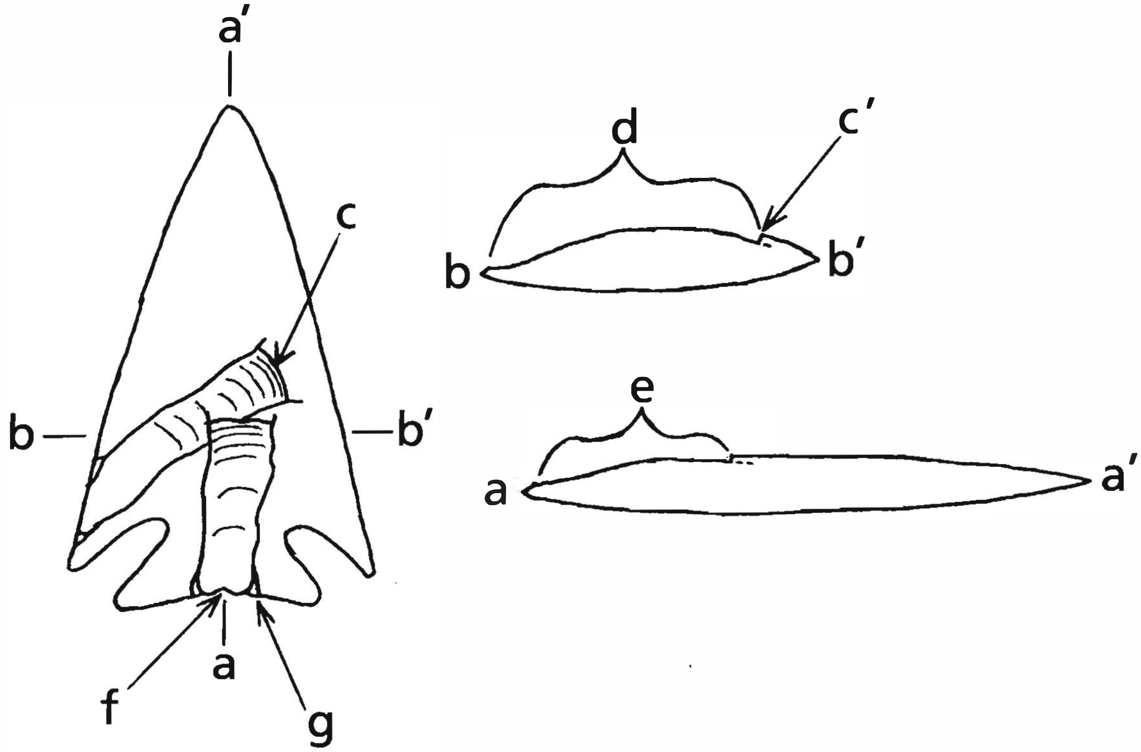

Figure 3. Characteristics of typical unaltered large pressure scars. a-a', longitudinal section. b-b', cross-section. c-c', snap termination. d-e, subtle arc from origin to termination. f, sharp-edged concavity. g, conspicuous remnant ridge resulting from platform isolation.

which transformed ovate knives into four-beveled knives. He determined that the conservative resharpening processes were a direct result of scarcity of lithic raw materials in certain geographic locations. It is a recognized tendency for the possessor of any object regarded in high value, regardless of reason, to preserve and conserve the object. The relative scarcity of corner tang artifacts, the quality of workmanship, and the common preference by prehistoric craftsmen in Bell, Williamson and adjacent counties for black raw materials suggest that corner tang artifacts were somewhat more highly regarded than most bifacially flaked artifacts. It is assumed, therefore, that conservation measures to prolong the use-life of corner tang artifacts existed.

