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Editor’s Note

H. Edwin Jackson

Articles on underwater archaeology have not often graced the pages of *Mississippi Archaeology*. Certainly not in the fifteen years since the journal first appeared in its present format. Nonetheless, Mississippi's cultural resources include not only terrestrial historic and prehistoric sites, but also a host of underwater resources. An amazing array of vessels lost offshore and in the rivers represent the long history of human use of the Gulf and Mississippi’s waterways, from the earliest dug-out canoes to intercontinental steamers. They represent transport of goods and people, a wide range of economic activities such as fishing and logging, actions in wartime, and the vital lines of communication that articulated the peoples of Mississippi with their outside worlds. A very different kind of archaeology has developed to meet the challenges of underwater sites, with its own research questions, methods, technologies, and vocabulary.

While serving as interim editor, Doug Sims recognized the need to heighten our interest and understanding of Mississippi's underwater archaeological heritage. He solicited papers from nautical archaeologists who had investigated underwater cultural resources in Mississippi in the recent past. The authors of the articles herein are to be thanked for their willingness to take the time to put together this special issue. I have learned a lot (being now able to discuss “keelsons” and “futtocks” with little discomfort) and I am sure many readers will as well. I am hopeful that this won’t be the last issue with articles of a nautical bent.

Underwater Archaeology Along The Lower Pearl River, Mississippi and Louisiana

Charles E. Pearson

Abstract

Boats provided an essential form of transportation on the lower Pearl River from before European contact until the end of the nineteenth century. However, there is little in the way of historical documentation of the range of vessels and their uses. This paper summarizes archaeological investigations of several of the vessels found on the lower reaches of the Pearl River.

Introduction

The Pearl River is one of the largest and most important rivers in the state of Mississippi. Arising near the small community of Philadelphia, in northeastern Neshoba County, the Pearl flows southward for almost 300 miles, emptying into Lake Borgne, an extension of the Gulf of Mexico. Today there is almost no commercial boat traffic on the Pearl River, but this was not always the case. At one time the river was one of the state’s most important avenues of commerce and travel and numerous boats and ships of all types plied its waters (Napier 1985; Thigpen 1965). Prior to the arrival of Europeans, native peoples paddled their dugout canoes on the Pearl and in the eighteenth century the French and Spanish carried merchandise up and down the river in canoes, bateaux and keelboats. One of these early keelboatmen was the French-Canadian Louis Le Fleur who operated his business from his trading post on high bluffs overlooking the upper Pearl at what is today Jackson, Mississippi. By the early 1830s steamboats were traveling the waters of the lower Pearl River and in 1835 the sidewheeler *Choctaw* became the first steamboat to reach Jackson. The river became the transportation lifeline for much of interior and southern Mississippi, with steamers carrying the region’s expanding cotton crop down river and on to New Orleans or Mobile and returning with material and supplies needed by the local population.
Timber had become an important product of the state by the 1840s and huge numbers of pine and cypress logs were floated down the Pearl to sawmills built along the lower river. From there, sawn lumber was carried away by steamboat or aboard sailing sloop or schooner. The arrival of the railroads in the late 1800s and the depletion of timber stands eventually brought an end to river commerce. By 1920, waterborne commerce had essentially ended on the Pearl River.

Despite its long history of navigation, until recently relatively little had been written about boats and their activities on the Pearl River. Beginning in the late 1980s, the Vicksburg District, U.S. Army Corps of Engineers, in response to various construction and dredging projects, initiated cultural resources studies of several areas along the lower Pearl and West Pearl rivers of Mississippi and Louisiana (Pearson 2000; Pearson et al. 1991; Pearson and Saltus, 1996; Saltus and Pearson 1997). Principally archaeological endeavors, these studies resulted in the discovery and examination of a number of historic watercraft of varying ages and types. In addition, this research collected a considerable amount of information on the history and economics of boat use on the river. These studies have demonstrated that over the almost three centuries of intensive boat use on the Pearl, large numbers of watercraft have been lost or abandoned along the river and some remain preserved today as important archaeological sites.

This paper draws from this previous work on the lower Pearl River and presents discussions on several of the boats discovered in these earlier studies. Individually, these boats are of interest in terms of what they tell us about techniques of construction and the function and use of specific types of watercraft. However, these vessels are probably most important as a group in that they provide information on many of the types of boats used on the Pearl in the nineteenth and early twentieth centuries and are reflective of the range and importance of river-related activities. Importantly, all of these types of vessels have disappeared from the river and, except for their archaeological remains, little is left to tell their stories. In the following discussions of individual vessels, the archaeological data are presented in conjunction with historical information on the individual boat, if it is known, or on the class of vessel under consideration.

**Pearl River Sidewheel Steamboat (16St182)**

In the Pearl River north of Walkiah Bluff, Mississippi, lie the well preserved remains of a small, sidewheel steamboat. Locally known as the “Clatterwheel Wreck,” this wreck lies on the western bank of the river in St. Tammany Parish, Louisiana, and has been assigned Louisiana state site number 16St182. Literally nothing is known about the history of this steamer, but it is typical of those used on the river from the 1840s to about 1880. Beginning in the 1830s, steamboats began to visit most of the towns and landings on the lower Pearl and West Pearl rivers. These towns included Pearlinton, Logtown, Napoleon and Gainesville, Mississippi, and White Kitchen, Indian Village and Pearl River, Louisiana (Figure 1). Upriver travel on the Pearl was limited to the winter and spring when the river rose sufficiently to permit steamboats to reach towns such as Columbia and Jackson, Mississippi. Even during high water, however, the Pearl was not an easy river to travel. It was shallow and narrow in many places, plus it contained numerous drifting logs as well as imbedded ones (“snags”) that could easily puncture the wooden hull of a steamboat. By the second half of the nineteenth century, attempts were being made to clear the Pearl of these hazards and in the 1870s the Federal government, through the Army Engineers, initiated intensive efforts to keep the river navigable.

The steamboats that used the Pearl River tended to be slightly smaller than those used on the Mississippi River, not surprising considering the conditions they faced on the Pearl. Pearl River steamers averaged about 125 feet long and 20 feet wide and most were less than 5 feet deep (Pearson and Saltus 1996). Most of the steamboats operating on the Pearl were propelled by two, single cylinder high-pressure steam engines. High-pressure engines were well adapted to river conditions because they could increase power quickly, often a requirement in the ever-changing currents along rivers. Steamboats on the Pearl consisted of sidewheelers as well as
carried out of the Pearl, across Lake Pontchartrain and into New Orleans, the principal market of the Gulf region. Other local commodities, such as naval stores, were carried by steamers, but these items were never as important as cotton. The upper cargo of these steamboats consisted of merchandise, foodstuffs and other manufactured items needed by the residents along the river and in the interior. These boats, also, carried passengers and before the arrival of the railroads travel by steamboat was common.

The Clatterwheel Wreck has been only minimally examined. This examination involved a single day of mapping the wreck during a period of low water. Most of the hull of the boat appears to be intact as are large areas of the main deck and portions of the port paddlewheel and paddlewheel shaft. All the upper works (cabin, pilot house, etc.) of the boat are missing; presumably either washed away by the river or removed as salvage.

The wreck rests on the western side of the Pearl River and lies roughly parallel with the bank with the bow pointed upstream. The hull is upright, but tilted sharply toward the starboard side. At the time the boat was examined the hull was almost entirely filled with sediment, plus the starboard side and stern were covered by up to 6 or 8 feet of water, in addition to being partially buried by sediment. Because of this tilt and partial burial, only the bow and the upper port side of the vessel forward of the paddlewheel were exposed or in water shallow enough to accurately map (Figure 2).

The distance from the bow stem to the side paddlewheel is 65 feet (19.8 m) and probing revealed that the hull extends at least an additional 19 feet or so aft of the paddlewheel (Figure 2). Generally, by the 1840s sidewheel boats had their paddlewheels positioned about two-thirds the length of the vessel from the bow (Hunter 1949:169). Under this assumption, it is estimated that this steamer’s hull is on the order of 95 to 100 feet (29.0 to 30.4 m) long and it is possible that the very stern of the vessel is missing or has collapsed. Measurements made across the hull just forward of the paddlewheels indicate that the steamer’s breadth is about 19 feet (5.8 m) and that the starboard side of the vessel is intact, although buried by sediment. The dimensions of this wreck are similar to those of sternwheelers, with the latter coming to dominance after the 1870s.

The Pearl River steamers carried agricultural products, merchandise and passengers. The principal downstream cargo of these boats was the agricultural produce of central and southern Mississippi. By the 1840s this was mainly cotton. Normally it was
sidewheelers known to have operated on the Pearl in the nineteenth century. Among these steamboats were the Grand Gulf, built in 1836, which measured 80 feet, 6 inches long and 20 feet, 6 inches wide; the Mary, built in Gainesville, Mississippi, in 1845, which measured 109 feet, 9 inches long and 24 feet wide; the Mad Anthony, also built in Gainesville in 1845, measuring 91 feet, 2 inches long and 19 feet, 6 inches wide; and the Anna Lancaster, built in New Albany, Indiana, in 1848 and measuring 86 feet long and 19 feet wide (Pearson and Saltus 1996:Table 4-2).

No extensive historical research on this wreck has been conducted and neither its identity nor age are known. The single historical document found that mentions the wreck is a 1920s map that identifies it as an “old sunken Confederate cotton steamboat.” The construction of the steamer, however, does conform closely to what is known about nineteenth century steamboats and it is believed that the vessel dates prior to the 1880s and possibly as early as the 1840s. Supportive of this belief is the fact that sidewheelers began to fall out of favor after the Civil War as sternwheelers became more popular and consequently relatively few sidewheelers were constructed after about 1880, particularly small ones (Hunter 1949). Additionally, the historical information that has been collected on Pearl River steamboats suggests that sidewheelers had disappeared from the river by the 1880s (Pearson and Saltus 1996:Table 4-2).

Approximately 65 feet of the upper port side of the hull of the steamboat was exposed when the vessel was examined. The tops of twenty-eight frames were mapped along this exposed side of the boat (Figure 2). These upright frames are more specifically called “futocks” and they represent what are most commonly known as the “ribs” of the boat and form the structural framework for the vessel’s sides. Attached to the bottom of each upright futlock is a timber known as a “floor” that extends across the bottom of the hull. Technically, a floor and its attached futlocks form what is called a “frame,” although the term frame is commonly applied to a futlock. Burial prevented an examination of the floors and the inside of the hull on this vessel, but if typical of other river steamboats, the bottom will be flat, except near the bow and stern. The construction used on
the Clatterwheel Wreck is known as “single frame” construction because each frame is composed of a single floor timber with futtocks at either end. Single frame construction was common on western river steamboats, which tended to be much more lightly constructed than ocean-going vessels (Hunter 1949). Sea-going vessels more commonly used “paired frame” construction where two complete frames (two floors with futtocks) were joined together into a single piece to obtain the added strength needed for marine conditions.

The dimensions of the upright futtocks on the Clatterwheel Wreck are 4 x 6 inches and the space between frames ranges from 10 to 17 inches, but averages 14 to 16 inches. Attached to the outside of the frames is the hull planking. The top two hull planks are 3 inches thick, while lower ones are 2 inches thick (Figure 2). The size of these futtocks and the thickness of the hull planks are typical for river steamboat hulls and it is likely that a durable wood, such as white oak, was used for both, although none of the wood on the boat has been identified.

A 3 x 10-inch plank identified as a deck clamp or deck shelf is attached to the interior of the frames (Figure 2, Inset). The top edge of the deck clamp is flush with the top of the futtocks and with the top edge of the uppermost hull plank (known as the sheer strake). The deck clamp was extant along all of the exposed side of the vessel and would extend along the entire length of the hull. This heavy plank provided stability to the upper edge of the hull by tying the futtocks together, plus it served as a support for the deck beams. About 9 inches below the deck clamp, another longitudinal plank, this one measuring 3 x 6 inches, is nailed to the inside of the futtocks. Known as a clamp or a strake, this piece, also, provided structural support to the sides and would extend the entire length of the hull (Bates 1968:30; Petsche 1974:Fig. 76).

The deck clamp and the sheer strake are notched to accept the 3 x 6-inch deck beams extending across the vessel. Most of the deck beams are broken off at or near the hull line, but one extends 41 inches outboard (outside) of the hull. All of the other deck beams would originally have projected beyond the hull like this one and they served as supports for the extension of the main deck known as the guard. On sidewheelers, guards projected beyond either side of the hull to the outside edge of the paddlewheels. They served to protect (or guard) the paddlewheels and, also, added considerably to the main deck space available for storing cargo.

Planks on the main deck of the wreck consist of 2-inch-thick boards nailed to the deck beams. The extent of this deck planking was not precisely determined, but it appears as if most of the main deck is intact. Two, 4 x 6-inch vertical posts rise about 1 foot above the deck 7 feet from the bow and a larger 10-inch-square post extends up through the deck planking 2 feet farther aft. The two small posts or timberheads are believed to represent a bitt for tying off ropes and the larger post might represent a timberhead used for the same purpose, or it may be the base of a broken off mast. Steamboats commonly were fitted with a central mast on the forward part of the main deck to support booms for lifting cargo and for handling the gangway or “stage” (Bates 1968).

High-pressure steamboats like this one were fitted with two, single cylinder engines, one on either side of the boat and each driving a paddlewheel independently of the other. Two, long, parallel wooden structures that originally supported the port engine on the boat are still in place on the main deck about 45 feet from the bow, although the engine itself is missing. The starboard engine supports are very likely still in place, but these are now buried by several feet of sediment and were not located. The exterior of the two visible wooden structures, known as the main cylinder timber, or main engine timber, measures 25 feet, 9 inches long and 5 inches wide. This cylinder timber is actually formed of several 5-inch-wide timbers stacked one on top of the other. The cylinder timber slants upward toward the stern of the boat, rising from 18 inches high at the forward end to 34 inches high at the aft end. A large pillow block and bearing holding the still-in-place shaft for the port paddlewheel is attached to the top of the main cylinder timber near its aft end.

The other, shorter timber, known as the auxiliary cylinder timber, is positioned 18 inches from the main timber toward the interior of the vessel. Also composed of stacked 5-inch-wide timbers, the auxiliary support measures 12.5 feet long. This timber, also, slants upward
toward the stern. Originally, the single cylinder, high-pressure steamengine would have been mounted between these two timbers, at their forward ends. The piston rod, extending from the aft end of the cylinder, would have been connected to the paddlewheel crank by a long wooden pole known as the pitman or pitman rod. Although the engine is missing, the pitman is present, with its aft end still attached to the crank on the paddlewheel shaft. The pitman measures 12.5 feet long and 3 inches wide. It is somewhat lozenge shaped, measuring 12 inches thick in the center and narrowing to about 8 inches thick at each end. A 3-inch wide iron strap is wrapped around the entire exterior of the wooden pitman and attached every 12 inches or so with iron bolts. This construction is very typical for steamboat pitmans; the iron strap enhanced the strength of the pitman. However, the use of a wooden rather than iron pitman was based on the assumption that a wooden pitman would break if the paddlewheel became jammed, before the entire assembly and engine could be damaged.

