The Battle as Told by Archeology:
A Story to Be Continued...

by Roger G. Moore, Ph.D., R.P.A., and Douglas Mangum

The battlefield at San Jacinto was long assumed to be an archeological slate wiped clean. It was assumed that what souvenir hunters had not carried away had been covered by Ship Channel dredge spoil. Previous archeological work at the site had been restricted to the ground disturbance "footprints" of specific projects such as utility lines and other improvements, and, perhaps critically, none of these prior investigations appear to have utilized metal detectors. Whatever the reason, no first-hand evidence of the battle had been obtained by these small survey excavations. In matters archeological, however, ultimate authority rests with what comes out of the ground, and rumors of finds outside the site suggested that conventional wisdom might be flawed.

First Systematic Archeological Research Investigation at San Jacinto Battleground State Historical Site

The Texas Parks and Wildlife Department, the San Jacinto Historical Advisory Board, and the Friends of San Jacinto Battleground ensured that systematic research archeology was included among the tasks to be carried out by a park planning consulting team. Moore Archeological Consulting, Inc. (MAC) was selected to conduct these investigations in the vicinity of the Mexican Army camp. Recovery of significant quantities of indisputable battle-related artifacts from the Mexican camp quickly overturned the assumption that no trace remained of the battle. We were more than relieved and frankly ecstatic to discover that some chalk marks and smudges do indeed remain on the slate of the San Jacinto Battlefield. Our task is now to read these marks intelligently to see if they can tell us anything new about this critical conflict.

2003 aerial photograph of San Jacinto Battlefield. All photos, unless otherwise noted, courtesy Moore Archeological Consulting, Inc. (MAC)

Work so far has been limited to three general areas. A small amount of work has been done in the area of the Texas camp, significant sampling has been done in the aforementioned area of the Mexican camp, and a swath along the shoreline of Peggy Lake has been surveyed.

Synopsis of the Battle and its Significance

This synopsis of the battle is based on letters from various participants as well as the traditional account. Many of the events in this timeline may have left physical imprints that can still be discerned if we are able to look for them.

April 20, 1836

- Texas forces (ca. 700 men) meet with Mexican forces (ca. 800 men) at the confluence of Buffalo Bayou and the San Jacinto River.
- The Mexican infantry probes the Texas position in the tree line and is repulsed by artillery fire.
- An artillery duel between the single Mexican cannon and the two Texas cannon lasts much of the afternoon with no real results.
- An attempt by the Texas cavalry to attack the retreating Mexican artillery piece is repulsed by the Mexican cavalry.
- Both sides retreat to encampments. The Mexican units build a breastwork out of packs, saddles and brush.
- The Mexican army is reinforced in the evening by General Cos with approximately five hundred men.

April 21, 1836

- Neither side engages the other throughout the morning.
- Around 3 p.m. the Texas forces form in line in a low spot in the battlefield and advance toward the Mexican defenses.
- The Mexican forces recognize the advance late and attempt to form up to meet it.
- Texas cannon and sharpshooter fire strike the Mexican forces before a line of battle can be established.

About the Authors:

Roger G. Moore, Ph.D., R.P.A., founded Moore Archeological Consulting, Inc., of Houston, Texas, in 1982. His dissertation focused upon Southeast Texas hunters and gatherers over the last 2000 years.

Douglas Mangum, a graduate of the University of Texas in Austin, has worked on archeological sites in Scotland, England, Mississippi, New Mexico, and Texas, before joining Moore Archeological Consulting. He acts as GIS manager for the firm and has developed many of the maps for the San Jacinto project.

- Texas infantry swarms over the Mexican breastwork and drives their opponents towards a boggy stream behind their position.
- Mexican forces break and flee. Many are killed trying to cross the boggy creek.
- Texans essentially capture or kill entire Mexican force while losing fewer than thirty killed and wounded.

April 22, 1836

- Gen. Santa Anna captured fleeing on foot.

From the perspective of the number of participants (roughly 2,000 total) and the time it took (less than twenty minutes for the main conflict), the battle of San Jacinto was little more than a skirmish. However, its outcome was far-reaching as readers will appreciate.