Sollberger (1971:210-213) discovered through replication and use that beveling is the most efficient means (in terms of number of resharpenings per linear unit of blade width) of conserving tool longevity. Beveling of the lateral edge opposite the tang is a common characteristic of corner tang artifacts, and the formation of these bevels, if not through resharpening, would be a needless waste of material on a valuable possession. Furthermore, without resharpening as the intent, the purposeful formation of bevels would imply a gouging or scraping use, for which the thin, bifacial blades and offset tangs are poorly designed. In the observed specimens there is a general tendency for the probability of the occurrence and degree of beveling to be directly proportional to the size of the artifact. Larger specimens tend to show less postmanufacture modification, and smaller specimens are most likely to show extensive postmanufacture modification. This relationship seems to be consistent with the resharpening characteristics and corresponding size reduction described by Sollberger (1971:213-217), indicating that resharpening processes similar to those that occur in Late Prehistoric four-beveled knives also occur in corner tang artifacts. However, since the original form of corner tang artifacts differs from that of four-beveled knives, the form resulting from resharpening also differs.

To test this idea an experiment similar to the experiment by Sollberger was performed on a replicate corner tang biface. Beginning with the unresharpened edge opposite the tang, dulling and resharpening were alternated until the biface was too small for convenient service. All resharpening was unifacial and confined to the edge opposite the tang. At five intervals drawings were made to illustrate the progression of the resharpening sequence. These drawings are shown in Figure 4. Measurements were made to permit evaluation of resharpening efficiency. Initially, resharpening was required only on the distal half of the cutting edge. Repeated resharpening resulted in the formation of a concavity near the medial blade section which impeded equal distribution of dulling along all sharp sections of the edge. It was determined that straight and convex shapes would allow maximum edge exposure and more even distribution of dulling. Furthermore, it was determined that if the concavity was allowed to continue toward the center of the blade, significant weakening of the blade would result. Although the more frequent dulling and concomitant resharpening of the distal end partially corrected this problem, some effort was made to remove slightly more material at the distal end to preserve blade strength and maintain maximum cutting edge exposure. As the cutting edge became progressively shorter, resharpening was required along the entire length of the edge rather than being confined to the distal area. When the process was discontinued, a total of 77 resharpenings had been executed with a loss of 29.35mm of blade material. Table 1 gives a synopsis of the reduction sequence.

As a result of this experiment the author determined that many mid-back tang artifacts were probably once diagonal and back corner tang artifacts that have been resharpened into their final form. Patterson (1936:42-45, Specimens 26-30) shows at least five specimens in which resharpening processes have very likely altered the original artifact form. Specimen 30 (Patterson 1936:45 Plate 8), for example, shows complete percussion thinning scars from only the edges adjoining the tang. None are present from the edge opposite the tang. The artifact could not have been originally manufactured to have this characteristic--the original percussion thinning scars from the edge opposite the tang have been removed by gradual and repet-

Table 1. Statistical data showing sequential reduction of replicate corner tang biface.

Stage	No. Resharpenings	Basal Width	Tang Axis	Distal Axis	Blade Length
1	0	58.10	59.50	35.30	102.50
	1	58.10	59.50	35.10	102.30
	2	58.10	59.50	34.85	102.00
a	3	58.10	59.50	34.65	101.65
a	4	58.10	58.80	34.45	101.65
a	5	58.10	58.70	34.30	101.30
a	6	58.10	58.20	33.90	101.10
	7	58.10	58.20	33.50	101.00
	8	58.10	58.20	33.20	100.50
	9	58.10	58.00	33.10	99.60
	10	58.10	58.00	31.95	99.55
	11	58.10	58.00	31.85	99.30
	12	58.10	58.00	31.30	98.30
	13	58.00	58.00	31.00	98.20
	14	57.85	57.60	30.50	98.10
	15	57.60	57.10	29.90	98.00
	16	57.45	57.00	29.30	97.45
	17	57.20	56.90	28.90	97.45
	18	57.00	56.10	28.30	96.70
	19	56.80	55.90	28.20	95.60
	20	56.60	55.50	27.80	95.40
	21	56.60	54.55	26.80	94.80
2	22	56.00	54.10	25.80	93.20
b	23	55.50	53.55	25.30	92.65
	24	55.50	53.35	25.30	92.65
	25	55.50	53.35	24.35	92.20
b,c	26	55.50	53.00	24.00	82.70
	27	55.50	52.75	23.65	82.70
	28	55.50	52.50	23.10	82.70
	29	55.50	52.45	23.00	82.70
	30	55.50	52.00	22.90	82.70
	31	55.50	51.45	22.30	82.65
	32	54.90	51.30	22.30	82.65
	33	54.85	50.90	21.90	82.35
	34	54.85	50.80	21.60	82.35
	35	54.85	50.40	21.60	80.60
b	36	54.80	50.00	20.65	80.00
	37	54.80	49.60	20.45	79.90
	38	54.80	49.60	20.40	79.75
	39	54.80	49.50	20.40	79.10
	40	54.80	49.10	19.60	78.70
	41	54.80	49.00	19.45	78.60
b	42	54.80	48.80	19.40	77.60
	43	54.80	48.20	19.00	77.60
	44	54.00	48.20	18.50	77.30