The paddlewheel shaft consists of a 5.5-inch-diameter, 6.5-foot-long iron rod extending from just inside of the main engine timber to the outside of the hull. The shaft is heavily corroded and appears to be round, however, some paddlewheel shafts were hexagonal in section (Bates 1968:92). The inner end of the paddlewheel shaft is still attached to the main engine timber by the pillow block. The outer end would have been held by a similar pillow block and bearing on the outer edge of the guard, but this structure is now missing. Two, 17.5-inch-diameter iron disks, known as paddlewheel flanges, are attached to the shaft outside of the hull. Paddlewheels often were constructed using three flanges, rather than the two found here. The end of the paddlewheel shaft did not appear to be broken and it is believed that the two flanges are all that were ever used on this wheel. The distance between the two flanges is 37 inches, which would represent the width of the paddlewheel. Stout pieces of wood that served as the arms or spokes for the paddlewheel would have been attached to these flanges. Both flanges were partially buried, but two paddlewheel arms that were still attached to the flanges could be measured. The longest of these is believed to be complete and measures 6 feet, 8 inches long. If the arm is complete, then the paddlewheel has a diameter of about 15 feet (the length of two arms, plus the diameter of the flange). A paddlewheel of this size, about 3 feet wide and 15 feet in diameter, was a relatively small wheel. However, it probably would have been appropriate for a small, 100-foot-long steamer such as this one.

One end of a large, oval plate of iron is attached to the inside end of the paddlewheel shaft. This is the paddlewheel crank and a rod projecting from the end opposite the shaft is attached to the pitman. The distance from the paddlewheel shaft to this rod, known as the crank pin, is 18 inches, meaning that the steam engine on the boat had a "stroke" of 36 inches. In light of the spacing between the two engine timbers, the engine cylinder diameter would have been less than 18 inches and was probably closer to 8 or 10 inches (Bates 1968:96; Hunter 1949).

Mounted on the paddlewheel shaft between the main cylinder timber and the hull is one, off-center disc of iron that represents a cam for operating the valves on the steam engine. This cam was only cursorily examined and it is likely that there are actually two off-center discs rather than one. Originally, iron rods would have extended from a frame built around these cams forward to the valves on the engine cylinder. As the paddlewheel shaft turned, the cams moved the frames and attached rods, which in turn opened and closed the steam valves on the engine. This cam arrangement was very typical for mid-nineteenth century steamboats (Bates 1996).

The Clatterwheel Wreck is the only nineteenth century steamboat wreck discovered on the lower Pearl River and is one of only two early steamboats in the vicinity to receive any study at all. The other is the steamer Arrow, whose remains lie not far away in the West Pearl River. A fairly detailed study of the Arrow has been conducted and a great deal is known about her history and archaeology (Pearson n.d.; Pearson and Saltus 1996). The Arrow was a low-pressure, sideward steamboat constructed specifically for coastal use. Built in 1856, the Arrow was one of several low-pressure steamers that traveled between New Orleans and the towns and landings on the north shore of Lake Pontchartrain and on the Gulf coast as far east as Mobile, including towns on the lower Pearl River. The Arrow was converted into a
Confederate gunboat during the Civil War and was scuttled on the West Pearl in the spring of 1862 after the fall of New Orleans. The well preserved remains of the Arrow consist of about 80 percent of the 125-foot-long wooden hull, plus some machinery, such as the boiler, capstan and the iron base for the boat's single, one cylinder, low-pressure engine that stood near the center of the hull. Unlike the Clatterwheel Wreck, the Arrow was constructed along the lines of a sea-going vessel. It was built with "double frame" construction and was fitted with several large and stout keels in the bottom of the hull to provide the strength needed in marine conditions. Together, the Clatterwheel Wreck and the Arrow provide examples of the two principal types of steamboats used on the lower Pearl in the nineteenth century.

The Logtown Schooner

In 1994 the remains of a wooden sailing vessel were discovered near the now-abandoned community of Logtown, Mississippi (Pearson and Saltus 1996). This vessel lies on the western side of the Pearl River (actually in Louisiana) and is almost entirely buried by sediment as well as submerged. This is believed to be the remains of a schooner and is representative of the numerous sailing craft that traveled the lower reaches of the Pearl River throughout the nineteenth and into the early twentieth century. Sailing vessels began visiting the lower Pearl River landings and towns in the eighteenth century, but the early nineteenth century saw a substantial increase in the number of sailing craft on the river. These were primarily schooners and sloops involved in the trade between Pearl River and New Orleans and other Gulf coast ports. Like steamers, these sailing vessels carried the products of Mississippi and Louisiana away from Pearl River and returned with a range of merchandise, manufactured goods and foodstuff. These sailing craft were particularly heavily involved in the timber trade after the 1840s, carrying lumber from the sawmills along the lower Pearl across Lake Pontchartrain to New Orleans.

Most of these vessels were small single-masted sloops or, more commonly, two-masted schooners, measuring 40 to 60 feet long and 20 to 50 tons in burden. These vessels tended to have shallow drafts and flat bottoms to accommodate the river conditions typically found on the lower Pearl. Even so, these sailing vessels rarely ventured far up the river, generally staying below Gainesville, where conditions were amenable to handling sailing craft. Many of these sailing vessels were built at locations along the lower Pearl and West Pearl rivers and other "North Shore" streams and by the mid-nineteenth century this area developed into one of the important ship building centers on the Gulf coast (Pearson and Saltus 1996; Work Projects Administration [hereinafter cited WPA] 1942). Typical of locally built vessels were the sloop Kate Smith, constructed at Logtown in 1866 and measuring 40.3 feet long; 17.4 feet wide, 3.9 feet deep and with a burden of 28.6 tons; the 30.1-ton schooner Maria Louisa, built in 1855 at Mulatto Bayou and measuring 52.5 feet long, 16.5 feet wide and 4 feet deep; the 33.8 ton schooner Rover, built at Pearlpoint, Mississippi, in 1830 and measuring 57 feet long, 18.2 feet wide and 3.8 feet deep; and the 20.6 ton schooner Peacock, built in 1840 along the West Pearl River and measuring 44 feet long 13.9 feet wide and 4 feet deep (Pearson and Saltus 1996:54).

With the arrival of steamboats, the importance of sailing craft as cargo carriers on the Pearl declined. However, small sailing vessels continued to serve the Pearl River area into the early years of the twentieth century. They survived by moving into trades peripheral to those served by steamers, visiting small communities and individual landings and carrying the less profitable cargoes, such as brick, or those, such as lumber, that were unsuitable for steamboats (Pearson and Saltus 1996:56).

Examination of the schooner at Logtown was limited and involved mapping the few exposed features of the vessel, probing the buried wreck to obtain a reasonable idea of its dimensions and lay, plus excavating two small areas to collect details on construction. When examined in 1994, the only exposed portion of the vessel consisted of the tops of several futtocks along the port side that projected a few inches above the mud and were visible at and just below the water's surface (Figure 3). Probing and excavations revealed that almost all the hull and portions of the main deck are extant. The vessel lies parallel to the riverbank with its bow upstream. Although resting upright, the
hull lists almost 20 degrees toward the starboard side, presumably following the slope of the bank. The hull is filled with sediment and most of the starboard side of the vessel is covered by debris and decking that has fallen or slid to that side of the wreck. Despite this, enough information was collected to reveal that the remaining hull is 52.5 feet (16.0 m) long and 21.1 feet (6.4 m) wide. These dimensions are believed to be very close to the original dimensions of the vessel. Debris inside of the hull made it difficult to determine its depth, but it is greater than 2.5 feet and the bottom appears to be relatively flat. Diving revealed that the vessel has a square or flat transom, a common feature of the lake and coastal schooners. As seen in Figure 3, the vessel was relatively wide and bluff-bowed, probably rather typical of the cargo schooners working in the region.

Two small areas were excavated to collect data on construction, one at the bow of the boat and one along the port side. Information from the excavations and from the exposed portions of the hull, reveals that the vessel is built with paired frames, typical of sailing and ocean-going craft. Each frame consists of a 4-x-6-inch floor that extends across the bottom of the hull, plus an upright 4-x-5-inch futtock attached to the ends of each floor (Figure 3, Excavation Area 1). The butt joint where the futtock joins the floor on each frame is offset slightly from its position on its paired member to eliminate weakness at this point, which corresponds to the "chine" or turn of the bilge of the hull. The paired frames are set on 18-inch centers, the close spacing typical of sailing vessels. A longitudinal, 3-x-8-inch timber is attached to the inside of the frames near the turn of the bilge. This piece, known as a bilge keelson or stringer, would extend for all or most of the length of the hull and served to strengthen this part of the hull.

Two-inch-thick hull planking is nailed to the exterior of the frames, although the upper one or two planks appear to be missing along most of the port side of the boat. Also, no evidence of an interior deck clamp was found, nor were any remains of deck beams or hanging knees recorded. These pieces may have been salvaged or they have broken loose and slid toward the starboard side of the wreck.

The small excavation unit placed at the bow provided some general information on the construction here. The stem post appears

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**Figure 3.** Mapped remains of the Logtown Schooner, a nineteenth century sailing vessel sunk on the Pearl River.
to be slightly out of place, apparently pulled forward, separating it slightly from some of the other structural members. The forward end of the stem also appears to be splintered and broken (Figure 3, Inset). What is identified as the "stem" may consist of two pieces, the true stem, plus an interior piece known as the stem apron, however, this was not confirmed. Excavations were taken down to the keelson, an 11-x-11-inch timber resting on top of the floors. Several single frames, commonly known as "caut" frames, were recorded in the extreme bow area.

Several nails from the vessel were briefly examined during the course of excavations and all were cut nails, either machine- or hand-headed. More than likely these are machine-cut and machine-headed nails, a type most commonly produced from about 1835 to 1885 (Edwards and Wells 1993:56). No wire nails were noted anywhere on the vessel. Wood samples were taken from the keelson, a futtock and from the stem. All three are identified as baldcypress (*Taxodium distichum*), a wood commonly used in area shipbuilding (Pearson and Saltus 1996:89).

The identification of this vessel as a sailing craft is based on its construction and form, although no direct evidence, such as masts, was found. Also, its identification as a schooner is based strictly on its size; sloops known to have sailed on the Pearl River normally were shorter than this boat, plus they were much less common than schooners. The use of cypress for many elements on the boat argues for local or regional construction and the nail types used suggest a date of construction between circa 1835 and 1890. This was the period when sailing vessels were in common use on the Pearl and, also, the period when many were built at local yards. The identity of this vessel remains unknown, however it is interesting that its dimensions closely match those of two nineteenth century Pearl River schooners closely associated with Logtown. These were the *General Washington*, built in Mobile County, Alabama, in 1854 and measuring 54.7 feet long, 22.6 feet in breadth and 4.8 feet deep and the *Minnie Otis*, built at Logtown in 1893 and measuring 51 feet long, 22 feet wide and 3.4 feet deep. In December 1854, the *General Washington* was owned by Henry Weston, owner of a large sawmill at Logtown and he probably used the vessel to carry lumber to New Orleans (WPA 1942:5:101). Interestingly, the *General Washington* disappears from official records after 1854, suggesting the schooner may have been lost or abandoned in that year or shortly after. The *Minnie Otis* was one of the last of the sailing vessels built along the Pearl and was owned and used by the Weston Mill, although little else is known about her history (Pearson and Saltus 1996:89). While there is a possibility that the Logtown Schooner is one of these vessels, additional research is needed to verify its identity.

**The Logtown Flat**

Just a few hundred feet down river of the Logtown Schooner are the remains of a wooden, decked barge. When examined in 1994, this vessel was almost completely submerged and partially buried. No excavations were conducted and only the exposed and easily accessible portions of the vessel were examined (Pearson and Saltus 1996). This is a small, flat-bottomed, rectangular craft measuring some 40 feet (12.2 m) long, 19.4 feet (5.9 m) wide and 3.3 feet (1.0 m) deep. The vessel, which is almost entirely intact, has sloped or "raked" ends and can be classified as "scow-built" in that it has a flat bottom and straight sides with the two joining at right angles. Commonly, small barges like this are called "flats."

Figures 4 presents views and construction details recorded on the flat. The sides are composed of four timbers stacked one on top of the other. The lowest timber is larger than the others and projects to the interior of the vessel, creating a shelf. Commonly known as a "chine log," this 6-x-8-inch timber forms the juncture of the side and bottom. Resting on top of the chine log is a 4-x-10-inch timber, while the top two pieces in the side are composed of 3-x-8-inch timbers. All of these side pieces are connected together with long, iron drift pins. One-inch-thick horizontal planking is nailed to the outside of the top two side timbers. Additional strength and support to the sides is provided by upright, 3-x-3-inch timbers resting on the inside lip of the chine log. These upright frames are attached to the inside of the upper three side timbers and are spaced on 28-inch centers along the side.

The framework for the bottom of the flat consists of seven, evenly spaced longitudinal timbers called "streamers" or "stringers"
that extend the length of the vessel. Planks running across the width of the vessel ("athwart") are nailed to the bottom of these 3-x-5-inch stringers. Crossing floors or cross ties may exist, but none were observed. One of the raked ends of the vessel was recorded and it is presumed that the construction of the other end is similar. At the base of the raked end is a large crossing timber known as a "mud log" that is attached to the ends of the stringers and chine logs. The bottom outside edge of this 10-x-10-inch timber is cut at an angle to conform to the slope of the end. Pieces known as rake frames extend upward at an angle from the mud log to the level of the deck. These frames are the same size as the bottom streamers and are spaced to align with the streamers. Planking is nailed to the outside of the rake frames. Additional support for the rake is provided by 3-x-5-inch timbers nailed to the top of each streamer and extending above the mud log to the top of the rake frames (Figure 4).

