As I struggled through the chest-deep mud that filled the old Santee Canal after nearly 150 years of neglect, I realized the past reveals its secrets reluctantly. They often hide in the most awful places. This revelation came as no sudden epiphany. It came after days in the thick muck, probing for the remains of canal boats and lock structures. It came after repeatedly falling face first into the ooze as a stuck leg suddenly came free. It came after becoming too exhausted from struggling through the deeper mud and having to be pulled out by rope. It came after . . . well, you get the picture.

When we began the Santee Canal Project in November 1987, we had no idea the mud would prove to be such a formidable foe. For one thing it slowed our work. Immensely. Tasks that should have taken minutes took hours to accomplish. With a tight budget, this presented a major problem. For another we were accustomed to working in open water. The debris and mud blocking the old canal was a new environment for us. Some of our established archaeological techniques worked. Others did not. Moreover we often worked completely submerged in the ooze. At the end of most days, we emerged from the canal dog tired and gritty, with mud stuffed, crammed, and caked in every orifice and crevice. The canal project taught us one of the great lessons of maritime archaeology: mud sucks.

The Santee Canal, which connected the Santee River with the upper reaches of the Cooper River, opened in 1800. Its claim to fame is in being America’s first summit canal, meaning a canal that uses locks to go up in elevation and then back down to another body of water. In addition it was a true marvel of engineering, taking thousands of workers seven years to complete its 20.42-mile length.

The canal was intended to open up the interior of South Carolina to the port of Charleston. The products of upcountry farms and plantations,
cotton and other goods, brought down the Congaree, Broad, Saluda, and Wateree rivers into the Santee would have a shortcut to Charleston. Conversely the imported commodities from abroad would have an easier path into South Carolina’s hinterland.

Imagine the relief William Buford felt as he maneuvered his small cargo vessel out of the flow of the Santee River at White Oak Plantation and entered the Santee Canal in May 1801. Buford, who owned a plantation on the banks of the Broad River some ninety miles above Columbia, was bringing his crops to market in a boat built at his plantation. No information as to the size or method of propulsion of Buford’s boat is available. We know, however, that his boat was less than sixty feet in length, ten feet in width, and drew less than four feet of water. We know this because that was the maximum interior size of the canal’s ten single and two double locks.

No doubt Buford looked forward to a leisurely two-day journey through the canal. Not only had he successfully managed the falls and sandbars along his journey, but with the new canal connecting the Santee River with the Cooper River, he no longer faced the shoals and breakers at the mouth of the Santee or the forty or so miles of open ocean between the Santee and Charleston Harbor.

Less than one hundred feet after leaving the river, Buford came to the first lock. With the momentum built up from the river flow, he could easily maneuver his boat into the lock. Behind him the lockkeeper closed the lock gate. When closed, the gates angled slightly inward toward the lock. Above Buford a roadway sixteen feet wide crossed the lock, providing shade for Buford and his crew. The lockkeeper then moved to the upper gates and began working a crank that opened sluices built into the gates, releasing water into the lock. As the water rose, pressure pushed against the lower gates, providing the force to keep them shut. When the water in the lock reached the height of the water above the lock, a rise of five feet, the pressure against the upper gates eased, and the lockkeeper easily opened them. On the draw paths that bordered the canal, black workers hooked teams of either horses or mules to Buford’s vessel. These teams effortlessly pulled the boat from the lock, starting it on its journey through the numerous lowcountry plantations that bordered the length of the canal. Less than a half mile later, Buford came to a second lock, which would raise his boat another ten feet. Here, next to the lock, was the house of the toll receiver. Again a bridge passed over the lock, as one did over every lock on the canal. After collecting the fee for passage, the toll receiver also probably reminded Buford of the rules of the canal. Buford could not load or
unload cargo anywhere but at the public landings. He could stop nowhere but at the public landings, and if his boat was delayed and not able to reach one of the public landings before dark, he was to stop at the next lock and stay there under the watchful eye of the lockkeeper.