Table 1. (Continued)

Stage	No. Resharpenings	Basal Width	Tang Axis	Distal Axis	Blade Length
3	45	54.00	48.20	18.00	76.75
	46	53.90	47.50	17.70	76.70
	47	53.70	47.30	17.50	75.00
b,c	48	53.50	46.30	17.00	72.00
	49	53.00	46.30	17.00	72.00
	50	53.00	45.80	16.40	69.75
	51	53.00	45.70	16.10	69.75
	52	53.00	45.60	15.50	69.70
	53	53.00	45.50	14.70	69.70
	54	52.40	44.80	14.00	69.70
	55	52.35	44.30	13.35	69.50
	56	52.20	44.30	12.80	67.65
	57	51.70	43.60	12.10	67.55
	58	51.00	43.60	11.60	67.25
	59	50.90	43.10	11.30	67.00
4	60	50.00	42.60	10.90	66.55
	61	49.80	42.40	10.25	66.20
	62	49.30	42.20	9.60	66.15
b	63	49.30	42.20	9.50	64.20
c	64	49.30	41.80	7.30	58.35
	65	49.30	41.50	7.30	58.35
	66	49.15	41.00	7.30	58.30
b,c	67	49.10	40.20	-	53.10
	68	49.10	40.20	-	53.10
	69	49.10	39.85	-	53.10
	70	49.10	38.80	-	52.90
	71	49.10	38.60	-	52.70
b	72	49.10	37.90	-	52.65
	73	49.10	37.85	-	52.60
	74	48.50	37.50	-	52.50
b,c	75	48.30	37.30	-	49.00
	76	46.35	36.65	-	48.55
5	77	45.20	36.10	-	46.70

All measurements made in mm. with a caliper. Stage numbers coincide with illustrations in Figure 4. a, formation of concavity near tang axis. b, long flake resharpening series. c, tip snap resulting from resharpening.