Two, upright 8-x-8-inch posts are attached to the interior of the sides at each corner of the flat. These obviously represent timberheads or bollards for attaching lines. The presence of these bollards suggests that the flat was designed to be towed. Several former residents of the Logtown area were asked about the flat, but none knew what it was used for or how old it might be (Pearson and Saltus 1996:85). The flat may have been used as a general barge or "lighter" to haul material up and down the Pearl, or may have worked only locally at or near Logtown in association with one of the several sawmills in the area. The flat deck and small size suggests it may have served as a ferry of some sort. The exact age of the flat is unknown, but wire nails were used in its construction. Wire nails first began to appear in the region after 1885 and by 1900 had almost entirely replaced cut nails (Edwards and Wells 1993:59), suggesting it dates after about 1890. Considering that none of the former residents of Logtown remembered the flat, it is believed to pre-date 1940 or so. Whether used as a ferry or a barge, simple working vessels such as the Logtown Flat were once important elements in the waterborne economy of the Pearl River. Unfortunately, little was written about the construction or use of these types of mundane river craft such that today much of what we know about them will come from archaeological sites such as this one.

The Walkiah Bluff Sternwheel Launch (Site 22Pr755)

The vessel identified as the Walkiah Bluff Sternwheel Launch, designated Mississippi state site number 22PR755, was discovered during cultural resources work conducted near Walkiah Bluff in 1995 and 1996 (Saltus and Pearson 1997:30-32) and was fully recorded in 1998 (Pearson 2000:31-50). The Sternwheel Launch site consists of the remains of a wooden, flat-bottomed, sharp- or skiff-bowed boat lying in the bottom of Parker Bayou, a small tributary of the Pearl River. When examined, the hull was partially filled with sediment and partially submerged (Figure 5).

The Sternwheel Launch measures 31 feet, 2 inches (9.5 m) long and 6 feet, 3 inches (1.9 m) wide. The exact depth of the hull was
difficult to determine because the upper hull planks are missing or damaged and the tops of most frames (futtocks) are heavily eroded. The most accurate measurements indicates that the hull is 24 to 26 in (62 to 67 cm) deep. The remnants of a chain-driven, stern paddlewheel assembly, including the paddlewheel shaft, is still attached to the hull. Additionally, two other iron shafts, each with various types of wheels, cams, and belt drives attached are in place in the stern half of the boat. A pile of debris, consisting mainly of iron boat fittings and machinery pieces, is located in the very bow of the boat. Some of this debris appears to consist of remnants of the gasoline engine that originally powered the vessel. Small, gasoline powered sternwheelers such as this, typically known as “gas boats,” were fairly common from about 1890 to 1920, but disappeared rapidly with the introduction of diesel engines in the 1920s (Custer 1994).

The Walkiah Bluff Sternwheel Launch was built using generally standard techniques of construction for small boats. The basic skeleton of the boat consists of frames comprised of horizontal floors running across the bottom of the boat and upright futtocks that form the framework for the sides (Figure 6). The space between frames is
approximately 20 inches, however, there is some variation in this spacing. Some of this variability is certainly due to distortions in the hull resulting from settling on the sloping surface of the bayou bank, however, it is possible that minor differences were incorporated in the original construction.

There is variability as well in the construction and configuration of the frames. Frames 1 through 11 each contain two upright futtocks on each side, while the last three frames each have just a single 2-x-6-inch futtock, per side (Figure 6). The floors of frames 1 through 6 and frames 12 through 14 consist of single, 4-x-4-inch timbers, except for the floor of frame 6, which is a 2-x-4. All of the other floors are paired, constructed of two pieces of 2-x-4-inch timber. This variability in frame construction is not random, but is related to the overall form and function of the boat. As shown in Figure 6, the paired floors are located in the flat bottom portion of the hull, while the single, larger floors were used at the very stern and in the forward third of the boat.

The transom is perfectly vertical and is constructed of a single piece of 2-inch-thick cypress. The bow is sharp and the stem is essentially straight or plumb. The bottom of the boat is planked with 1.5- to 2-inch-thick cypress planks laid longitudinally, or “for-and-aft.” The sides are planked with 1-inch-thick cypress boards. Although the boat is somewhat twisted and the sides distorted, several measurements at frames suggests that the sides flare outward about 10 degrees from vertical. Typical of flat-bottomed boats, the Sternwheel Launch is “chine built” or “hard chined,” meaning that there is a definite angle formed between the bottom and sides of the hull (Chapelle 1951:34).

The bottom of the boat is essentially flat between Frames 6 and 11 and then gradually curves in a long upward sweep toward the bow. The bottom also curves upward aft of Frame 11, but between Frame 14 and the transom, the bottom rakes up sharply (Figure 6). This upward rake of the bottom at the stern produces what is known as a “tucked transom,” a feature that helps prevent dragging of the stern by raising it out of the water, compensating for the heavy weight of the stern paddlewheel. Additionally, the tucked transom accommodates the movement of the rudder.

Excavations and probing inside of the hull revealed that a portion of the bottom contains intact ceiling planking. The ceiling forms the floor of the boat and consists of 1-inch-thick planks nailed directly on top of the floors. Two, longitudinal 5-x-7-inch timbers are attached to the top of the ceiling in the area of Frames 7 and 8 (Figure 6). Each timber is located 15.5 inches (40 cm) from either side of the boat and these are believed to have served as supports for the boat’s gasoline engine.

The stern paddlewheel assembly consists of the paddlewheel shaft itself, two long, stout 3-x-5-inch “engine” or “cylinder” timbers that extend behind the boat, plus several smaller boards that help attach the engine timbers to the hull at their forward ends. The entire assembly has collapsed down at the stern and the engine timbers have been pulled loose at their forward ends. Each cylinder timber measures 14 feet long and they provided the principal support for the paddlewheel. Their name derives from their use in sternwheel steamboats where the engines (or cylinders) would have been attached to their forward ends. No engine was ever attached to the timbers in the Sternwheel Launch, but the original name for these features is used here. The engine timbers are set into notches in the transom and rest in notches cut into the tops of the last several frames on either side of the boat. Attached to the underside of the inboard section of each engine timber is a 1-x-5-inch board that extends from the transom forward to Frame 10. Two large iron bolts join the engine timber and this board together and extend to the bottom of the boat where they are attached to the hull.

The 2-inch-diameter iron paddlewheel shaft is heavily corroded, but flanges and collars that once supported the paddlewheel assembly are still attached, as are some pieces of the wooden wheel. The shaft is attached to the tops of each engine timber by pillow block bearings. The distance between the outsides of the two flanges is almost exactly 4 feet (1.2 m), presumably, representing the width of the paddlewheel. In order to clear the rudder, the diameter of the wheel could have been no more than about 5.5 feet.

Attached to the port end of the paddlewheel shaft is a 19.5-inch-diameter, iron sprocket wheel. Originally, a large chain that drove the paddlewheel was fitted around this sprocket wheel and extended
forward and around a smaller sprocket wheel attached to the port end of a drive shaft positioned just inside of the stern of the boat. This shaft, identified as the main drive shaft and commonly known as the “jacksack” (Daly 1995; Way and Rutter 1990:xix), like the paddlewheel shaft, is a 2-inch-diameter, iron rod that rests in pillow block bearings on top of the cylinder timbers. Three, very heavily corroded iron flanges or collars are attached to the port half of the drive shaft, inboard of the sprocket wheel. Because of the corrosion, these pieces are unidentifiable, but it is believed that they are pulleys or gears that served to connect the drive shaft to the boat’s engine. Most sternwheel “gas boats” used a belt drive system to connect the boat engine to the jacksack (Daly 1995:8).

A third iron shaft, also extending completely across the hull, is located at Frame 10 (Figure 6). This shaft is believed to be some kind of auxiliary drive that was powered by the boat’s engine. It is presumed that a leather or canvas belt from the engine was wrapped around one of the belt drive wheels on the shaft to power it.

Photographs of early-twentieth-century, chain-driven, sternwheelers similar to the Walkiah Bluff Launch commonly show the motor positioned well forward in the boat, in the center or even forward of center (Custer 1994). The two, 5-x-7-inch timbers attached to the top of the ceiling and floors in the vicinity of Frames 7 and 8 are believed to be engine supports, indicating that the motor on this vessel also was positioned well forward. Additionally, portions of what are believed to be the steering mechanism for the boat were found in the area of Frames 7 and 8, matching what seems to have been a common practice of placing a gas boat’s steering wheel close to the engine.

All of the evidence indicates that the Walkiah Bluff Sternwheel Launch is a gasoline-powered, chain-driven sternwheeler. Commonly referred to as a “gas boat” these were fairly common during the period from 1900 to about 1920, however, relatively little is known about them, particularly their early history (Custer 1994; Way and Rutter 1990). Their development arose in conjunction with the expanding use of the internal combustion engine, particularly the gasoline engine, in the latter years of the nineteenth century. Many of these early gasoline engines contained only a single cylinder and were known as “one-lungers,” although multiple cylinder motors were made. Although many gasoline engines were used to drive propellers in small boats, sternwheel-powered boats were particularly adapted to shallow-water conditions. The boat hull itself could be shallow and flat bottomed and the paddlewheel needed only to enter the water a small distance to drive the boat. A stern paddlewheel was particularly useful in rivers and small streams that contained numerous snags, logs and other obstructions that could damage a propeller, in other words, settings like the Pearl River.

The exact age of the Walkiah Bluff Launch is unknown, but it is presumed to date no earlier than about 1890 and no later than about 1920. All of the nails used in the boat are wire nails, indicating that it was built after about 1885 and possibly after 1900. This age estimate is supported by the small amount of historical information available for these types of boats (Custer 1994), as well as by information obtained from several long time residents of Walkiah Bluff (Pearson 2000).

No direct historical evidence has been found to verify how this sternwheel launch was used, but it is likely that the boat worked in conjunction with lumbering and rafting which were at their peak on the Pearl River between about 1890 and 1910 and had ended by 1920. It may have been employed to maneuver logs in the formation of rafts or to accompany rafts down the river. The auxiliary drive shaft on the boat is believed to have been utilized in these activities, because it seems to have no relationship to the mechanical operation of the boat itself. Driven by a belt from the boat’s motor, this shaft could have been used to wind in ropes attached to logs or groups of logs in making up rafts or otherwise maneuvering floating timber. In addition, the boat could have been used for general passenger, cargo and courier service associated with timber rafting.

The Walkiah Bluff Launch was almost certainly built locally. This is based on the use of cypress in its construction, plus the fact that historical evidence suggests that many of the early gas boats tended to be built by individuals and not by big boat yards (Custer 1994:17). Although locally built, the sternwheel launch emulates a “national” style and technology. The development and fairly rapid
diffusion of gasoline powered boats across the inland waters of the United States were reflections of the advantages provided by the gasoline engine. Other technological advances soon led to the decline of sternwheel “gas boats” and, ultimately, to their almost complete disappearance. The Walkiah Bluff Sternwheel Launch represents a rare surviving example of one of these boats and presently is the only one identified in the lower Pearl River region.

The Walkiah Bluff Skiff (Site 16St184)

The Walkiah Bluff Skiff site consists of a small, essentially complete, wooden skiff, that when originally found was almost completely buried in the west bank of the Pearl River opposite Walkiah Bluff, Mississippi. This boat lay in St. Tammany Parish, Louisiana, on the property of the Bogue Chitto National Wildlife Refuge and has been designated Louisiana archaeological site 16St184. When examined in the summer of 1998, approximately 2 feet of the stern of the skiff was extending from the bank, just above the level of the river. The soils covering the boat were mainly sands and sandy silts that were very easy to dig with shovels, so it was decided to remove all of the overburden covering the vessel and completely expose it for recording (Pearson 2000).

Removal of the overburden revealed that the skiff to be almost completely intact. The boat is flat-bottomed with flared sides and measures 12 feet, 2 1/2 inches (3.7 m) long; 3 feet, 5 inches wide (1.1 m); and 1 foot (30.8 cm) deep (Figure 7). The vessel narrows at the bow, but has a flat or “transom” bow (sometimes called a “scow” bow) rather than a “sharp” or pointed one (Dillon and Lipke 1990:6-5). The flat bow of the boat is straight and consists of two pieces of board nailed together. The sides of the bow piece slant outward at an angle of 126 degrees, which constitutes the angle of the sides of the boat at the bow. An iron eyebolt that served as a point for attaching a bowline extends through the bow piece.

The transom of the skiff consists of a single piece of 1 1/2-inch-thick cypress board. The sides of the transom slant outward at 112 degrees, meaning that the slant of the sides of the boat at the stern is somewhat less than at the bow. The transom had been uncovered and exposed to the elements for some period of time and is somewhat deteriorated.

Two athwartship bulkheads are built into the boat. Each consists of a single, 1-inch-thick piece of cypress. The forward bulkhead is located 6 feet aft of the bow and the other is 8 feet aft of the bow (Figure 7). The two bulkheads provide support for the bottom and sides and also form a water-tight livewell. Two, 1-inch-diameter holes are drilled through the bottom planks inside of the livewell. These holes allowed water to enter the well, where fish or bait could have been kept alive. The livewell probably would have been fitted with a cover, but this is now missing.

Each side of the skiff is comprised of a single, 1-inch-thick, 12-inch-wide cypress board. The side planks are attached to the transom, the inner bow piece and the two livewell bulkheads with wire nails. Most of these appear to be 16-penny nails, however, a few seem to be smaller, possibly 10-penny nails. A 1 x 2-inch chine piece or chine board, extending from the bow to the forward livewell bulkhead, is attached at the juncture of the sides and the bottom planks (Figure 7). This chine piece provides strength and support along this joint. A short, 12-inch-long piece of 2 x 4-inch board is nailed to the inside of the hull on the starboard side about 2 feet forward of the livewell. This is presumed to be a support for a seat that originally existed at this location. Another seat is likely to have been at the very stern of the boat, although evidence of this is missing.

The bottom of the skiff consists of 1-inch-thick cypress planks laid across (athwart) the width of the boat. Tar is smeared over the inside of several of the bottom planks just forward of the livewell. Presumably, this had been used to stop leaks. What appears to be caulking of some sort was observed in the seams between several of the bottom planks.

The sides of the skiff form a very graceful curve and show a slight flare at the bow. As noted above, the sides slant outward at an angle of about 112 degrees along most of the boat, but at the bow this slant is 126 degrees which creates the slightly exaggerated outward flare in the sides at the very bow of the boat. The bottom has a fairly
pronounced bottom rocker or camber (Figure 7), such that when floating the bottom rises clear of the water at the bow and the stern. The curvature of the bottom (rocker) of the boat is produced by the bending of the side planks when they are attached to the bow piece, transom and livewell bulkheads. This “springing” of the sides is a simple technique for producing desired rocker with a minimal waste of material (Chapelle 1951:51).