Leaving the second lock, Buford passed a dry basin off to the side of the canal. Built to hold two boats undergoing repair, the basin measured 30 by 60 feet. Then came a stretch of level ground that turned into a low, swampy area. The open swamp soon closed in around his boat as he passed a tree line, and the canal became walled by woods of pine, sweet gum, oak, and hickory. About a mile past lock number two, the woods were replaced by open fields. A half mile ahead he saw lock number three, the first of the canal’s two double locks. To his left he saw the residence of Samuel Porcher. On the right was the lockkeeper’s house. Passing through the double locks took an hour, raising his boat another 19 feet. He was now 34 feet above the level of the Santee River and 69 feet above the Cooper River. Beyond the lock he could see that the canal and towpaths passed beneath the Eutaw Road bridge. Next to the bridge was the St. Stephen basin. Built to allow boats to spend the night or to load or unload cargo, the basin measured 100 by 150 feet. He also could see a 25-by-60-foot brick warehouse near the Eutaw Road. Nearby was the canal company’s work yard, which included several workshops, the residence and gardens of the canal’s director, and the overseer’s house. He was now in the five-mile-long summit canal and as high as he would go. Ahead of him he had another double lock, six more single locks, and two tide locks to pass through, lowering him into Biggin Creek and the Cooper River at Stoney Landing. In between he would pass rice fields, pastures with grazing cows, and long stretches of woods. He would go by large reservoirs holding water to keep the canal filled and skirt numerous swamps with their large cypress trees.

After the two-day trip through the canal, Buford came to Stoney Landing. Here canal barges were transferring their cargo into the schooners that would take the produce to Charleston and vice versa. If Buford’s boat carried a sail, it was here he would rerig his mast and sails before the trip down the Cooper.

Ending the canal at Stoney Landing was a logical decision. Being at the head of navigation for the Cooper River and possessing high bluffs, Stoney Landing had been a natural landing site for boat traffic as the early European settlers began moving inland. Sir Peter Colleton, one of the Lords Proprietors, was granted twelve thousand acres at the head of the Cooper River, including the area of Stoney Landing, in 1678. This property stayed in the Colleton family for about 140 years. During the
American Revolution, the British built a redoubt on the property and turned the Colleton home into a fort and later a magazine. When they left in 1781, they burned the Colleton home and the structures associated with the Colleton plantation.

Construction of the canal began in 1793. Talk of connecting the Santee River with the Cooper had started much earlier, in fact twenty years earlier, in 1773. But a small matter of a revolutionary war delayed further discussion until 1785, when a meeting was held in Charleston to discuss the matter again. Governor Moultrie presided over the meeting. The next year, in 1786, the South Carolina General Assembly passed an act forming a company to open inland navigation between the Santee and Cooper rivers. Members of this new corporation were some of the big names of the day, including Moultrie, John and Edward Rutledge, Judge John Grimké, Theodore Gaillard, Thomas Sumter, Francis Marion, Benjamin Waring, John Vanderhorst, Aaron Loocock, Ralph Izard, Commodore Alexander Gillon, William Bull, Nathaniel Russell, Philip Gadsden, and Henry Laurens Jr.

Many proposed courses for a canal were offered, including five from mapmaker Henry Mouzon. One report states that as many as thirty-eight different plans were studied. One was selected, and Col. John Christian Senf, a Swedish engineer, was hired as project engineer. Senf had come to America with General Burgoyne’s Hessian troops, falling into American hands with the British loss at Saratoga. Henry Laurens brought Senf to South Carolina, where he served as an engineer with the South Carolina militia and as the state’s chief engineer.

Senf began work on the canal in 1793 with ten workers. By the end of the year, there were one thousand employed on the project. Senf rented slaves from the local plantations to build his workforce. He also had a number of white workers in his employ. These included physicians, master carpenters, master bricklayers, overseers, cooks, wagon drivers, butchers, and various tradesmen. In 1794 a total of eight hundred whites and blacks were employed on the canal. In 1795 and 1796, there were seven hundred. Maintaining such a large workforce was not without its problems. Summer fevers devastated the workers. In his final report, Senf noted that during the construction of the canal “twenty-four white persons died at the Canal by Fevers.” Senf made no mention of how many slaves died of fever.

For its twenty-mile length, the canal was to be thirty-two feet wide at the surface and twenty feet on the bottom. The depth of water was to be four and a half feet. Towpaths ten feet wide bordered either side of the canal. Construction of the canal meant a massive earth-moving
effort. This was manual labor, using picks and shovels. Just as laborious was the driving of pilings. Pilings were pushed into the earth as far as possible. A rammer called a “tup” was then used to drive them. The tup was a square device, three feet long, with a base of fourteen inches, weighing two hundred pounds. Four laborers lifted it using handles on each of the sides. Once over the piling, the tup was slammed down, driving the piling into the earth. This was repeated until the piling reached the desired depth.