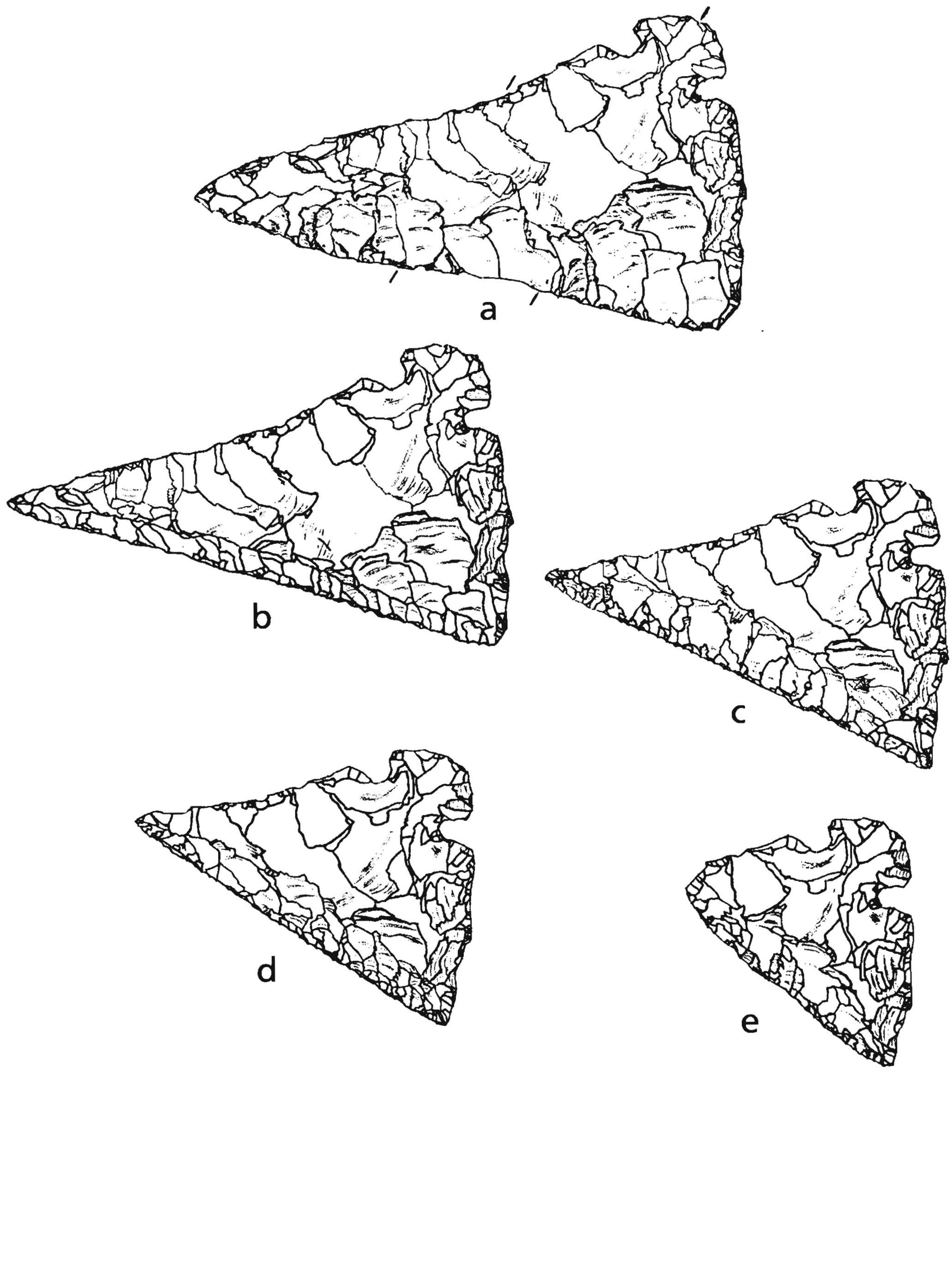

Figure 4. Sequence showing flake scar characteristics and size reduction resulting from experimental resharpening of a replicate corner tang biface. a, Stage 1 (slashes indicate the points of distal and tang axis measurements). b, Stage 2. c, Stage 3. d, Stage 4. e, Stage 5.

itive resharpening. Mitchell and Orchard (1984:4, Figure 2,a-b) and Mitchell, Chandler and Kelly (1984:21, Figure 6,c) show similar corner tang artifacts which appear to have been resharpened from larger specimens.

A generalized sequence through which some diagonal and back corner tang artifacts are converted to mid-back tang artifacts is shown in Figure 5,a. When resharpening of diagonal and back corner tang artifacts is limited to the edge opposite the tang, the angle of the resharpened edge in relation to the tang axis becomes more perpendicular as subsequent resharpenings move the edge closer to the tang. When this process is continued for the entire use-life of the artifact, the resulting form is that of a mid-back tang, even though the original form was that of a diagonal or back corner tang. More resharpenings are required nearest the distal end because this part of the edge is more exposed. Progressively more dulling and damage occurs the closer a point on the edge is to the distal end. A second consideration for removing more material nearer the distal end is that blade strength to resist snap fracture is preserved because the mid-section has not been weakened.