This small wooden boat is a very well preserved example of a type of watercraft that was once common in the lower Pearl River region. It is a vernacular, or “folk” craft, almost certainly built by a local craftsman for local use, following traditional techniques of construction. The skiff is a very simply built boat, but one with elegant lines and a very pleasing shape. The amount of lumber used to construct the boat is minimal. The hull contains only 19 pieces of board, most of which are 1-x-12-inch boards that could come from just a few pieces of lumber. The boat is referred to here as a “skiff,” a term that is regionally used to refer to flat-bottomed boats with pointed bows and flat transoms. In French-speaking (southern) Louisiana, just to the west of the lower Pearl River area, the term “bateau” is sometimes used to refer specifically to a flat-bottomed boat with a wide, bluff or transom bow; however, “skiff” is used for boats with narrowed, transom bows like the Walkiah Bluff boat (Comeaux 1972, 1985). Residents along the lower Pearl River sometimes use the term skiff to refer to boats like this one, but more often they simply call it a “boat,” frequently with a modifier, such as “fishing boat” or “paddle boat” (Curtis Blackwell, personal communication 1998). Boats like the Walkiah Bluff Skiff were a common and ubiquitous watercraft of the Pearl River region until the 1950s. Since then they have been almost entirely replaced by aluminum and fiberglass boats. Interviews with several residents of Walkiah Bluff revealed that none knew of the existence of any wooden skiffs today, although some elderly residents remembered when they were common. When these boats first appeared in the area is not specifically known, but they certainly would have become popular after the introduction of sawn lumber into the region in the 1840s.

The exact age of the Walkiah Bluff skiff is unknown, but information collected from local residents suggests it was built in the 1930s (Curtis Blackwell and George Thomas, personal communication 1998). The use of only wire nails in construction indicates a post 1885 or 1890 date for the boat. Also, few local boat builders used cypress planks after the opening of a plywood plant in nearby Picayune in 1940. Informants stated that the boat was very
similar in style to those made by members of the Wise family who lived north of Walkiah Bluff and were prominent local boat builders prior to the 1950s (Pearson 2000:56-57).

These small skiffs were used for many purposes, but principally for fishing, trapping and travel. The presence of the livewell in the boat suggests that it was built for fishing. Local residents noted that these small “paddle boats” were always built with bottom planking running across the boat, noting that fore-and- aft, or longitudinal planking, would be too too in a boat unless it had floors and frames in it to provide support. Chapelle (1951:51), also, notes that cross-planking on the bottom involved less labor and cost of construction than did longitudinal planking. Athwartship planking on small, flat-bottomed boats is generally characteristic of the Eastern and Southeastern United States, where it is commonly associated with an Anglo boatbuilding tradition. In south Louisiana, similar small flat-bottomed boats, typically, are built with fore-and-aft bottom planks and internal floors and frames to provide support, a construction technique generally considered reflective of a French heritage (Cameaux 1985).

Small, locally built wooden boats like the Walkiah Bluff Skiff, once common on the Pearl River, have all but disappeared. These vernacular craft are reflective of local boat building traditions; traditions that incorporated construction techniques that were almost always passed verbally from one person to another through the building of the boats and were never written down. Thus, the boats themselves become the most important expression and conveyors of these vernacular traditions. The rapid disappearance of these local watercraft, as they have been replaced by manufactured boats, as well as the demise of those who built them, make any surviving example an important item of regional material culture.

Conclusions

The several boats discussed here represent only some of the historic watercraft that have been found and examined along the lower Pearl River and vicinity. Among these other vessels are the remains of the government snagboat Pearl 2, built at Logtown in 1893 and lost on the Pearl River in 1902; the wreck of the sidewheel steamer Arrow, scuttled as a Confederate gunboat in 1862; and several wooden barges and small boats of various types that date from the late nineteenth and early twentieth centuries (Pearson 2000; Pearson and Saltus 1996). Normally, archaeologists concentrate their efforts on the study of individual vessels; only rarely do they have the opportunity to examine the range and variety of watercraft as have been found on the lower Pearl River. It is for this reason that the various vessels discussed here constitute a truly unique collection. Each is different and distinctive and important in its own right and deserving of archaeological study. However, they are most meaningful as a group by providing a window through which to obtain a wide view of the rich and varied history of watercraft on the Pearl River.

Other than the cultural resources studies noted here, almost no research on the archaeology of boats or history of their use along the lower Pearl River has been conducted. Although these previous studies do present overviews of the history of navigation and vessel use on the Pearl, no comprehensive examination of watercraft of the region has been undertaken, such as has been done for the Atchafalaya Basin of Louisiana by Comeaux (1972) or for the south Atlantic coast by Fleetwood (1995). The discussion presented here represents only a small effort in that direction, but it is apparent that the much more can, and should, be done. There seems to be no doubt that the remains of other historic vessels exist along the lower Pearl. Their discovery and careful study can expand our understanding of many facets of the long history of watercraft use on the river. This history is now almost forgotten, and these boats, the men who worked them and the work they did have disappeared from the river. A few written accounts, some oral histories and, possibly most importantly, the remains of these boats themselves are all that are left to tell the story of this important aspect of Pearl River history.

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Relocation And Evaluation Of The Back Bay Biloxi Shipwreck Site 22Ja542, Jackson County, Biloxi Bay, Mississippi

Michael C. Krivor

Abstract

In 1997, Panamerican Consultants, Inc., of Memphis, Tennessee conducted a remote-sensing survey and underwater investigation to relocate and evaluate a colonial-period shipwreck located near the eastern shore of Biloxi Bay (Site 22Ja542). The remains of a vessel approximately 40 feet in length with an extant beam measurement of 12-15 feet in width were successfully relocated and subsequently recorded. Hull remains recorded included the keelson, bilge ceiling planking, floors, rising floors, offset first futtocks, and outer-hull planking. A variety of artifacts including brick, rigging material, and iron stock were also recorded during the investigation. The site appears to be a colonial-period vessel dating to the eighteenth century.

Introduction

Panamerican Consultants, Inc., of Memphis, Tennessee (Panamerican) was contracted in 1997 by the Mississippi State Department of Archives and History (MDAH) to conduct a remote-sensing survey and underwater investigation to relocate and evaluate the site of an early shipwreck reported to be in Biloxi Bay in Jackson County. The site is tentatively thought to be associated with the early French settlements of Fort Maurepas (1699–1702) or Vieux Biloxi (1719–1721), and possibly one of several ships sunk in the 1722 hurricane that hit the area.

The wreck site was originally discovered in 1892 by Eugene Tiblier Jr., an oysterman who reportedly located a cannon while catching oysters off an area referred to as the “rock pile.” Tiblier, Jr. told his father, Eugene Tiblier, Sr., about the find and they then told...
Captain Jose Suarez of the schooner Maggie. The three men investigated the site, uncovering a number of cannon and various artifacts. Newspaper articles from 1892 state that the vessel was approximately 55 feet in length and 20 feet in width (*Biloxi Herald* 1892; *New Orleans Daily Picayune* 1892). The three men spent over 12 days on the wreck making observations and recovering artifacts. They believed that the vessel was made of oak and mahogany and was in a fair state of preservation.

A previous attempt in 1973 to relocate the vessel using a magnetometer survey of the area (Hudson 1973) failed to identify the wreck. This study examined the cannon previously recovered from the site and suggested a temporal association of circa 1700 (Hudson 1973:3-4).

**Fieldwork**

Fieldwork focused on an area near the eastern shore of the back bay of Biloxi. Water depths ranged from three to 15 feet. The initial phase of the current investigation involved magnetometer and sidescan sonar surveys of two areas (A and B; Figure 1) to identify anomalies that might represent historic resources. The survey began with a magnetometer survey of a 1500 by 1500-foot square (Area A). The magnetometer survey was extended to a second 1600 by 1000 foot square area (Area B), based on interviews with one local informant who suggested the wreck might be located nearer modern shipping lanes. A sidescan sonar survey of both Area A and Area B followed the magnetometer work in an effort to identify cultural resources that may have projected above bay sediments. Provenience and survey transect navigation was controlled by the use of a Differential Global Positioning System (DGPS).

For complete survey coverage, navigation lines were established at 100-foot intervals. Sixteen tracklines were run over Area A for total coverage and an additional ten survey lines were added to the west (Area B). The tracklines were programmed to run parallel to each other and were aligned perpendicular to the existing Louisville and Nashville Railroad bridge. The end points of each trackline were
set to extend beyond each survey line end to ensure sufficient coverage of the area.

Prior to the commencement of the survey, fix points were entered into the navigational program Navtrak®. After the appropriate points were entered, the program and positioning system generated a set of tracklines. Remote-sensing equipment was turned on and tested to check for accuracy of data. To follow the predetermined tracklines, the helmsman viewed a video monitor, linked to the DGPS and the computer, as an aid in directing the course of the survey vessel. The monitor displayed both the pre-plotted trackline, the real-time position of the survey vessel relative to the line being run, and the actual track of the survey vessel. By keeping the real-time position of the survey vessel as close as possible to the associated pre-plotted survey line, the helmsman was able to cover all tracklines within the proposed survey corridor with a high degree of accuracy.

As the survey vessel maneuvered along each trackline, the navigation system determined the vessel’s position along the actual line of travel once every second. The computer concurrently recorded the position every second and the magnetometer data every two seconds. Vessel speed was maintained between eight and 10 feet per second, with magnetometer readings being recorded every 16 to 20 feet. Magnetometer data was collected at the 10-100 gamma scale with a background deviation of three to five gammas (Figure 2). All positioning points were recorded on a computer floppy disk as well as the magnetometer data (magnetometer data were also recorded on a paper stripchart). During the data collection along each individual trackline, bathymetric data and visible surface targets (such as crab pots) were periodically noted.

Once the magnetometer survey was completed, the raw positioning and magnetometer data in ASCII format was edited and merged into a single Excel® file. The edited file was downloaded into the computer contouring program Surfer® to produce a series of magnetic contour charts (Figure 3). The maps, field notes, and magnetometer stripcharts were then analyzed. Thirty magnetic anomalies were recorded within the project area.

Figure 2. Example of magnetometer stripchart data.

After the magnetometer survey was completed the sidescan sonar unit was assembled and calibrated with the DGPS to enable investigators to associate magnetic targets with any sonar images recorded during the sonar survey. Sixteen passes (each recording 120 feet per pass) were made in each of the two survey blocks. Total coverage of each block was 960 linear feet (times two blocks=1920 feet coverage) allowing for a 40-foot overlap of each pass. Natural bottom features recorded by the sidescan sonar included sand ripples and underwater shoals. Schools of fish were also recorded. Man-made features recorded during the sidescan sonar survey included crab pots and small amounts of modern debris (Figure 4). Since the wreck was completely covered in sediment no wreck features were identified during the sidescan sonar survey.
Thirty magnetic anomalies were found within the project areas. One of these correlated with location information provided by Ocean Springs resident Charles Eleuterius. Dr. Eleuterius, a descendent of the oysterman who originally found the site in 1892 and whose family had passed down to him information about the shipwreck, proved to be instrumental in the relocation of the site.

The second phase of the project, a diving investigation, intended to focus on magnetic anomalies that potentially represented the target shipwreck. Using the information provided by Dr. Eleuterius to prioritize the anomalies, divers began with the anomaly identified by him as being in the location that coincided with family oral...
history about the wreck. The anomaly was relocated and divers made a preliminary examination. Visibility on site ranged from zero to three feet depending on tides while water depths ranged from 12 to 15 feet. Probing activities revealed the remains of a vessel approximately 40 feet in length with an extant beam measurement of 12–15 feet in width. Artifacts located included bricks, rigging material, wood shingles, cask remains, and a variety of iron concretions. Artifacts were either brought to the surface and recorded in detail or were recorded and left in situ. None, however, represented exact temporal or origin (i.e., nationality) indicators.

**Description Of The Wreck Structure**

Preliminary investigation of the target area revealed wood remains beneath one to three feet of soft sediment. A small excavation was placed in the area, and wood planking was documented. It was decided to closely examine the area of wood planking in order to establish the orientation of the site. A jet probe was set up to facilitate the removal of overburden from the site. Twenty inches below the sediment, a run of frames was uncovered along with intact outer-hull planking and ceiling planking. The wood remains were badly eaten by Teredo worms (*Teredo navalis*); however, wood found deeper in the sediment was in a better state of preservation. All areas uncovered during the investigation were mapped to produce a scaled plan of the site (Figure 5).

Five frames were exposed, extending west perpendicular to the existing shoreline. Three of the frames were exposed enough to record. The frames appeared to be single frames of varying space and room measurements. The three exposed frames measured 6, 9, and 6 inches sided, and all were 7 inches moulded. The space between the frames ranged from 3 to 6 inches. Ceiling planking recovered from this area measured from approximately 1 7/10 to 1 3/4 inches in thickness. Hull planking recovered measured 2 inches thick. Wood samples of the frames, hull, and ceiling planking were recovered for analysis. There was no evidence of sacrificial or outer-copper sheathing or copper fasteners. The vessel was fastened with

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*Figure 5. Site plan of the Biloxi Bay shipwreck.*

wood "treenails" that were faceted (six to eight sided). Treenail diameter was 1 1/4 inches.

Once the east side of the site had been located, the next step was to determine the site’s spatial extent. A diver using the seven-foot...
probe defined the northern, western, and southern extremities of the site. Results of the probing determined that the site was approximately 40 feet in length and 12–15 feet in width. Buoys were placed at the extremities of the site for future reference. Based on the orientation of the framing pattern and the length of the site, it was determined that the vessel was oriented on a north-south heading, with the frames oriented east-west.

Jet probing on the north end of the site continued, exposing a main structural timber (keelson), a number of floors, and outer-hull planking. The keelson is an internal keel (in the form of a stringer) mounted on top of the floors and keel to provide strength and support to floor timbers (Kemp 1993:444). Floors or floor timbers are actually frame members to which the bottom hull planking is attached. Preliminary indicators, including the butt end of the keelson, the fine run of the outer planking, and the presence of rising floors established this end of the site as the stern of the vessel.

The north end of the site was cleared of overburden and recorded in detail. Here, a number of vessel timbers were documented. Two V-shaped rising floor timbers were noted at the extreme end of the site. The northernmost of these was not completely cleared of overburden, but appeared to be approximately 15–20 inches in length. It was positioned 10 inches from the end of the keelson. Another V-shaped rising floor timber was recorded between the keelson and the previously mentioned frame. This second frame was 7 inches sided and 22 inches in length. It had a moulded dimension of 15 inches.

Three sets of floor timbers associated with the north end of the keelson were documented (A, B, and C in Figure 5). Each of the floor timbers was V-shaped and seated beneath the keelson. The first floor measured 5 inches sided and had a moulded dimension of 12 inches. Approximately 13 inches of the frame remained intact, with the end being highly degraded. This frame member was located on the starboard side of the vessel; the port side floor was no longer extant.

The second floor timber was 8 inches sided and 15 inches moulded. On the starboard side of the vessel, 15 1/2 inches of this frame were extant. The end of this floor was highly degraded as well. The port side portion of this floor was no longer extant. The third recorded floor was partially covered by overburden, making an accurate sized dimension of the timber impossible. However, the moulded dimension of the floor was 17 inches. Approximately 14 inches of this floor remained; the end was highly degraded.