On Monday, May 19, 1800, Colonel Senf reported that the canal was ready to commence operation. The total cost of building it was $750,000. The first vessel through the canal entered in July 1800. Thus began an important era in the history of transportation in South Carolina as cargoes of rice, naval stores, and cotton passed through the canal. In 1809 canal stockholders received a dividend of $12.50 per share. In 1828 the dividend rose to $40 per share.

Nevertheless the canal was plagued with problems. The lack of water to fill the upper levels of the canal was just one. It closed periodically for lack of water. A protracted drought closed the canal from 1817 to 1819. Another problem was keeping it cleaned of debris. In 1804 the canal closed in September to clear it of obstructions. Each year thereafter the months of July, August, and September were devoted to cleaning out the canal.

Sometime about 1820 John H. Dawson of Charleston bought Stoney Landing at auction for $2,500. The canal experienced one of its high points in 1830, when 1,720 boats passed through. Nevertheless the operation continued to suffer from a multitude of problems. Droughts continued. The need to clear the canal of snags continued. Finally it was the ever-expanding railroad system, which opened up the South Carolina interior in the 1840s, that brought on the end of the canal. It closed sometime about 1850.

The Stoney Landing property subsequently passed through a series of owners. In 1856 St. Julien Ravenel bought the 935-acre plantation. Shortly thereafter Ravenel began mining and processing limestone from the bluff adjacent to Biggin Creek. The limestone was processed into quicklime, mortar, cement, and niter, a necessary ingredient in gunpowder. During the Civil War, the gunpowder went to supply Confederate forces.

Stoney Landing played another important role during the war as the construction site for three Confederate ships. The most important of these was the CSS David, one of those newfangled Confederate semi-submersibles. On the night of October 5, 1863, the Confederate warship
slipped past the Union picket boats and attacked the USS New Ironsides. The David successfully exploded its torpedo against the hull of the New Ironsides, though owing to bad placement of the charge, it failed to sink the Union warship.

In 1910 the property passed into the hands of the Dennis family. The Tailrace Canal was cut through the property in 1940 in conjunction with the construction of the Pinopolis Dam. The resulting Lake Moultrie inundated much of the Santee Canal, leaving only small portions exposed. One of these was on the north end where it connected with the Santee River. The other was the south end where the canal entered Biggin Creek and the Cooper River at Stoney Landing. In 1982 the old Santee Canal was listed on the National Register of Historic Places. Senator Rembert Dennis sold Stoney Landing and two hundred surrounding acres to the state in 1984 with the understanding that the property would become a state park. Not long after the sale, the South Carolina Public Service Authority (Santee Cooper) and the South Carolina Department of Parks, Recreation, and Tourism (PRT) were charged with the park's development and operation.

Planning for the proposed park included an archaeological investigation of the property. This is how the Institute of Archaeology and Anthropology became involved. In early 1986 Santee Cooper contracted with SCIAA for a two-week field survey of the property. SCIAA archaeologists Tommy Charles and James O. Mills performed the land portion of the survey. The survey investigated fourteen sites in all, including two underwater sites discovered during an initial reconnaissance of the area.

Three of the land sites indicated prehistoric occupation only. Three sites consisted of both prehistoric and historic components. Charles and Mills found these six sites along the top of the bluffs that mark the western edge of the proposed park. The prehistoric artifacts recovered from these six sites, mostly pottery shards, indicate a Native American presence during the Middle Woodland period, which lasted from 200 B.C. to about the time of Christ. These dates are consistent with other nearby Native American sites. The historic components of three sites consisted of artifacts, mostly ceramics dating from 1780 to 1900. The archaeologists found no evidence of any structures on the six sites.

Four sites were associated with the industrial use of the land, specifically the limestone mining and processing in the mid–nineteenth century. These sites included the remnants of a limekiln, two cisterns, an iron sluice, foundations for buildings or sheds, and mining areas. One site, given the artifacts found (including a windlass, chain links, a pintle
plate, metal straps and spikes, iron rings, and tin sheet fragments), was probably the building site for the *David* and the two other Confederate boats.

The main house was recorded as a site, as were the bluffs behind the house, which had been used as a trash dump. When the survey was conducted, two structures existed on the house site. The archaeologists wanted to determine whether the main house was the original home on the site or a replacement. Construction details showed that the house was built about 1850 and was indeed the first house on the site. The other structure is the William Dawson house. Moved to the site in the 1950s to replace an earlier structure that burned, the house lies southwest of the main house. William Dawson was caretaker of the property in the mid-1900s. The trash disposal site extends for sixty meters across the top of the bluff between the main house and Biggin Creek. Pottery shards from the dump yielded a mean ceramic date of about 1840, yet it was obvious the site was used into the twentieth century. Included in the artifacts found were lightbulbs, aerosol cans, a car muffler and seat belt, a garden hose, and one 1928 South Carolina license plate.