Figure 5,b-c compares the flake scar characteristics of a true mid-back tang artifact to one which has resulted from resharpening. In Figure 5,b percussion thinning scars originating from the edge opposite the tang are approximately perpendicular to that edge, and original characteristics of these scars have not been altered except near the edge. In Figure 5,c percussion thinning scars originating from the edge opposite the tang have been obliterated by resharpening. In Figure 5,b the size of the bevel is smaller because it has been produced near the lateral edge of the blade, while in Figure 5,c the size of the bevel is larger because it has been produced in the center of the blade.

As noted during the resharpening experiment, a concavity resulted in the edge opposite the tang when equal amounts of material were removed from distal and medial sections of the blade. When this process is continued for the entire use-life of the artifact, the resulting form is not a mid-back tang, but rather a long, narrow-bladed corner tang with a recurved edge opposite the tang. A generalized sequence for this reduction is shown in Figure 6. Forrester (1957:-122-126) identified this general form in 54 percent of untanged, bifacial artifacts artifacts that exhibited unifacial bevels, but he did not describe the developmental processes involved. Forrester also described a "spur" near the base of the beveled bifaces. A similar projection is also present on corner tang artifacts that have undergone such resharpening processes. Considering the ease with which this form can be flaked into a drill, it is suggested that this is the most likely process from which corner tang "drills" result.

The possibility that many mid-back tang artifacts, as well as corner tang "drills" are final stage artifact forms resulting from the sequential resharpening of larger original diagonal and back corner tang artifacts has been demonstrated by this experiment. The processes through which diagonal and back corner tang bifaces are transformed into mid-back tangs and corner tang "drills" have been described in terms of two resharpening strategies, each of which has distinct advantages and disadvantages. In the first of these strategies, progressively more material per resharpening is removed the closer a point on the edge is to the distal end. This strategy preserves medial section blade width relative to length, and it allows the maintenance of a straight or convex edge. Wide medial sections give the blade strength to resist snap fracture, and straight to convex edges provide maximum cutting surface exposure and more even distribution of dulling and damage. A disadvantage to this technique is that blade and cutting edge length are lost more rapidly. The continuation of this strategy for the entire use-life of the artifact moves the cutting edge toward the base and eventually results in the classic mid-back tang form.

In the second strategy, more equal amounts of material per resharpening are removed from distal and medial blade sections. This strategy conserves blade and cutting edge length instead of blade width. Disadvantages of this technique include increased susceptibility to medial section snap fracture and unequal dis-