Approximately 53 inches of the keelson was exposed at the north end of the vessel. The keelson was oriented perpendicular to the existing floor timbers and terminated in a butt end just forward of two rising V-shaped floors mounted in the stern. The keelson measured 10 inches sided and 5 1/2 inches moulded at the butt end.

Southward (toward the bow) the keelson's moulded and sided dimensions increase. The dimension of the keelson at the first seated floor, from the butt end the keelson, was 10 inches sided and 6 1/2 inches moulded. At the next floor the keelson measured 12 inches sided and 6 1/2 inches moulded. The keelson measured 13 inches sided and 8 inches moulded at the third floor timber proceeding forward of the stern of the vessel. The keelson was notched to accept the floor timbers. Notching allowed for the keelson to lock the floors of the vessel into place, adding additional strength to the hull of the vessel. The keelson was notched 1 1/2 inches at each of the three floors in the stern section.

Between the first and second seated frames, semi-circular grooves were cut into both sides of the keelson. Both were 10 inches in length, and each was cut into the keelson approximately 2 1/2 inches. The smooth construction of these architectural features indicates that they performed some function for the vessel. However, at this time their function has not been determined. These grooves could have accepted two bilge pump tubes; however, bilge pumps were usually located closer to the midship area. If the vessel was hogging in the middle, it might have been necessary to install bilge pumps closer to the bow/stern of the vessel.

Two outer-hull planks were measured at the stern of the vessel. It appeared that the port quarter of the vessel received some damage either when the vessel founded or as a consequence of post-depositional process. Two of the port floors were missing, allowing access to the garboard strake and one of the hull planks. The garboard
strike was 8 inches sided and 2 inches moulded. The other exposed hull plank measured 6 1/2 inches sided and two inches moulded.

With the stern section recorded, the investigation moved to uncover the southern extremity of the site. The area was probed again with the seven-foot stainless steel probe to confirm the presence of wood; once confirmed, the jet probe was used to clear the end of overburden. The end of the site was located, and a number of floor timbers and futtocks (frame members attached to the ends of floors to which the side planking of the hull is attached) were exposed on the port side of the vessel. The bow of the vessel was missing, with the framing pattern and keelson ending abruptly.

One floor and two first futtocks were cleared of sediment and documented. The first offset futtock at the north end of the test pit was 8 inches sided and 6 inches moulded. This timber was offset from the keelson 4 inches. This futtock was spaced 4 inches from the floor to the north and 2 inches from the floor to the south. The floor recorded was 8 inches sided and 8 inches moulded. The next offset futtock was 6 1/2 inches sided with a moulded dimension not available. The futtock was offset from the keelson by 1/2 inch. The frame/futtocks at this end of the vessel appeared more rounded rather than the "V" construction of the timbers at the stern.

The keelson was highly degraded at the southern extremity of the site and did not appear to represent the original end of the timber. An absence of additional floor/futtock arrangements and cant frames suggests that the bow section is no longer extant. The keelson measured 17 1/2 inches sided and 10 1/2 inches moulded. A ceiling plank recorded in the test pit was 14 inches sided and 1 1/4 inches moulded.

With the north, south, and east sides of the vessel marked, a tape was used to measure the length and width of the extant hull remains. The remaining keelson was 38 feet 1 inch in length, and the overall length of the vessel was approximately 40 feet. A probe was used to locate the starboard side to determine the width of the hull remains, which was approximately 13 feet. The majority of the intact remains are on the port (inshore) side of the keelson.

Another test pit at the center of the vessel remained was attempted in order to examine the framing pattern and dimensions of associated timbers. Although a trench was initially planned, it was decided that it would be detrimental to the provenience of existing artificial remains. The keelson was relocated with the jet probe and a section of the framing was exposed. A small amount of bilge ceiling remained; however, it was possible to access a number of timbers for measurement. The keelson, two floors, and two offset futtocks were uncovered on the starboard side of the vessel. The keelson measured 14 inches sided and 8 inches moulded. The first futtock was offset from the keelson 5 inches and was 21 inches in length. The timber was 7 inches sided and spaced 1 inch from its associated floor. The associated floor was 24 inches in length and had a moulded dimension of 8 inches. The next futtock was spaced 1 1/2 inches from this floor. The futtock was 22 inches in length and was offset from the keelson 5 inches. The sided dimension was 7 inches with a moulded dimension of 9 inches. The next floor was spaced 3 1/2 inches from the previous futtock. This floor was 30 inches in length with a moulded dimension of 13 inches. Sediment in the test pit prevented a sided measurement. A square limber hole was documented in the base of this floor. The limber hole was 2 inches in height and 3 inches in width. A limber hole was cut into floor timbers on either side of the keelson to allow for the free passage of bilge water to the vessel’s bilge pump (Kemp 1993:484). All the recorded timbers were highly eroded on their ends.

Associated Artifacts

Although the wreck site has been disturbed in the past, a small assemblage of cultural material was documented during the current investigation. These materials included cannon recovered from the site in 1892, as well as brick, rigging material, iron stock, barrel staves/heads, and wood shingles recovered during the 1997 investigation.
Cannon

Newspaper articles state that four cannon were raised during the initial investigation of the Back Bay Biloxi site (in 1892). One cannon is six feet in length with a muzzle diameter of 8 1/2 inches. The letters “H.E. or F.O.S.” were discernible about one foot from the vent hole. A second cannon is seven feet long with a portion of the carriage still attached. The two remaining cannons are approximately four feet long with 2 1/2 inch muzzle diameters. The latter two were recorded as being badly eroded due to prolonged exposure underwater (Biloxi Herald 1892; New Orleans Daily Picayune 1892).

These four cannon were eventually donated to the city of Biloxi and put on display, where they remain today (Figure 6). A fifth cannon purportedly from the wreck is now located at the Poitevant estate in Ocean Springs, though there is not sufficient information to corroborate this possibility. All were recorded in detail during this investigation. Although degraded, measurements taken from the five cannon suggest that they are consistent with weapons deployed on small vessels of the eighteenth-century.

![Figure 6. Four cannon recovered from the Biloxi Bay shipwreck in 1892.](image)

Brick

A number of bricks were documented on-site during the preliminary investigation. A quantity of complete brick was uncovered approximately 16 feet 6 inches forward of the butt end of the keelson (at the stern). These bricks were mortared together at least three tiers (of brick) deep and oriented parallel to the keelson. One of these complete bricks was recovered for analysis (Figure 7). The extent of this brick configuration was undetermined. However, because the bricks were mortared together, they were possibly part of a hearth, likely used for food preparation during a voyage.

There are other archaeological examples of tiered brick hearths. For instance, the vessel Hermine, a French frigate that foundered off Bermuda in 1838, had onboard a brick and iron galley basin (Waters 1997:18). Bricks were mortared into place in a circular fashion and layered to help insulate the cooking area as well as protect the vessel from the potential of fire. The 1984 excavation of the vessel Boscawen in Lake Champlain revealed a number of whole and fragmented brick remains just aft of the forward mast. The

![Figure 7. Complete brick with mortar recovered from the site.](image)
Boscawen was thought to be an English sloop that foundered in 1759. The hearth was usually found in this location on board vessels of this time period (Crisman 1985:421). The bricks and brick fragments from the Boscawen were diverse in their size and color, indicating that the fire hearth was constructed from material scrounged from different areas (Crisman 1985:423). In contrast, although a variety of brick fragments were documented at the Biloxi Bay site, the mortared bricks comprising the hearth appear to be of relatively the same size.

The dimensions of bricks can lend some insight into the nationality of the vessel, although this determination should not be regarded as a positive identifying factor. The whole brick removed from the fire hearth area was 8 1/4 inches in length, 4 inches in width, and 1 1/2 inches thick. The brick was gray with some evidence of staining from the underwater sediment. A study of French brick employed in the architecture of New Orleans indicates that this brick style dates from the 1720s to the 1780s for the city. However, this style of brick pre-dates the founding of New Orleans and could represent an earlier artifact brought from Europe, if in fact this vessel originated there.

After 1720 a variety of handmade bricks were being produced in New Orleans. The standard size of the bricks being produced from 1720-1780 were 8.2-9.0 inches in length with an average thickness of 1.56-1.92 inches. All bricks during this period were handmade, resulting in extreme variation in morphology (Greene 1980:17). Color variations in the brick produced in New Orleans ranged from red and light red to weak red.

From 1780-1810 the bricks being produced were still handmade. However, these bricks were shorter and thicker than those produced from 1720-1780, averaging from 6.36-8.19 inches in length with a thickness ranging from 1.93-2.16 inches. Color varieties of these latter brick ranged from light brown and red to reddish yellow (Greene 1980:17).

In addition to the in situ mortared brick, brick and brick fragments were found throughout the site. These fragments were all handmade, evident by the diversity in both length and thickness of the brick, and were most likely employed as ballast or as cargo for building material. Handmade bricks were made by packing clay into molds, letting them dry, and then stacking them into the kiln for firing (Greene 1980:9). The brick fragments recovered from the site ranged in width from 4 inches to 5 1/2 inches. Four brick fragments recorded on site were 1 1/2 inches thick (including the brick removed from the fire hearth location). The largest brick fragment recovered was 11 1/2 inches in length and 5 1/2 inches in width (and 1 1/2 inches thick). This fragment was reddish orange with mottled gray spotting. Screen marks were noted on one face of this brick fragment. Two of the smaller brick fragments recovered from the site were also handmade, ranging in color from gray/yellowish beige to gray/orange.

The historical record indicates that bricks were being produced in the southern territories and then shipped to the French West Indies. On April 30, 1734 a vessel arrived in New Orleans from Bordeaux, France with a shipment of wine, flour, and brandy. On its return voyage the vessel was loaded with brick, lumber, laths, and joists to carry to the French West Indies (Surrey 1916:186).

**Fairlead Bead**

One artifact recovered from the stern end of the vessel (on the port side) was a circular wooden object identified as a fairlead bead (Figure 8). A fairlead bead was used to help lead a rope in the most convenient way for working (Kemp 1993:294). The fairlead bead found on the Biloxi Bay site is similar in size and shape to three beads found on the British sloop Boscawen (Crisman 1985:379). Chapman, in his description of eighteenth-century rigging, identifies the bead as a shroud-truck, used to guide small to medium-sized running lines (Chapman 1768:115-116). From the smooth appearance of the fairlead bead found on-site, it would appear that the bead was lathe-turned. Fairlead beads were probably common onboard a vessel with standing rigging.
Sheaves

A number of spare wooden sheaves were uncovered from the south end of the site. Sheaves, the grooved wheels in a pulley block, were commonly made out of Lignum vitae, a hardwood found in the West Indies (Kemp 1993: 778). Three sheaves were brought to the surface and recorded (Figure 9). Each of the three had a diameter of 6 1/3 in. with a width of 1 1/3 in. One of the sheaves recorded still had its wooden pin intact. The pin is what the sheave rotated on, and they were commonly made from holm-oak (Chapman 1768:108). The sheaves recorded appear to be larger sheaves intended for large rigging blocks. The diameter and width of the sheaves correspond closely to the large sheaves recovered off the Boscawen in 184 (Crisman 1985:379).

A wood analysis by Dr. Lee Newsom at the Center for Archaeological Investigations in Carbondale, Illinois indicates the sheaves were made of lignum vitaea (Guaiacum officinale). This circum-Caribbean tropical hardwood quickly became very popular with Europeans, who began harvesting and exporting the wood as early as the middle 1500s. Because lignum vitaea is so hard, dense and durable it was employed in a number of ways, in particular the sheaves of ships’ pulleys. One advantage of lignum vitaea for this purpose is its “self-lubricating” quality, a function of having oil deposits throughout the wood.

Iron Stock

A substantial amount of iron stock was found approximately 24 feet off the southern starboard side of the vessel. The large amount of iron stock was cause for a sizable magnetic reading during the refinement of the target area. The strapping uncovered was of varying lengths and ranged from 2 inches to 2 3/8 inches in width. No holes or accessories were found in conjunction with the iron stock. Investigation indicates that the iron stock was a supply to be used at a later date. Raw iron stock was used for repairs, fasteners, barrel hoops, and for a variety of other purposes.
Barrel Staves and Heads

A small number of replacement barrel staves and heads made from white oak were uncovered during the investigation of the site. The single recovered barrel stave was approximately 14 inches in length remaining, 4 inches in width, and 1 inch thick. One end of the remaining length had a V-croze groove cut laterally across one end of the stave to accept the head of the barrel. Beyond the V-croze the stave was beveled or “chimed.” This stave was recovered from the south end of the site next to the keelson.

One barrel head stave was recovered from the port side of the stern section (Figure 10). The stave was approximately 8 inches in length and 3 1/2 inches in width. The circular edge of the head stave was double beveled to accept the V-croze groove. The straight-edge portion of the stave was approximately 5/8 inch thick. It appears that both the head stave and the barrel stave were spares, as they were not associated with any other barrel fragments. The double-beveled edge indicates that the head stave was to be used for barrels containing liquid rather than dry goods.

Wood Shingles

A number of wood shingles made of pine were documented during the excavation. A stack (approximately three to five staves deep) of shingles was uncovered during investigation of the south end of the site. One shingle was recovered and brought to the surface to be recorded. The shingle was 11 3/4 inches in length and 4 1/2 inches in width. The shingle was just under 3/4 inch thick at its thickest end. The wood appeared to be split, with one side planed smooth and the opposite side left unfinished. Wood shingles were likely used as roofing material for houses and other early structures built by the French. A number of photographs and drawings of early French colonial houses show that they frequently used wood shingles as a roofing material (McDermott 1965:photographs 2-A through 9-C, 20–21).