A portion of the trash dump extended into Biggin Creek and was recorded as a separate site. Owing to this and the two vessels spotted by the land archaeologists, the institute's Underwater Archaeology Division was called in, specifically Alan Albright, Joe Beatty, Ashley Chapman, and Mark Newell. They conducted a one-day investigation of the dump site and the two vessels.

Investigating the dump site, the underwater team found four distinct concentrations of artifacts in the waters of Biggin Creek, indicating four separate time periods. One pile dated to the eighteenth century, one to the early to middle nineteenth century, one to the late nineteenth century, and one to the twentieth century.

One of the vessels was a wooden flatboat (barge) measuring forty feet by sixteen feet. The exterior consisted of pine planking, two inches by ten inches. Deck planking measured one inch by twelve. Iron drift pins and wire nails used as structural fasteners indicate that the flatboat was built in the early twentieth century. The vessel is of the type used in the construction of the Pinopolis Dam and Tailrace Canal. The other vessel spotted by Charles and Mills in Biggin Creek turned out to be a wooden ship-built vessel. About thirty feet of the vessel was visible in the creek's tannic waters. Its forward end disappeared into the creek bank. The exposed portion consisted of the keel, frames, keelson, and remnants of a sternpost. A single mast step was observed about sixteen feet from the stern. Since single-masted vessels had their mast a good ways
forward of midships, the placement of the mast step indicates the vessel may have had two masts. The archaeologists named the craft the Biggin Creek Vessel and tentatively dated it to the mid-nineteenth century.

By the time Charles and Mills issued their report, Santee Cooper was formulating plans for the proposed park. Part of those plans called for dredging a portion of the canal in the park area. The intent was to give the public the feel of what the canal would have been like during its operation and to open up the canal to canoers. This necessitated a full archaeological survey of the canal. On October 10, 1987, Santee Cooper and PRT signed a contract with SCIAA's Underwater Antiquities Management Program (UAMP) to perform this survey.

A month later, on November 9, UAMP staff members Mark Newell, Jodie Simmons, Peggy Brooks, and I packed our gear and headed for Moncks Corner. We ensconced ourselves at the Berkeley Motel. The motel contained a restaurant that was not only convenient but was open for breakfast. All small towns have a place where the locals gather, where you are likely to run into the mayor in a suit and a farmer in overalls drinking morning coffee at the same table. The Berkeley Motel Restaurant was such a place. For lunch the restaurant turned into the epitome of a southern meat-and-three. A large portion of our per diem meal allowance was spent there.

As we headed down to the canal for our first day of work, we were filled with trepidation. The planned survey of the portion of Santee Canal destined to become a state park was the largest project yet undertaken by UAMP. Moreover the swampy environment threatened to defy our skills and talents. In effect it was us versus the mud.

Our plan was fourfold. First, we were to find and document all cultural remains within the project area. This included almost anything that could have found its way into the canal bed either during its operation or since. Of course we were hoping to find one of the boats built especially for canal use. This would have been a unique find. Second, we were to complete the documentation of the Biggin Creek Vessel. Third, we planned to examine the underwater artifact scatter in Biggin Creek. Fourth, we were to document further the remains of the flatboat in Biggin Creek. Moreover the schedule called for us to accomplish this in twenty working days. Daunting is the word that comes to mind.

Our first chore was to survey the canal for cultural remains. This required a magnetometer to locate any ferrous metal under all that mud, silt, debris, and fill dirt. We leased a Geometrics 866 proton magnetometer with an integral paper strip chart from Harvey Lynch, Inc., of Houston to accomplish the task. For power we rigged two car batteries.
We decided to divide the canal into four sections. Area A ran from Highway 343 (the road from Highway 52 to what was then the Dock Restaurant) to about the midpoint of the property, where an access had been cut at a right angle over to a culvert connected to the Tailrace Canal. While this area of the old canal ran for 1,030 meters, the average width of the waterway was 17 meters, giving us a total area of about 17,500 square meters (or about 4.3 acres) to survey in this one section. Area B was a partially dry area that ran from the end of Area A south to Biggin Creek. This portion of the old canal had been filled with dredge spoil that had slumped down from the large embankment that ran between the Tailrace Canal (the origin of the spoil) and the old canal. This added another 1.7 acres to our survey area. The Biggin Creek Vessel and area around it were designated Area C. The river bottom around the trash piles at the mouth of Biggin Creek and the flatboat examined earlier by the underwater team were designated Area D.