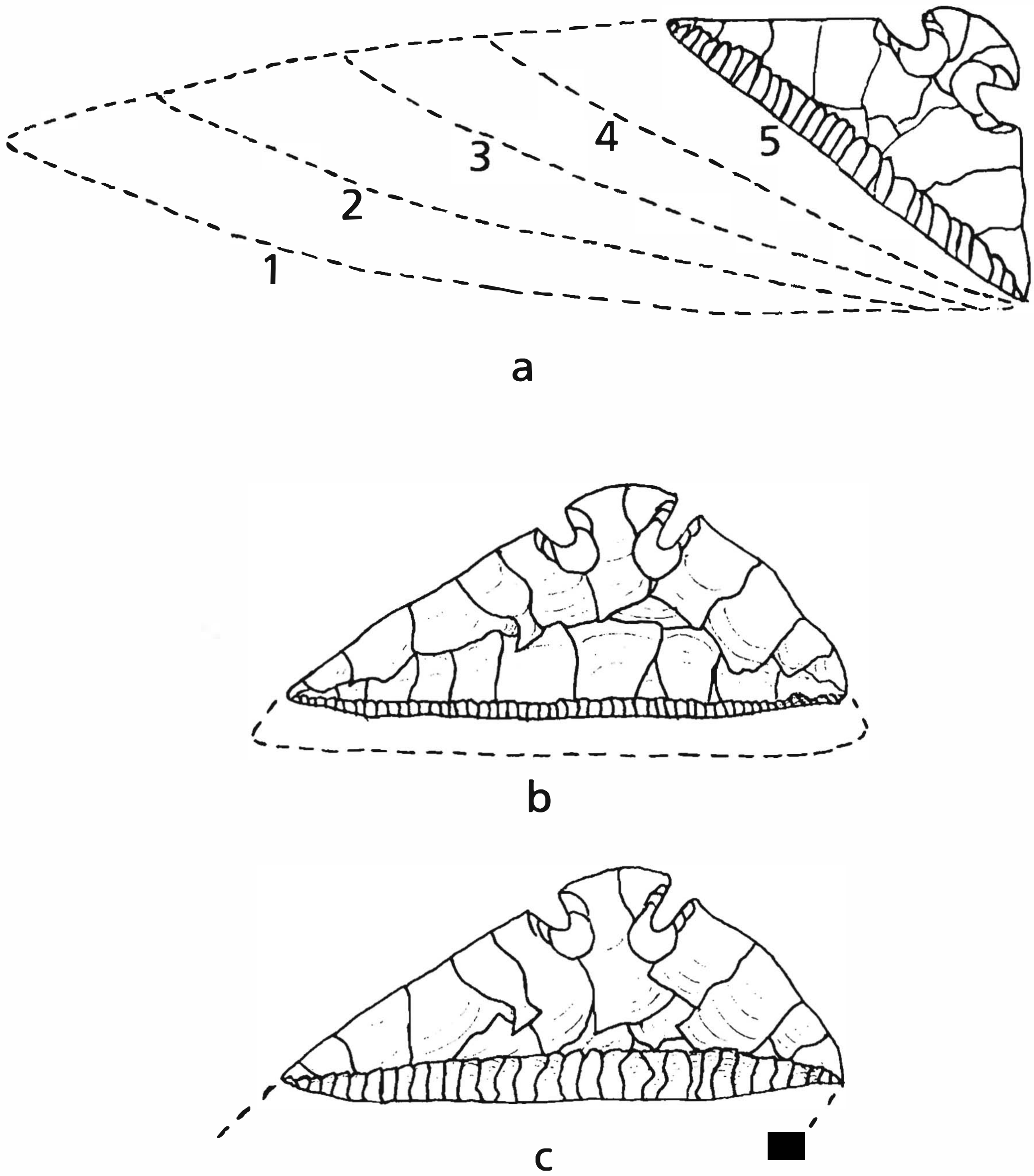

Figure 5. a, proposed resharpening sequence through which diagonal or back corner tang artifacts are transformed to mid-back tangs. b, flake scar characteristics of a biface originally manufactured as a mid-back tang. c, flake scar characteristics of a mid-back tang originally manufactured as a diagonal tang.

tribution of dulling and damage along the blade. The continuation of this strategy for the entire use-life of the artifact moves the cutting edge toward the opposing lateral edge and results in a remnant blade which is easily converted to a corner tang "drill." Whether the resharpening techniques used are a result of different utilization or of individual preference has yet to be demonstrated by experimental evidence.

The effects of resharpening must be considered before effective use-wear analyses and gross reduction strategies can be suggested. In the resharpening experiment shown in Figure 4, a steep bevel had formed by the second sequence with an average loss in blade width of 7.45mm. At this stage flake scars originating from the edge opposite the tang and the blade cross section had been greatly altered. Conspicuous bevels and loss of original blade characteristics opposite the tang are also characteristic of large blades which have undergone considerable size reduction as a result of resharpening. For example, the blade characteristics of an artifact resembling Figure 5,a,5 may be identical to those of an artifact resembling Figure 5,a,2. Therefore, the original or maximum length of a blade often cannot be determined. It is possible, however, to estimate the minimum amount of material required to produce a specific edge angle on a blade of known thickness. The specific reduction strategy cannot be accurately reconstructed for artifacts whose original size cannot be determined.