Wood Analysis

Wood samples were recovered from all major structural elements associated with the wreck site. These elements included the keelson, frame timbers, outer-hull planking, and bilge ceiling planking. Wood analysis identified two temperate and two tropical species (see Table 1). Temperate taxa include a “soft” or “white” species of pine (Pinus sp.), and an unidentified white oak species (Quercus sp.). Of the two tropical woods, one is identified to genus or possibly to species as lignum vitae or ironwood (Gualacum cf. officinale), while the other has been identified to genus Haematoxylon (logwood or purpleheart). Both woods are neotropical and strongly exhibit characteristics that suggest a circum-Caribbean origin. Wood analysis indicates that the vessel likely had some contact with the Caribbean and possibly also Europe. White oak samples exhibited characteristics suggesting either American white oak or European white oak, making it difficult to say on which side of the Atlantic this vessel may have been constructed. However, the fact that one of the frames of the vessel was constructed of logwood or purpleheart (Haematoxylon sp.) indicates that the vessel underwent some sort of repair in the West Indies, Central America, South America, or Mexico.
Table 1. Wood Sample Analysis

<table>
<thead>
<tr>
<th>Sample</th>
<th>Vessel Component</th>
<th>Wood Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>wood stave</td>
<td><em>Pinus</em> sp., pine</td>
</tr>
<tr>
<td>2</td>
<td>bilge ceiling</td>
<td><em>Quercus</em> sp., white oak group</td>
</tr>
<tr>
<td>3</td>
<td>frame</td>
<td><em>Haematonyx</em> sp., tropical hardwood (i.e., logwood/purpleheart)</td>
</tr>
<tr>
<td>4</td>
<td>keelson</td>
<td><em>Quercus</em> sp., white oak group</td>
</tr>
<tr>
<td>5</td>
<td>scrub</td>
<td><em>Quercus</em> sp., white oak group</td>
</tr>
<tr>
<td>6</td>
<td>barrel top</td>
<td><em>Quercus</em> sp., white oak group</td>
</tr>
<tr>
<td>7</td>
<td>hull planking</td>
<td><em>Quercus</em> sp., white oak group</td>
</tr>
<tr>
<td>8</td>
<td>wood sheave</td>
<td><em>Gnusium</em> sp., tropical hard wood (i.e., ligustrum vitis)</td>
</tr>
</tbody>
</table>

Pollen and Macrofloral Analysis

A small amount of organic material was recovered off a large ballast stone. The ballast stone was recovered from the midship area and was found beneath both an oyster shell lens and a soft mud layer approximately one to three feet deep. Pollen analysis revealed that the sample was dominated by arboreal pollen, primarily *Pinus* (pine) pollen. Other well-represented taxa were *Ostrya/Carpinus* (hophornbeam, ironwood/hornbeam, or ironwood) and *Quercus* (oak) pollen. Other types of pollen identified in smaller numbers were *Betula* (birch family), *Betula*-type (birch), *Corylus*-type (hazel/horn), *Castanea* (chestnut), *Ilex* (holly), *Nyssa* (tupelo), and *Taxodium* (bald cypress). Non-arboreal pollen include high-spine (aster, rabbitbrush, snakeweed, sunflower, etc.) and low-spine (ragweed, cocklebur), *Asteraceae*, *Cheno-am* (amaranth and pigweed family), and *Poaceae* (grass family), all of which can be found throughout the world. Other types reported in small quantities were *Trifolium pratense* (red clover), which was introduced into North America by European colonists, and *Typha* (cattail), a native of the Western Hemisphere.

The macrofloral analysis revealed the presence of a number of conifer needle fragments, a number of rootlets, and both charred and uncharred wood. Fragments of *Taxodium* (bald cypress) wood and charcoal were found, as well as *Quercus* (oak) wood. Both the bald cypress and oak trees are found locally.

Local plants dominate the pollen and macrofloral remains recovered from the Biloxi Bay shipwreck. The botanical analysis did not identify any exotic pollen or plants that would indicate the vessel’s possible country of origin (other than Colonial America). In particular, the pollen and macrofloral analysis turned up no exotic remains indicative of European origin. This may not be so surprising, considering that the sample was taken off a ballast stone that could have been placed onboard after the vessel reached America. It was common practice for vessels laden with cargo from Europe to offload the cargo at a specified location and then take on ballast to help stabilize the vessel.

Conclusions

Preliminary investigation of the Biloxi Bay shipwreck site documented the hull remains of a vessel tentatively dated to the eighteenth century. The surviving wreck consists of a section of the lower hull below the turn of the bilge. As a complete excavation was not undertaken, only the extreme ends of the vessel and three test pits near the midship area were uncovered. Extant hull remains consisted of a keelson, rising floors, floor timbers, offset first futtocks, ceiling planking, and outer-hull planking. The extent of the hull remains are approximately 40 feet in length running north to south with a remaining beam measurement of 12–14 feet. Examination of the north end of the vessel indicated that the stern is oriented to the north with the bow facing to the south. Although the stern is relatively intact, the bow section appears to be absent from the site. The entire stern area was not uncovered, so it is not clear whether or not the rudder is still intact. The majority of the lower hull remains were found to the port side (inshore) of the vessel. Much of the starboard side of the lower hull appears to be heavily eroded.

The overall dimensions of the vessel indicate that it once had an overall length of approximately 50–70 feet in length with a beam measurement of 15–20 feet. The vessel was tightly framed, indicating that it could have been used to make offshore voyages. Although small vessels were known to make such crossings, there
were many light-draught vessels used extensively in Biloxi Bay for
the sole purpose of transporting supplies and people from Ship
Island to both Old and New Biloxi during the eighteenth century.
Many smaller vessels of the period were also used to travel to the
West Indies as well as Mexico for trading purposes.

In comparing the size of the vessel to the *Belle*, a trans-Atlantic
vessel excavated by the Texas Historical Commission in 1996,
certain similarities exist. The *Belle* was a French vessel lost during
La Salle's early explorations of the Gulf region during the last
quarter of the seventeenth century. Both vessels exhibited similar
framing patterns (floor timbers with associated offset first futtocks),
and both vessels employed a keelson that was notched to accept the
floor timbers. Various measurements taken from both vessels are
comparable; however, none are conclusive enough to make any
definitive statements about the nationality or purpose of the Biloxi
Bay vessel. However, a comparison between the average moulded
and sided dimensions of the framing timbers would suggest that the
Biloxi Bay vessel was slightly larger than the *Belle*.

Throughout the eighteenth century a number of vessel types
were plying the waters off Biloxi Bay. From traversiers to feluccas
to shallows, a variety of small vessels have been mentioned
frequently in the historical record. It is almost impossible to discern
the type of vessel the Biloxi Bay wreck due to the small amount of
hull remaining. Many of the vessels during the period were similar
in hull configuration but differed solely in their rigging, resulting in
different vessel types. Without any rigging remaining and the hull
incomplete, identification as to the type of vessel is difficult. We
know that the vessel was not extremely large and had a V-shaped
hull configuration, suggested by the shape of the floors and offset
first futtocks. This hull shape would suggest that the vessel was
capable of handling offshore conditions.

Besides the hull, the only artifacts recovered that can be
considered temporally diagnostic are the bricks. Bricks of the
dimensions recovered from the site date from the 1720s to the 1780s in
New Orleans (Greene 1980), but could be older if brought from
Europe. Given the lack of specific temporal indicators, only an
approximate date range can be assigned to this shipwreck site. Both the
brick and the hull indicate that the vessel does not post-date the 1780s,
and most likely represents an earlier time period. It should also be
noted that the poor condition of the cannon supposedly recovered from
the site prevents any assertions about nationality or temporal period.

In addition to the question of temporal period is that of vessel
origin and/or nationality. Possibly due to past salvage, diagnostic
artifacts, such as ceramic types, were not observed during this
preliminary investigation. Although the brick appears to be French
in origin, this cannot be verified and is not a clear indicator of the
vessel's origin and/or nationality. This, however, does not mean that
diagnostic artifacts do not remain on-site. Further investigation of
the site might recover artifacts more helpful in determining the
origin and/or nationality of the vessel.

Regardless of the exact temporal period of the Back Bay Biloxi
shipwreck, the remains represent an important record of eighteenth
century vessel construction. Today our most valuable source of new
data concerning the design and construction of colonial vessels is
preserved in historic shipwreck sites. Thus, the Back Bay Biloxi
shipwreck site can add to the assembly of valuable clues for
reconstructing the architectural and construction traditions of the
eighteenth century.

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Department of Archives and History is thanked for allowing us this
research opportunity on a shipwreck that is a significant and valuable
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Sam McGaha, Chief Archaeologist with MDAH, is thanked for his
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Michael Krivor is a marine archaeologist employed by Panamerican Consultants, Inc.

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Waters, Sarah
Discovery of the Nineteenth Century Coastal Steamer Josephine (22Hr843) off Horn Island, Mississippi

David A. Ball, Jack B. Irion, and Richard J. Anuskiewicz

Abstract

During the summers of 1997 and 1999, divers from the U.S. Department of the Interior’s Minerals Management Service (MMS) Gulf of Mexico Region (GOMR) conducted non-destructive surveys of the remains of a sidewheel steamship that currently lies about six miles off the Mississippi Barrier Islands. Data collected from the site, and subsequent research, identified the vessel as the remains of the nineteenth century merchant steamship Josephine. The vessel was part of a fleet of ships owned and operated by Charles Morgan’s Louisiana and Texas Railroad and Steamship Company.

Introduction

For much of the nineteenth century, New Orleans was one of the busiest port cities in the United States. This was due, in no small part, to the introduction of the steam engine and the city’s location near the mouth of the Mississippi River. The first steamboat to reach the Crescent City, the sternwheeler New Orleans, arrived on January 12, 1812, after completing a 14-day journey down the Mississippi River from Pittsburgh, Pennsylvania. Shortly after this historic journey proved that steam-powered vessels could reliably navigate the current of the Mississippi to reach the wharves of New Orleans, some 95 miles from the river’s mouth, regular steamboat service began operating in the area.

Charles Morgan

Twenty-five years after the first steamship arrived at New Orleans, New York businessman Charles Morgan began setting up his steamship empire along the Gulf Coast. By the late 1830s,
Morgan became the first to successfully establish regular steamship service in Texas, despite losing ten vessels in the process (Dayton and Adams 1970). By 1855, his Southern Steamship Company had introduced regular steamship service between New Orleans, Louisiana, and Galveston and Port Lavaca, Texas.

Prior to beginning his ventures along the Gulf Coast, Morgan had developed steamship interests along the Atlantic and Pacific coastlines, and operated merchant vessels with routes to Central America and Mexico. Morgan also became involved with construction of merchant steamships when he founded the Morgan Iron Works Company in New York City. By the mid-nineteenth century the Morgan Iron Works Company had become one of the leading producers of marine steam engines in the United States.

During the Civil War the Confederate States Navy commandeered many of the vessels operated by Morgan’s Southern Steamship Company; several that were not commandeered operated as blockade runners (Baughman 1968). Though Morgan’s steamship empire was temporarily hindered by the Civil War, the Iron Works Company continued operations by manufacturing machinery for several Union naval vessels.

After the war, Morgan again returned his attention to Gulf Coast merchant shipping. Perhaps his greatest achievement was the development of a combined railroad and steamship network that connected the Gulf Coast with the Mississippi Valley, northern Latin America, and the Atlantic and Pacific coasts.

By 1877, the Morgan Louisiana and Texas Railroad and Steamship Company was established. Though Morgan died the following year, his railroad and steamship company continued to operate under the direction of his son-in-law, Charles Whitney. The company folded with the death of Whitney in 1882. Charles Morgan owned and operated 117 steamships during the course of his lucrative career.

The Josephine

Construction of the Josephine began in 1867 at the shipyard of Harlan and Hollingsworth in Wilmington, Delaware. Harlan and Hollingsworth was one of the premier shipyards in the country, having built two of the first iron-hull vessels. In 1883 they also built the first steel-hull ship, the Olympian (Hall 1884:204). Harlan and Hollingsworth constructed 28 ships for the Morgan Line (Gause 1886).

The Josephine was completed in early 1868 and, on February 6 of that year, began her maiden voyage from Wilmington to New Orleans. Charles Morgan and several members of his family accompanied the ship on this cruise. The Josephine was brought to New Orleans to establish a new steamship route from Brashear City, Louisiana, (later renamed Morgan City in honor of Charles Morgan) to Galveston, Texas. In addition to carrying passengers and freight, Josephine also served as a mail carrier between these cities. The steamer made this voyage twice weekly, departing Brashear City on Tuesdays and Saturdays.

Shortly after the Josephine began servicing the Gulf Coast, the vessel was almost lost when she ran aground off the Texas coast. The vessel sat grounded at Brazos Bar for almost two weeks. Eventually she was re-floated and taken back to New Orleans, where she was placed in dry dock at the ValLETTE Dry Dock facility for a complete inspection of her hull. A contemporary photo of the Josephine in dry dock may have been taken at this time (Figure 1).

The Josephine provided passenger, mail, and cargo service between Louisiana and Texas for over twelve years, and at least two other events were recorded in local newspapers during that time. An account from 1874 described how the vessel carried the entire New Orleans Mechanic’s Fire Company, No. 6, and their steam engine to Galveston and back for a brief outing. The following year the Josephine was tasked to provide refuge for residents of Corpus Christi, Texas, when Mexican bandits raided the town (Baughman 1968:181).

Having completed over twelve years of service on the Brashear City to Galveston route, on January 15, 1881, the steamer was reassigned to passenger, mail, and cargo service from New Orleans to Havana, Cuba. The Josephine was to be the replacement for the aging steamer Morgan, another vessel constructed by Harlan and Hollingsworth.

Loaded with passengers and cargo, the Josephine departed from New Orleans on Thursday, January 27, and arrived at Havana a few days later without incident. After a brief layover, the steamer began
her return voyage on February 2, loaded with several passengers and a cargo of cigars and tobacco (Irion 1989:8). Over the next two days the vessel made calls at Key West and Cedar Key, Florida, to transfer passengers and goods. Among the passengers boarding at Cedar Key were 14 Italian crewmen from a lumber ship that had recently sunk while enroute to London from Pensacola.

The Josephine departed Cedar Key on Friday afternoon and ran into severe weather the following day. By Sunday afternoon, the crew noticed that she was taking on water. Passengers and crew fought to keep the vessel afloat for more than twenty-four hours and were successful in controlling the leak for a time. However, heavy seas eventually overcame their efforts and, by early Tuesday morning, all 65 passengers and crew were forced to abandon ship. Two accounts of the foundering were detailed in the New Orleans newspaper shortly after the event (Daily Picayune, 10 February 1881). The first account, from which the above report was taken, included the following excerpt:

At 10 o’clock Monday night, orders were given to prepare to forsake the ship, and all arrangements were made for saving life. The best of order prevailed on board. The vessel lay on one side; for some time the machinery had not been working well, and about 3 o’clock in the morning, Tuesday, stopped entirely, the fires being put out by the water.

The loss of the Josephine, valued at $75,000, was the first major accident to occur to a Morgan Line vessel in eleven years.