The Battle as Artifact

San Jacinto may have been a particularly brief battle, but no battle lasts more than an instant in the timeframe of archeology. We are accustomed typically to excavating sites that were utilized for tens to thousands of years. Battlefield archeology is most exciting and yields the most insight when the dynamic and ephemeral character of conflict and its intent are central precepts of analysis. Battles in history are semi-organized projections of force between groups of men, and that force has been projected at the level of hand-to-hand conflict through the movement of armed men, on foot or on horseback. Attack from afar is accomplished by the flight through the air of physical projectiles, from the first cast of a spear to the relative perfection of the nineteenth century gun.

Movement and intent are key concepts for conflict archeology because battles are not "constructed"—once begun, they simply happen, resulting in scatters of arms, projectiles, personal items, and ultimately human remains across the landscape. With the significant exceptions of collection of booty and the burial or scavenging of human and animal remains, nobody tidies up after a battle. The miscellaneous debris of combat and especially the aerial projections of force (bullets and cannonballs) remain where they fall unless disturbed by cultivation or construction. And, as the result of an archeologically distinctive and virtually instantaneous event, no confusing second or third layers of occupation are added to the archeological record of a battlefield unless the ground is soon fought over again. The distribution of artifacts across the hallowed landscape thus becomes a lens to peer through the "fog of war" despite the passage of 170 years.

Data Recovery Methods

The stereotypical image of an archeologist digging large, square holes by hand in hopes of finding artifacts does not apply here for the reasons outlined above. Instead, the investigations at San Jacinto have, and will continue to rely heavily on metal detectors—in fact, the use of metal detectors and volunteer operators to find the artifacts was essential to the success of this investigation. Efforts to recover artifacts using traditional archeological sampling methodology would be prohibitively expensive and time consuming with no guarantee of equal results. Additionally, it is reasonable to expect that a large percentage of the possible artifacts associated with the battle will be made of metal. The volunteer operators bring a level of expertise in the use of their machines that could not be matched by professional archeologists, who typically have little experience using metal detectors. The subtleties of the machines and their effective use are as much an art form as a science.

By teaming the volunteer metal detector operators with professional and avocational archeologists, MAC achieved the combination of maximum artifact retrieval with assurance of full documentation. Each operator was teamed with a MAC staff member and an Archeological Steward. At all times MAC staff members were present when excavations and artifact retrieval took place. MAC staffers or stewards recovered and bagged all artifacts and kept field notes.

When a team found a "hit," efforts were made to determine the size and potential depth of the artifact. The size of the hole excavated was dependent on this effort. Archeologists and stewards attempted to minimize the size and depth of the excavation to what was absolutely necessary to recover the artifact. Excavations were filled back in immediately after recordation with the total station.

A Sokkia Set 6F total station was used to gather the location data for each artifact. Permanent benchmarks close to the work area were created and used to set up the blocks within the Project Area. This allowed for a high level of accuracy and precision in recording the location of the artifacts. This effort was critical to

Archeologists, Stewards, and volunteers working in Mexican camp area. Photo: Peter E. Price

the investigation because it allowed us to look for both large and small patterns in the distribution of the artifacts. Large patterns could include spread of shot from artillery rounds and distribution of fired musket balls. Small patterns could include items dropped by a single individual or items scattered around a campfire.