Sollberger (1971:212) observed that long flake resharpening was occasionally required to maintain edge angle acuteness on thicker blades. In the experimental corner tang resharpening sequence described above, long flake resharpening was required when the blade thickness at the bevel reached 6.5mm. Edge angle acuteness must be maintained to allow unifacial resharpening to continue. Acuteness of resharpened edges on prehistoric artifacts will vary with blade thickness and the length of resharpening flakes. While unifacial beveling was used in the resharpening experiment, it should be noted that on resharpened edges of some prehistoric corner tang artifacts the unifacial resharpening was alternated to the opposite face once the edge angle steepened. Although the resulting edge characteristics can resemble bifacial resharpening, it is apparent that the direction of the unifacial bevel relative to the respective faces was reversed to lessen the frequency of removal of long flakes required to maintain acuteness.

Predictably, edges that have been resharpened at regular intervals will show a great range of variation, from no apparent wear to extensive wear. This range of variation results from removal of existing worn surfaces by each renewal of the edge, as well as the loss or discard of individual specimens at various use and edge renewal stages. Also, original manufacturing scars above the resharpened areas are more likely to develop use polish, or sheen, than those near the cutting edge because the unresharpened areas are exposed to indirect wear almost the entire artifact use-life.

CONCLUSION

While it should be noted that the manufacturing and resharpening techniques discussed in this report will not include all corner tang artifacts, it is suggested that the information is applicable to a significant percentage. Additional evidence concerning the relationship of corner tang artifacts to two Central Texas projectile point types has been presented based on successful replication of prehistoric artifacts with tools and techniques hypothetically available to prehistoric craftsmen. The experimental resharpening of a replicate corner tang biface produced characteristics exhibited by prehistoric corner tang artifacts and demonstrates the possibility that prehistoric craftsmen used conservative resharpening techniques to prolong the use-life of the artifacts. Replication and utilization can provide empirical data on which hypotheses can be based. Without consideration of raw material limitations, prehistoric manufacturing techniques and prehistoric utilization strategies, a complete understanding of variation and function in any artifact type cannot be achieved.

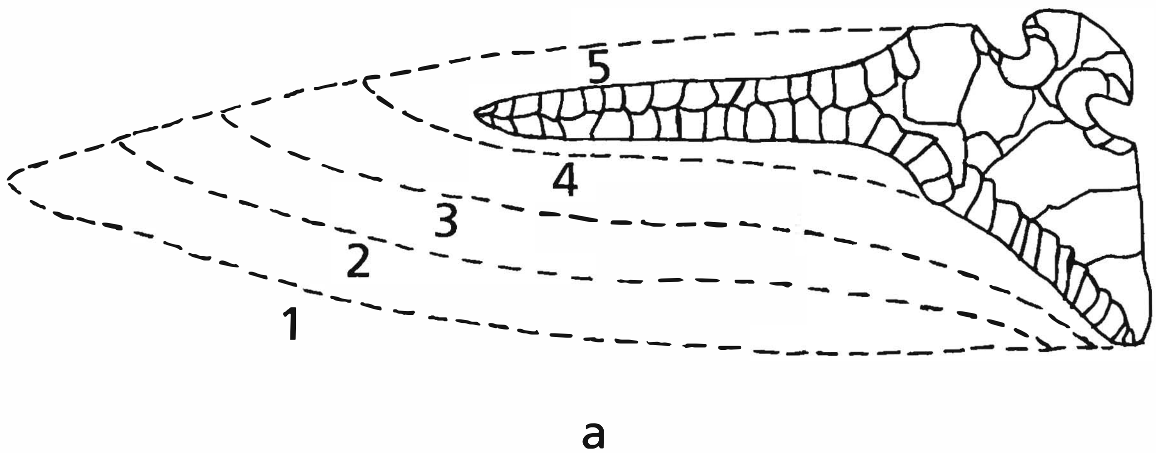

Figure 6. Proposed resharpening sequence through which some corner tang artifacts are transformed to corner tang "drills".