Investigation of the Josephine

The remains of three of Morgan’s steamships have been located in the Gulf of Mexico over the last eleven years. Archaeologists with the MMS have documented two of these vessels, the New York and the Josephine. The New York wrecked in 1846 and lies off the Texas coast. The Josephine, which foundered in 1881, was identified off the coast of Biloxi in 1997. The third vessel, the Mary, was identified off Aransas Pass, Texas, and documented by archaeologists in 1995 (Pearson and Simmons 1995).
Investigation of the steamer *Josephine* included two trips to the site during the summers of 1997 and 1999. MMS archaeologists limited their work primarily to photodocumentation and were able to obtain enough information to confirm the identification of the wreck. Sidescan-sonar images of the vessel were also obtained. Though fieldwork on the wreck site was limited, archival research uncovered several design features of the vessel and an image of the vessel at sea (Figure 2). The *Josephine* was constructed with two decks, two masts, two cabins, and a rounded stern, and could accommodate 250 passengers. An 1886 publication lists the overall dimensions for the steamer at 235 feet long, 34 feet wide, with an 18.5-foot depth of hold. Vessel displacement was 1,283 tons, and it was powered by a 50-inch diameter, 11-foot stroke steam engine built by Morgan Iron Works (Gause 1886:382).

Currently, the wreck lies in 38 feet of water, about six miles off the Mississippi Barrier Islands. Though most of the lower hull of the wreck remains buried in sediment, the upper hull, above the waterline, is no longer present. The most prominent features of the vessel are the remains of the paddlewheels and the walking beam engine, which has collapsed to the starboard side of the wreck (Figure 3). The walking beam, a diamond-shaped feature mounted on an A-frame, connected the engine piston to the eccentric of the paddlewheels (Figure 4). Several spokes are still present on the paddlewheels, and both paddlewheel shafts are still mounted in their pillow blocks. The remains of the smokestack and the boilers also lie nearby.

On the basis of observations made by MMS archaeologists—the vessel’s iron hull, the measured stroke of the engine, and the design of the walking beam that is identical to the nineteenth century photograph of the ship, as well as the present position of the wrecks with respect to its position on an 1883 navigation chart—the authors are confident in identifying the wreck, which has been assigned State of Mississippi archaeological site number 22Hr843, as Charles Morgan’s *Josephine*. This vessel is very well preserved, much more so than its contemporary the *Mary* in Corpus Christi. The research potential of the *Mary* also suffers from its location in waters that make data recovery extremely hazardous (Pearson and Simmons 1995:130). Pearson wrote of the *Mary* that she was “a ship that played a central
and critical role in the economic history of the Gulf coast region (and) serves as a model for understanding the workings of a critical element of the nineteenth century Gulf coast trade and as a point of departure for studies of that trade” (Pearson and Simmons 1995:131). Not only are these words also true for the Josephine, but because of its excellent state of preservation and the relatively benign environmental conditions at the site, its research potential is far higher.

During the sinking process the Josephine’s iron hull remained intact. Soon after the vessel sank the below-deck portion of the wreck filled with sand and mud preserving artifacts below the mudline. This shipwreck has remained undisturbed for 120 years and represents a virtual time capsule from the year 1881. Even though most of the ship’s exposed wooden features such as the wheel-house and above-deck cabins have disappeared, the passengers and crew’s personal items, the ship’s cargo below the main deck, and all of the mechanical components of the of the ship’s steam engine would be well preserved. Further study of this important historic shipwreck would provide a detailed look into the late-nineteenth century maritime culture and lifeways.

The Josephine was listed on the National Register of Historic Places in September 2000. In addition to documenting this unique sidewheel steamship, MMS has also developed a teaching unit that focuses on the vessel (Ball 2001). This unit can be downloaded from the MMS website at:

www.gomr.mms.gov/homepg/lagniapp/shipwreck/

Figure 4. Walking beam engine (photo courtesy of the Mariner’s Museum, Newport News, Virginia).

Dave Ball and Richard J. Anuskiewicz are marine archaeologists for the U.S. Department of Interior, Mineral Management Service, New Orleans. Jack B. Irion is the chief of the Social Sciences Unit of the MMS Gulf of Mexico Region, as well as a marine archaeologist.

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Book Reviews


Reviewed by Vicki L. Rolland

In 1936 archaeologist Matthew Stirling divided the state of Florida into eight geographical and cultural areas. Seventy years later, those boundaries have been pushed and pulled a bit, but his original plan remains largely intact (Milianich 1994:xix). His concept of geographical and cultural regionalism provided a uniquely new perspective that was culled from the often detailed but largely descriptive reports and field observations of Jeffries Wyman, S.T. Walker, C.B. Moore, Wm. Holmes, Frank Cushing, and N.C. Nelson. Stirling's approach to archaeological research, site survey and testing, data recovery and interpretation, and publication altered the course of anthropological inquiry for the next generation of archaeologists.

Within ten years that next generation would elaborate those cultural regions. Gordon Willey and Richard Woodbury took on the cultural syntheses of the Gulf and Glades cultures and it fell to John Mann Goggin to define the traditions, distribution, environmental relations, and cultural material of the St. Johns people. The book under review is the result of Goggin's dissertation research (1948) and materials collected through a joint survey venture by the Universities of Michigan and Yale. Appearing in 1952, Space and Time Perspective in Northern St. Johns Archeology, Florida could be purchased for a price of $2.00.

The text is organized into four sections: Introduction, Cultural Sequence, Cultural Traditions, and General Discussion. It concludes with two appendices. Appendix A lists the 432 then known sites and the author(s) responsible for each site's report. Appendix B presents descriptions of artifact types and offers standardized classificatory
Having reviewed the archaeology of the culture area, Goggin enters into a broader anthropological discussion of St. Johns linguistics, population growth, interaction and trade with far-flung influences.

Space and Time Perspective concludes with a 14 page bibliography and a series of 12 black and white photographic plates of aboriginal and European artifacts. The quality of the photos has not suffered in this reproduction. The large area map (30x50 cm) is a pleasant change from standard 8x10 formatted report maps of today. Though the map is incomplete by today’s site tally, the generous size allows one to see in detail the locations and relationships of the classic sites visited by Wyman, Holmes, Moore, Nelson, and Goggin.

Finally, the re-publication of this and other seminal works in the Southeastern Classics Series is a fine idea and greatly appreciated by the present generation of students who no longer have to rely on poorly photocopied pages. The massive amount of information that Goggin organized and plainly presented continues to be relevant. Goggin’s clear writing, comprehensive research, and standardized definitions serve as guidelines for today’s reports. All too often as we read reiterated site report background sections, we suspect that some names and references have become casually or mindlessly recited in prefabricated cut and paste chapter. It is a pleasure to be able to own and check the citations in the original publication. The books of the Southeastern Classics Series, of which Space and Time Perspective plays a major role for me, are not simply reproductions of fragile museum pieces, they are hard working volumes.

Goggin, Johns M.


Milanich, Jerald T.
Stirling, Matthew

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Reviewed by Greg O'Brien

Hooray for the University of Alabama Press! My copy of John Swanton's original 1931 Bureau of American Ethnology Bulletin number 103, of which this is a reprint, was falling apart. Dog-eared and with broken spine, that army-green covered publication was indispensable in my research on the eighteenth-century Choctaws, though I grew anxious each time I opened its increasingly fragile cover. But thanks to the University of Alabama Press's recent move to reprint classics in southeastern anthropology, including this and several other works by Swanton, scholars will never again have to confront the dusty shelves of their school's government documents collection in search of these hard-to-find early twentieth-century Smithsonian Institution publications.

John Swanton (1873-1958) casts a huge shadow over twentieth-century interpretations of southeastern Indian culture, politics, social structure, and language. Swanton remains remarkable for the breadth of his knowledge and his prolific publication record encompassing works on the Creeks, Chickasaws, Choctaws, southeastern Indian folklore, and southeastern Indians generally. His works continue to be the most comprehensive scholarly investigations of many aspects of southeastern ethnohistory, and all subsequent scholars of southeastern Indians have used his work and confronted his interpretations. That said, Swanton is also a product of his times and training.

In a capable and cautionary foreword, Kenneth Carleton, the Tribal Archeologist for the Mississippi Band of Choctaw Indians, highlights many of the interpretive problems within Swanton's study of the Choctaws. Carleton points out Swanton's amazing inconsistency regarding Choctaw ceremonialism and cultural rituals: Swanton claimed that the Choctaws had "no complicated religious ceremonies" and that "[a]bsence of pronounced native institutions made it easy for [the Choctaws] to take up with foreign customs and usages," while proceeding to describe in infinite detail many of the "traditional" Choctaw customs and rituals—such as the eagle tail dance and the green corn ceremony—delineated in eighteenth-century European records (vii, 2). Swanton also found the Choctaws lacking when fitted into a Darwinian framework of "civilized" political and cultural development. Statements about the degree of "civilization" among the Choctaws can be rightly disregarded by contemporary scholars as ethnocentrism, but we are left wondering to what degree such thoughts colored Swanton's interpretations and to what degree they may impact the general reader today.

Swanton tried mightily to fit the Choctaws into the structural outlines that he developed for other southeastern Indians such as the Creeks and Chickasaws. Carleton dismisses Swanton's tortured attempt to recognize clans among the Choctaws for lack of evidence, and he instead emphasizes the moiety as the basic unit of social organization (viii-ix). As Patricia Galloway has demonstrated, the Choctaw moiety, reflected the diverse ethnic heritage of the Choctaws, and it seems plausible to me that each ethnic group contained clans prior to and after merging into the larger Choctaw identity. There is also disagreement, caused to a significant degree by Swanton, over the function of the moiety. Swanton believed that there was a war moiety and a peace moiety, and that they determined leadership roles as peace chiefs or war chiefs (78). His evidence is minuscule and misleading, however, and I failed to see that there are too many contradictions to this rigid structural framework within the documentary record. Carleton notes further contradictions and anachronisms.
What is still of tremendous worth in Swanton’s study of the Choctaws is his compilation of eighteenth- and nineteenth-century documentary evidence about nearly every aspect of Choctaw life. In this respect, the book lives up to Swanton’s original title, for here will be found many of the most significant European sources on the Choctaws. Swanton uses French, British, and American documents, though he unfortunately did not utilize the rich Spanish documentary record from the late eighteenth century. Nevertheless, he was able to compile tremendous source material on Choctaw social organization, government, cultural rules, games, warfare, burial customs, and religion. Putting some of Swanton’s interpretations aside, his 1931 publication provides indispensable information. With this reprint edition, all students of southeastern Indians can easily access this starting point of Choctaw studies, and libraries can fill holes in their collections.

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Reviewed by Charles H. Faulkner

Urban archaeology did not emerge as a distinct discipline of North American historical archaeology until the 1970s. This was a consequence of a misconception that urban archaeological sites were too badly disturbed by extensive landscape modification, and a focus on small scale projects that were circumstantial and culturally biased toward early upper class Euroamerican domestic, governmental, or military sites. A dramatic growth of urban archaeology during the past three decades occurred in part because of passage of federal laws protecting significant cultural resources in urban as well as rural areas, interest in the emergence of the modern world, and the application of the new theoretical approach of humanistic historical archaeology that focused on the so called “invisible” or “disenfranchised” groups who have been inadequately or erroneously documented because of race, sex, religion, poverty, or isolation.

The publication of Archaeology of Southern Urban Landscapes, edited by Amy L. Young, demonstrates how far we have come in this discipline since 1970. Because the South was conceived as primarily a rural, agrarian region well into the 20th century, humanistic historical archaeology initially took a different course and concentrated on the “invisible” people who lived back of the big house, the African American slaves and later the free black and white yeoman and tenant farmers who were the engine driving the Southern economy during the past 400 years. Only recently has this “backyard archaeology” shifted to “rear lot archaeology” in the urban South as historic archaeologists realized that urbanization was critical in understanding cultural development in this region, and that archaeological remains are as well preserved in the city as on rural sites.

In her introductory chapter, Dr. Young succeeds where many compilers of edited works fail; she clearly sets the stage for both the lay reader and the professional by defining what we mean by urban on national and regional scales, how northern and southern cities shared the same functions, yet how the latter manifested distinct characteristics that can be investigated and understood through urban archaeology. Dr. Young proposes to study Southern cities through the theme of “landscape archaeology.” The ten case studies that follow Dr. Young’s introduction deal with the creation and changing components of the urban landscape and how archaeology can reveal the relationships between these components in Southern towns and cities. Landscape, material culture, and attitudes are woven together to create an archaeological tapestry of the Southern city rather than the individual warp and weft threads of archaeology in the urban South.

The transformation of early urban landscapes is discussed by Audrey J. Horning in “Urbanism in the Colonial South: The Development of Seventeenth Century Jamestown; Christopher N. Matthews, “The Making of the Ancient City: Annapolis in the Antebellum Era”; and Bonnie L. Gums and George W. Shorter, Jr., “Mobile’s Waterfront: The Development of a Port City.” These studies scan the spectrum from failure to success, the failure of the
English model for urban planning and development at Jamestown; the de-evolution of colonial and revolutionary era Annapolis from an important trade center to a small southern town in the antebellum period; and the transformation of Mobile from a small town to a thriving port city.

Two studies explore how the evolving Southern urban landscape can be understood by integrating the study of standing architecture and archaeology and the importance of changing functions of a building as revealed by archaeology and historical documentation. "Developing Town Life in the South: Archaeological Investigations at Blount Mansion" by Amy Young concerns the process of urbanization of Knoxville, Tennessee, from a frontier outpost to a major commercial center as reflected in architectural style and house lot arrangement. The evolving urban landscape and changing needs of the residents of Charleston, South Carolina are seen in the variety of functions of the town powder magazine in Martha A. Zierden's "Charleston's Powder Magazine and the Development of a Southern City."

The ethnic dimension and race in Southern cities are covered in three case studies. Linda Derry, in "Southern Town Plans, Storytelling, and Historical Archaeology" illustrates how Southern storytelling about their superiority over, first, Native Americans and later African-American slaves is used to justify their hegemony imbedded in the landscape and archives of Cahawba, Alabama. J.W. Joseph in "Archaeology and the African American Experience in the Urban South" explores the urban African-American communities in Birmingham, Mobile, and Augusta that were established in liminal and marginal space centering on the church, thereby creating and maintaining a vibrant creole African-American culture. Excavation in the courtyard of a Creole cottage in New Orleans provided the data in Shannon Lee Dawdy's "Ethnicity in the Urban Landscape: The Archaeology of Creole New Orleans", demonstrating that the courtyard is not a miniature replica of Louisiana plantations, but is a new urban tradition arising out of several cultural influences.

What identifies a Southern city in an artifact assemblage is tackled in Robert A. Genheimer's "Archaeology at Covington, Kentucky: A Particularly 'Northern-looking' Southern City". The author demonstrates that Southern communities were dependent on Northern manufacturers for durable goods and how the basic economy of the Southern city was similar to that in other cities throughout the country.