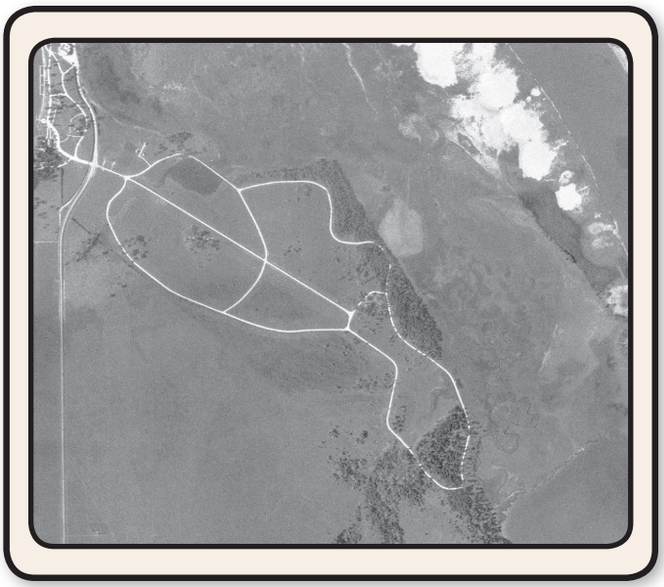
Blocks

For the sake of time and control it was necessary to limit the excavations to a sample of the available areas. With this in mind, "blocks" were established within each general area to be examined. The initial blocks were placed to maximize coverage of each area while not surveying the whole. Additional blocks were added later in efforts to follow real or perceived patterns of artifacts found in other blocks. On the main battleground, blocks were typically 900 or 3,600 square meters in size, but exceptions occurred as necessary. During the Peggy Lake work, blocks were made up of as many 60-by-60 meter sub-blocks as could be fit into the area cleared for the weekend's work.

On the main battleground work, a series of two-meter-wide lanes were set within each block until the whole area was covered. Teams were assigned lanes and examined them completely. The same basic pattern was followed during the Peggy Lake work, but with teams being assigned sub-blocks rather than lanes.

Once a field day was completed, work in the lab began. The data from the total station was immediately downloaded into a GIS mapping system (ArcView) and examined for potential rough patterning of the artifacts. At this point, the recovered artifacts were distinguished on the plots only by their field classifications as "battle-related," "historic metal," or "other". Patterns that were immediately obvious might lead to setting of new investigation blocks.

The lab then began to clean, identify and catalog artifacts. Corrections were made to the initial divisions of artifact types. Further divisions were made where possible including uniform parts (buttons, insignia etc.), gun parts (ram rods, lock-plate screws), and by size of musket balls. These results were combined with the initial location data and examined in detail for more subtle patterns. Such patterns included examination of the distribution of different sizes of musket balls, based on the understanding that the Mexican Army was predominantly armed with English Brown Bess .75-caliber muskets while the Texans were armed with a wider array of calibers and musket and rifle types.



1930 Tobin aerial of San Jacinto Battlefield, prior to construction of monument.

After artifacts had been fully cataloged, they were sent to conservation laboratories at Texas A&M University where the items were treated to prevent further decay. The material was next transferred to the Texas Parks and Wildlife Department for permanent safekeeping and eventual exhibit.

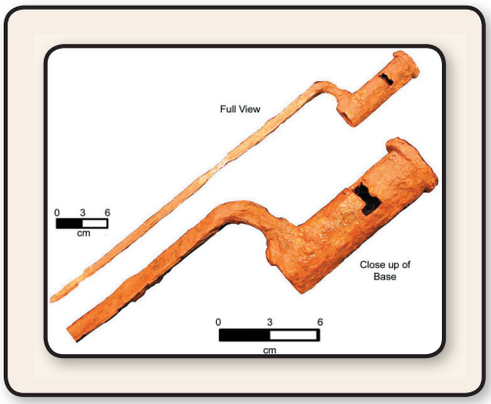
Results

Twin Sisters

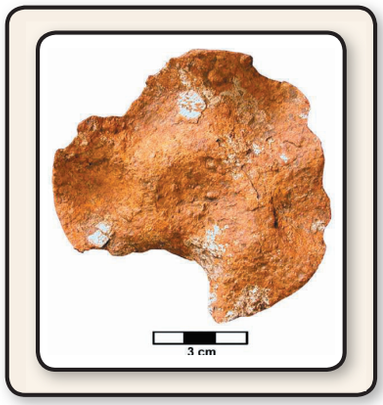
One of the most interesting finds from this work was the recovery of two artillery canister bases. Canister shot would have been the most likely and most useful type of shot used by the artillery on the field that day. Canister is essentially a shotgun shell for cannon, except that the shell (canister casing) is expelled out the barrel along with the shot. The bases we found are literally the bottoms of the cans that had held the shot, and these bases had clearly been fired because each bore a symmetrical pattern of dimples that reflected the positions of the approximately 1.2- to 1.3-inch shot balls in the canister. Both were found in the area of Mexican retreat goods, which suggests that they were fired from one or both of the Twin Sisters. There have long been questions about the size of the Twins and whether they were firing formal shot or some sort of expedient projectiles (chopped up horseshoes being a popular suggestion). The radii of the canister bases confirms with virtual certainty that they were fired from six-pound cannon (referring to the weight of a cannon ball that would fit the barrel). The dimples found on the bases and the iron bases themselves suggest that at least some formally manufactured canister shot was available to the Texas side on the day of the battle.