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<u>REMINDER</u>

This is your last issue of *LA TIERRA* if you have not yet renewed your STAA membership. Please use the renewal form sent earlier, or just forward your dues ASAP to the Membership Chairman:

Liz Smith
1607 West Huisache
San Antonio, Texas 78201

SPANISH MISSIONS RESEARCH CONFERENCE

In August 1984, the San Antonio Missions National Historic Park (SAMNHP) and Our Lady of the Lake University co-hosted the third annual Spanish Missions Research Conference. The conference was opened by José A. Cisneros, Park Superintendent, and participants welcomed by a representative of Sister Elizabeth Ann Sueltenfuss (C.D.P., Ph.D), President of Our Lady of the Lake University. Dr. Gilbert Cruz, SAMNHP Historian, was program chairman, and had developed an outstanding conference agenda. The program included a wide variety of speakers and topics ranging from the impact of mission architecture on modern San Antonio to the future revision of the *Handbook of Texas*. Dr. Tom Campbell (Professor Emeritus of the University of Texas at Austin) provided an excellent discussion of the Indian groups of Mission San Antonio de Béxar highlighting the problems of ethnographic research.

Mr. Robert H. Thonhoff, author and a school principal from Fashing, Texas, discussed the role of the Spanish in the American Revolution. The Ranchos of the San Antonio River valley from San Antonio to La Bahía provided over nine thousand head of cattle which were driven overland to Nacogdoches to support the Spanish forces of Bernardo de Galvez gathered in Louisiana. Galvez and his Spanish troops took to the field (1779 - 1782) and were victorious in battles at Manchac, Baton Rouge, Natchez, Mobile, and Pennsacola, effectively sweeping the British from the entire Gulf Coast. The role of South Texas ranchos in providing Longhorn beef to support this campaign is further detailed in Mr. Thonhoff's 1981 book *The Texas Connection with the American Revolution* (Eakin Press, P. O. Box 23066, Austin, Texas, 78735). Both the presentation and the book were fascinating!

As a final activity, conference participants took a bus coach to Rancho de las Cabras near Floresville, where Anne Fox provided a guided tour of the site and discussed archaeological work of the last three seasons. This was the perfect ending for an outstanding day. One unforgettable image was the huge bus coach maneuvering gingerly across the sandy dunes along the bluff above the San Antonio River bringing 20th century conferees back to this 18th century rancho...

The next Spanish Missions Research Conference is scheduled for August 10th, 1985. Those wishing to participate should write to the address given below and ask to be placed on the conference mailing list:

San Antonio Missions National Historical Park
(Attn: Dr. Gilbert Cruz)
727 E. Durango Blvd., Room A-612
San Antonio, Texas 78206

A U T H O R S

JOHNNEY POLLAN was born and raised in San Antonio. He graduated from Highlands High School and Trinity University where he earned a BS in Engineering Science in 1969. He is presently employed by Dow Chemical, USA, as a member of their Process Computer Engineering group. He is a member of STAA and the Texas Archeological Society as well as Secretary of the Brazosport Archaeological Society; he also acts as Curator of Archaeology for the Brazosport Museum of Natural Science. His field experience includes historical and prehistoric sites, primarily in Brazoria County. Johnney lives in Lake Jackson, Texas.

PAUL WARD is a long time member of the STAA who has extensive archaeological experience both at the Dan Baker Site and on various projects with the UTSA Center for Archaeological Research. He has taken a number of graduate courses in archaeology with UTSA. His article in this issue is a very careful statistical analysis of the Brom Cooper collection from both sides of the grand bend of the Nueces River in South Texas. Paul's very astute analysis of these materials exemplifies his scientific approach to archaeology and represents a major contribution to South Texas archaeology. This is Paul's first article for *La Tierra*, and, hopefully, the first of many. Paul lives in San Antonio, Texas.

CAREY D. WEBER is originally from Fredericksburg, Texas, but now resides with his family on Route 1 near Granger, Texas. He is a member of the Texas Archeological Society and recently joined STAA as well. For several years, Carey has been working with replications of artifacts and experimental studies on use of prehistoric lithic artifacts. He is currently engaged in a study of *Andice* and *Bell* points, including a discriminate function analysis to distinguish the two types (with the assistance of Lee Patterson's computer).

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 amateur 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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