The concluding chapter, "Archaeological Views of Southern Culture and Urban Life" by Paul R. Mullins and Terry H. Klein combined with the introductory chapter, ties this volume into a neat scholarly package that will appeal to all readers. In addition to outlining their view of the breadth of Southern urban life and the state of urban archaeology in this region, Mullins and Klein provide a keen insight for future directions of the discipline in the South.

This volume is a well-written and organized compendium for the general reader who is looking for new fields of archaeology to explore as well as the professional who seeks references to the current state of urban archaeology in the South, or a set of readings for anthropology, history, or geography courses. I teach an urban archaeology course every two years, and when I offer this course again in 2003 I will definitely use it as a text book.

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Reviewed by Marvin D. Jeter

"Late Woodland" means different things in different parts of the Eastern U.S., but to most heartland Southeasternists it refers to a time span between about A.D. 500 (or earlier) and 1000 (or later). During this period, many socioeconomic systems-mainly tribes, practicing mixed hunting, fishing, and gathering supplemented by native Eastern
cultigens—seem to have reached their limits, as populations expanded. For instance, Patricia Galloway, using Mississippi state site file data in the December 1994 issue of this journal (Vol. 29, No. 2, Tables 3-8 and Figures 4-5), found that “Late Woodland” led all other period designations for numbers of sites, sites per generation, and estimated population per generation. The following centuries saw the rise of Mississippian chiefdoms or more complex tribes, based increasingly on maize (corn) agriculture. This process continues as a major research topic: the Mid-South Archaeological Conference in June 2001 focused on it, as did a symposium at the Southeastern Archaeological Conference (SEAC) in November 2001.

Your reviewer started out in archaeology 30 years ago, along the Alabama River east of Selma. In my 1971-72 surveys and 1975 testing along the River and its tributaries, by far the most common finds were Late Woodland. I was also involved in 1973 investigations, near Birmingham, into what became known as the West Jefferson phase, a terminal Late Woodland complex influenced by Early Mississippian culture. After a sojourn in Arizona, I have worked in the Lower Mississippi Valley (LMV) of southeast Arkansas most of the time since 1978, encountering middens and large storage/trash pits of the Baytown period (c. A.D. 400-700), plus middens and mounds of the post-700 Coles Creek period (Plum Bayou culture). And, during a mid-’80s digression, I learned from direct observations that, despite the fame of the Hopewellian Middle Woodland burial mounds and village sites in the Lower Illinois Valley, that region had also seen an apparent population increase in Late Woodland times. Further data were then coming out about Late Woodland and subsequent “Emergent” Mississippian sites in the nearby American Bottoms, opposite St. Louis, where the greatest Mississippian complex of all eventually developed.

So, it was with great interest that I learned of a new report on a significant Late Woodland project in southwest Alabama. The volume at hand deals with problem-oriented contract “salvage” archaeology conducted by the University of South Alabama’s Center for Archaeological Studies along the right-of-way of a highway-widening project in southwestern Clarke County, on the Tombigbee River floodplain margin about 100 km (c. 60 miles) above Mobile Bay. The report is nicely produced, on “slick” coated paper with numerous clear illustrations (281 figures, including photos and line drawings) and 57 tables. It is generally well-edited, and priced at a bargain rate, with discounts offered at meetings.

In Chapter 1, Shorter summarizes the project’s goals, the natural setting, and previous research. After initial survey and testing, four sites, all with principal occupations assignable to the problematical “McLeod phase” of the latter Woodland periods(?), were regarded as possibly eligible for the National Register of Historic Places, and chosen for “mitigation.” Emphasis was placed on excavating middens samples and features, and collecting dating samples and “ecofacts” as well as artifacts (although, as will be seen, more ecofactual data would have been desirable).

The section on the Tombigbee River Basin is too brief: it merely gives a geographic subdivision, placing the project locality in the southern “Lower Basin” and listing the physiographic provinces that the river flows through. Unfortunately, there is no real discussion of the local and regional geographical situations, here or elsewhere in the report; see the discussion of lithics, below.

The “previous research” section does not come off smoothly. It starts as a mixture of the history of archaeological investigations along the Tombigbee Valley with a chronological summary of prehistoric cultures. It then turns, somewhat redundantly, to a more straightforward chronological cultural summary, noting that some Alabama archaeologists regard McLeod as starting in late Middle Woodland times, c. 400 A.D., while others consider it Late Woodland. Another section jumps back to summarize the Lower Basin’s equivalents of the Early Woodland (regionally, latter “Gulf Formational stage”) and Middle Woodland periods. The next introduces the Weeden Island culture, as a Florida-Alabama Gulf Coastal contemporary of more northerly Late Woodland cultures, noting that some regard McLeod as a Weeden Island variant. A penultimate section notes the origins of the McLeod concept in early-1950s work by David DeJarnette and Steve Wimberly, plus subsequent efforts to place it in the regional sequence and date it.

Finally, a section on Woodland chronology in southwest Alabama summarizes the previous consensus, via text and four maps (all in
found. Jar and bowl forms dominated, with “beakers” also present, as inferred from rims and bases; no whole or reconstructible pots were recovered. Rims often had short exterior folds, described as just “a few centimeters” wide (p. 116); this should have read “millimeters.”

The major plainware on all sites was McLeod Plain; the local decorated types were McLeod Simple Stamped, McLeod Linear Check Stamped, and McLeod Check Stamped, all present on all sites, but in widely varying percentages. The chronological progression of simple stamping to linear check stamping to check stamping, documented here and in Chapter 10, parallels the sequence seen in Deptford and related cultures of Georgia, northern Florida, and east to central Alabama during Early to Middle Woodland times, and has bedeviled attempts to find a secure chronological placement for McLeod. Shorter had mentioned (p. 10) that Wimberly’s original designation had been “McLeod Deptford” but Dumas does not pick up that theme here, although she agrees (p. 123) with Shorter that at least some of the McLeod “simple stamped” decorations were produced by means other than stamping (e.g., brushing!), and adds that subdivision into varieties may eventually occur.

The most common intrusive (very rare overall) included cord-marked sherds (untyped, but found mainly at the earliest site, 1CK236) and several Weeden Island types. Dumas merely describes these and other minority types or wares and stops at that, leaving the conclusions about chronology and cultural relationships for Shorter in Chapter 10.

It should be noted, though, that Dumas and Shorter are “not on the same page” with regard to presenting ceramic data. Dumas uses type percentages based on total ceramics, whereas in his chapters, Shorter subtracts both the small “sherdlets” and the larger “eroded” sherds (together accounting for over 50% of the ceramics from 1CK236 and 1CK286, and over 40% from 1CK290) from the total before calculating percentages. As a result, their percentages vary widely (cf. Dumas’s Table 4 and Shorter’s Table 56); their raw counts also differ, though by smaller amounts.

In Chapter 7, Keene deals with more than 29,000 lithic items from the four sites. He briefly summarizes the regionally well-known Tallahatta Formation, which outcrops in an east-west swath across
Clarke County (and northwestward into eastern Mississippi), but does not even mention the term “Tallahatta quartzite” which archaeologists have been using for decades to describe the formation’s most commonly used stone type. (As Keene notes, it was especially popular in Late Archaic times.) Instead, he calls this material “Tallahatta sandstone” and only refers (p. 138) to “quartzite-like pockets” within the sandy matrix. In my experience, at least in the better grades of artifacts, the semi-translucent quartzite-like texture is dominant, reinforcing the traditional term used by archaeologists, and the opaque, often-weathered “pockets” are the sandy stuff. The traditional belief has been that although this is not a metamorphic quartzite, it is an “orthosilicic” in which the silica cement is so strong that the material breaks across the cemented grains when flaked. If there has been a formal or conventional change by archaeologists and/or geologists to the “sandstone” terminology, it should have been explicitly cited here.

Be that as it may, “TQ” (or “TS”) was not commonly used by the McLeod peoples on these sites, accounting for only 7.3% of total lithics. In fact, and somewhat surprisingly, just over 80% of these lithic items were made on pebbles of whitish vein quartz (generally a by-product of metamorphism in bedrock source regions such as the Piedmont of eastern Alabama), said to be readily available in the local gravels. Even more common (“by far”) in these gravels are cobbles and pebbles of metasandstone, but this relatively poor material accounted for only 12.4% of the lithics, mostly non-flaked. Chert pebbles are locally scarce, and account for only 3.4% of the lithic items.

Having read some of the northern Tenn-Tom literature and although being only generally familiar with the geology of southwestern Alabama, I would have expected a Tombigbee Valley lithic assemblage of this period to have included much more chert, and much less vein quartz and metasedimentary, since the Tombigbee itself does not drain the metamorphic regions of eastern Alabama and adjacent Georgia. Instead, this situation was reminiscent of my own findings on Late Woodland sites along the Alabama River and tributaries east of Selma, where pebble “VQ” was always over 50% and often over 80%; cobble/pebble metaquartzite was usually around 10% or more; and pebble chert was usually in third place, subject to chronological-

technological situations and perhaps local gravel availability.

So, what is the geological situation in and near the present project locality? The Alabama River is now about 20 km (c. 15 miles) to the east; could its ancient courses have deposited these gravels? Or, were they brought down by eastern tributaries of the Tombigbee-Black Warrior system, dissecting Coastal Plain deposits that included materials derived earlier from the metamorphic rock area? As noted earlier, this report could have used a geological section, providing details on such relevant situations.

Various forms of small arrow points, especially triangular variants of the widespread Madison and Hamilton types, were by far the most common “diagnostic” lithics. Stemmed “dart” points were relatively rare, and may have been recycled from earlier deposits. Although Keene does not make chronological inferences, this would suggest that these McLeod components largely postdate the transition from atlatl and dart to bow and arrow, generally estimated at around the A.D. 600s.

Two very short chapters describe subsistence-related remains. Chapter 8, by Clute, summarizes evidence for McLeod faunal exploitation, and Chapter 9, by Mickelson, deals with the plant remains. They do not draw upon the same contexts, however.

All faunal remains from the three largest sites, “lumped” for each site rather than broken down by provenience units, are very briefly discussed and tabulated by Clute, who refrains from premature comparisons. Bone preservation was “disappointing” due to acid soils. Not surprisingly, deer bones were the dominant faunal remains, but smaller mammals were uncommon; instead, turtles, birds, and fish were the next largest categories of vertebrates. One “educational” surprise for me was the fairly common occurrence of species of Rangia, a marsh clam genus that I had previously thought was restricted to more coastwise brackish-water situations.

By contrast, Mickelson deals with floral remains from only one site, 1CK236, where flotation samples were taken from four stratified pit features. Preservation of carbonized material was good. Nuts, especially hickory nuts and acorns, appeared to be strongly dominant. Grains (seeds) of goosefoot, maygrass and knotweed were present, but apparently were of minor importance and lacked indications of
domestication. Maize was the only definite cultigen present; cupules and/or kernels, but no cobs, were found in all four features, mainly from one of them. Mickelson regards these data as "indicative of emergent agriculture." I would reiterate that this is the earliest of the four sites, and it seems to me that peoples in these southerly regions, without much of an "overwintering problem" (as the ecologists say), would have had relatively less pressure to intensify the use of cultigens. This certainly does not sound like a significantly Mississippian-influenced situation, but it would have been nice to have had some comparative data from the later sites!

In Chapter 10, Shorter synthesizes the findings from excavations and analyses, in terms of settlement patterns and chronology. He notes that the overall McLeod assemblages at the four sites are similar, but that "dramatic" differences in ceramic percentages indicate sequential occupations. His discussion (pp. 158-159) mistakenly refers to "check stamped" instead of linear check stamped pottery as 9.6% of the ceramics at 1CK236, and there are slight discrepancies with other percentages given elsewhere. He suggests that each site was occupied fairly intensively for about 20 years; the question of seasonal vs. permanent occupations is not really addressed, though.

Shorter next turns to intra-site settlement patterns. His analyses were made difficult by the absence of clearly defined house patterns, but clusters of post molds, pit features and associated middens suggest that "rather informal structures" were present. He compares the ceramic percentages for test units (lumped by "areas") and pit features (similarly lumped) for two sites, 1CK236 and 1CK286, and finds consistent within-site frequencies in both cases, suggesting that the occupations of all "areas" within individual sites were essentially contemporary.

To test his conclusion further, I analyzed both of these sites, plus 1CK290, at a much finer level (at the cost of some effort; see discussion of feature data presentation, above). I compared the ceramic percentages from all features which yielded adequate ceramic samples at each site. I am happy to report that the results do indeed support Shorter's contention, although there is of course much more variation among these smaller provenience units (and I did not count a few statistical "outliers" which may well represent other components, as he notes).

E.g., at the earliest site, 1CK236, simple stamped sherds in features generally varied from just below 50% to just above 70% (overall c. 58%); linear check stamped, from 0% to around 20% (c. 9%); and check stamped, from 0% to 8% (0.4%). At the next earliest site, 1CK286, the figures were, respectively, about 20% to 40% (c. 33%); about 20% to 35% (c. 27%); and 0% to about 10% (c. 4%). At 1CK190, the next-to-youngest site, they were: 0% to about 20% (c. 1.5%); less than 30% to nearly 50% (c. 39%); and generally 30% to 40% (c. 37%).

In the next sections, Shorter summarizes pit and feature shapes, defining five classes and discussing their probable functions. Community patterning at the major site, 1CK236, is hinted at by the clustering of large pit features. Shorter speaks of "linear" patterns of pits, possibly related to local topography. But, noting that some parts of the site were not excavated (Fig. 278), I would suggest the possibility that there was an overall pattern of structures and associated features at least partially surrounding a central open area—perhaps a sort of hamlet-scale model of the larger mound-and-plaza patterns that were becoming common in the LMV and Southeast. Other comparisons might be made with Late Woodland community patterns at non-mound sites in these regions and the American Bottoms. No burial areas or even individual burials were encountered at these sites, but he inserts a useful summary of Middle to Late Woodland burial data for the region.

Shorter concludes by returning to the question of McLeod phase chronology. Some of his introductory discussions here might well have been presented in Chapter 1. At any rate, some Alabama colleagues have seen, and still see, McLeod as beginning around A.D. 400 and ending before 1000. After tabulating the ceramic type percentages and radiocarbon dates for his four sites (Tables 56 and 57), Shorter presents a Fordian ceramic percentage seriation chart (Figure 280) for these sites, plus three others (Deus Village, McLeod Estates, and James Village) from the "classic" McLeod literature. By comparison with the usual seriationists' practice, his chart is upside-down (oldest site at top, youngest at bottom), and the line lengths do not closely match the percentages they are supposed to indicate, but no matter.

The bottom line is a rather revolutionary new scenario, in which McLeod probably "emerged... around AD 800, and... may have
p. 1 Reference to Figures 1-2 should be Figures 1-3.

p. 4 "threatened" should be "threatening".

p. 5 Figure 2 is actually Figure 3.
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