Mexican Camp

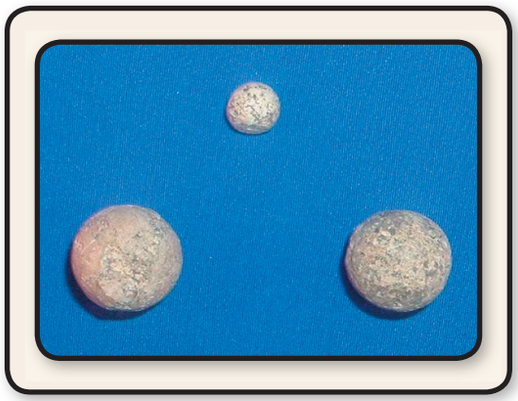
Our work in the Mexican camp was situated within (though it did not completely cover) the traditional locations of the breastwork and the camp. Despite this placement, elements of the finds were more suggestive of a retreat zone rather than the main area of conflict. For example, more than ninety percent of the musket balls found in this area were dropped rather than fired. Additionally, little in the way of camp goods was found. The most frequently found battle-related artifacts, aside from musket balls, were uniform parts, musket related artifacts, and a small number of personal items. Though it is likely that useable camp-related items would



Bayonet, possibly Brown Bess Musket.



Canister shot base, fired.



Two musket balls and one buckshot.

have been scavenged by the Texas army, it is also probable that many small or unwanted items would have been missed or left behind. Yet little of the sort has been found so far. The scarcity of such finds suggests that the location of the camp and breastworks may be somewhat different than traditionally believed or the paucity of surviving camp-related artifacts may be due to the brief duration of the camp itself. Or the scarcity of camp artifacts may reflect a bias of the collection technique employed—in other words, most camp artifacts simply may be non-metallic. A more exhaustive recovery method such as manual excavation must be employed across the area before we dismiss the traditional campsite location.

Further investigations in the broader potential breastworks and campground area are necessary to determine decisively what is reflected in the artifact patterning. But we can already celebrate the fact that this patterning definitely survives and holds meaning. We are finding clusters of musket balls that probably represent the abandoned cartridge boxes of individual Mexican soldiers. Matching bullet mold scars may allow us to link individual soldiers into large units, or follow their path in flight from their foe. High-information artifacts like the Battalion Guerrerro chest-plates simplify the location of troop units on the ground. The position of the canister shot bases tells us not only about the size and ammunition of the Twin Sisters, but also hints at their firing positions at a critical points in the battle. Live fire experiments with replica canister ammunition can refine our understanding of the range and effect of these weapons.

Texas Camp

Work so far in the area of the Texas camp has been limited to a single day of detecting in a fifty-square-meter block near the park headquarters. Though more than one hundred artifacts were found, none could be related to the battle. Examination of aerial photographs suggests that some previous construction may have impacted this area and eradicated any possible battle related items.

Peggy Lake

Work in the Peggy Lake area was conducted in the summer of 2005. This work was confined to a relatively narrow band between an access road and the modern shore of the lake. This work was complicated by the fact that at least three homesteads were located here after the battle. Numerous artifacts were recovered during the fieldwork, but most were determined to relate to these later occupations. In all, only twenty-seven battle-related items were recovered; most of these were unfired musket balls. All evidence suggests that this area was part of the precipitous retreat of the Mexican soldiers after the Texans broke their lines.

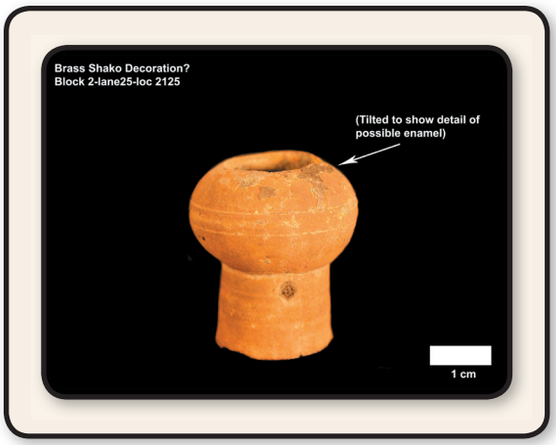
Artifacts

We have already mentioned that the most numerous items from the battlefield were those intended to be flung about at high speed and with bad intent, such as the musket balls and canister bases. Personal items included two parts of a broken fork or spoon, two Mexican coins (one a Spanish Colonial half real, the other a Mexican Republic eight real, both silver), two buttons (one with the Mexican Eagle symbol), more than a dozen buckles of various types, a spur and a number of insignia. These last included two horn decorations, a lion's head in profile and the two striking brass cross-belt plates with BG° inscribed in flowing script on them. The BG° plates were determined to be from the Battalion Guerrero, one of the "permanent" battalions with Santa Anna at San Jacinto. Among the musket-related items found were five ramrods, two lock plate screws, a broken gun tool such as would have been used on the screws, a broken frisson, two gunflints, and an entire bayonet. It is likely that most of these were from the Brown Bess musket that was the mainstay of the Mexican infantry.

Interdisciplinary Approaches

This project has been the effort of an interdisciplinary team including historians, archeologists, and other scientists. Some of the principle outside contributions came from the following individuals.

Douglas D. Scott, Ph.D. (formerly with the U.S. Parks Service and known for his work at the Little Big Horn and Palo Alto battlefields) conducted the examination of all lead shot recovered during the investigation of the Mexican camp. This study showed that less than 10 percent of these had actually been fired. He was also able to determine that some balls had come from the same bullet mold and made many other



Possible Shalo decoration.

Spur with intact rowel.

valuable qualitative and quantitative observations regarding the bullets.

Michael E. Ketterer, Ph.D. (Chemistry Dept., University of Northern Arizona) carried out a study of the isotopic signature of twenty lead samples removed from musket balls and ingots found during the Mexican camp investigation. These isotopic signatures are unique to particular lead deposits and therefore identify the mining source of the raw material. He determined that five of the samples were from the Mississippi River Valley and thus were most likely Texan in origin. Fourteen of the remaining samples were disclosed as of Mexican origin, while the mining source of one item was indeterminate.

Mark Everett, Ph.D. (Geophysics Dept., Texas A&M University) and graduate student Carl Pierce conducted an experimental electromagnetic survey of limited areas of the park. This study suggested that there may be items more deeply buried than can be found with hand held metal detectors. Two significant artifacts (a musket ramrod and a broken musket tool) were found during the electromagnetic survey.

Peter E. Price, GISP (North Harris College) provided both direct and technical support to the Geographical Information System (GIS) mapping efforts. He geo-referenced many historic maps and aerial photographs of the battlefield, enabling us to accurately plot the locations of historic features on the modern landscape. He also resolved innumerable GIS problems that have been encountered over the period of the project.

Future Objectives

The work conducted at San Jacinto only scratches the surface. Our work raised as many questions as it answered. For example, the ambiguity of results so far in the Mexican camp area underlines the need for significantly more work. This work will involve expansion of the detector survey into more blocks, as well as using alternative remote sensing devices such as ground penetrating radar and more sensitive electromagnetics to locate artifacts and features. We can expect eventually to identify definitively the location of the camp and the main area of conflict, including the Mexican breastwork. We will also look in earnest for the Texas camp and evidence of the cannon duel from the day before the main battle. Additional work is also planned for the location of the new visitor's center for the park.

We are currently preparing a proposal for an experimental live firing of a six-pounder cannon, using replica canister rounds, in order to determine the fall of individual shot and fragments of the canister. This experiment will allow us to better understand the potential firing locations of the Twin Sisters on the day of the battle. Should shot and additional canister fragments be found during future excavations, comparing their patterning to the experimental results may allow us to determine the range of possible firing positions of the cannon.

Battlefield archeology applied to San Jacinto has already provided both insights and artifacts to expand the experience of visitors to this hallowed ground. Continued multidisciplinary research promises to fill minds as well as display cabinets with a clearer image of this important conflict.

Battalion Guerrero cross belt plate.