We began in Area A. In this section the canal took on the characteristics of a small tidal creek. Water from the Tailrace Canal and Cooper River entered the canal through the culvert. At high tide the water depth in the canal (on top of the three to four feet of mud) ranged from about one foot at the north end to about four feet at the bottom end where the culvert connected the water bodies. To survey the area, we rigged the magnetometer head to the end of an eight-foot-long piece of angle aluminum. We thrust the mag end out the front of the boat, like an aluminum bowsprit, clamping the other end to the johnboat’s bow. Once this was rigged, we oared and poled the johnboat down the mud-filled canal, starting at the upper end. We soon found the error in our method. While there was enough water to float our johnboat at high tide, about midway to low tide all the water was gone from the canal, returning to the Tailrace Canal through the culvert at the southern end of Area A. Needless to say, we could not paddle through the mud, although a few times, as the water left the canal faster than we could get back to our launch area, we had to get out and push the boat and ourselves through the muck. This cut our available work time drastically.

To lengthen our workday, we needed to slow the flow of water from the canal. We decided to rig a flapper valve over the culvert. This would keep the water in the canal longer, we thought, letting us extend our magnetometer surveying each day. Using a piece of plywood, some poles, and rope, we made a flapper and tied it over the culvert on the canal side. In theory the incoming tide opened the flapper, allowing the water into the canal. When the water started out, the water pressure closed the flapper, keeping the water in the canal. Our contraption worked
well for three days, then deteriorated to the point where it was useless. We blamed the failure on the stresses of the strong water flow. The idea that our engineering and construction abilities were lacking was not considered. We went back to surveying at high tide. The mud had won this round.

Nevertheless we recorded seven magnetic anomalies in Area A. In addition, while conducting the survey, we spotted the sternpost of a small vessel sticking up out of the mud on the east side of the canal just north of the culvert.

Two of the seven anomalies, located about 150 meters down from the north end of what remains of the canal, were within the confines of what we identified as one of the canal's locks from features on the canal bank. Another 100 meters south, where a small creek entered the canal, the magnetometer recorded a large anomaly spreading over some 30 square meters. Still farther south of the canal lock, about 300 meters, were two anomalies—a small one on one side of the canal and a large one on the other. Finally two other anomalies, one small and one large, were recorded. The large one was located near the southern end of the canal, just north of the culvert. To mark each site, we jabbed wooden poles into the canal mud. Now came the chore of ground truthing the magnetometer hits to identify the source.

Our methodology (a big archaeological term meaning “plan of attack”) consisted of probing into the mud with the wooden poles we used as markers. If this proved unsuccessful, we donned our wet suits and got down into the canal bed, gingerly sweeping around with our feet for the object in the mud. In places sand covered our target objects, making our foot probing impossible. We then slipped on our scuba gear and dug in the sand with our hands or, in hard-packed sand, with our water dredge.

The first time we pushed our way through the waist-deep mud in the canal around the markers, we discovered grooves in the canal floor. These grooves were made more than two hundred years ago by the picks of hundreds of slaves as they carved the canal out of the hard marl. These laborers had a quota of two cubic yards of material to move per day. Perhaps they would have been happy to have mud to excavate rather than the rock-hard marl. The grooves reminded us that our difficulties with the mud were nothing to those endured by the slaves.

After the first day of ground truthing, we realized we had to add a step to our methodology. At the end of the day, we could not simply pack up our gear and return to the motel. Far too much mud covered us for us to get into our vehicle or enter our motel rooms. Instead we walked
down to the Tailrace Canal near the Dock Restaurant. First, we waded into the water and rinsed as much mud as possible off our wet suits. This accomplished, we peeled off our suits, pulling them inside out to clean out the several pounds of mud that had found its way inside. Then we turned our attention to ourselves, sluicing the mud out of our armpits, ears, necks, and other crevices. We attracted more than one strange look from early dinner customers at the nearby seafood restaurant. After washing off as much of the mud as possible, we walked, dripping, barefoot, and carrying our wet suits, back to our vehicle and the motel. We put this part of our workday in the category of public relations, that is, we didn’t want to tick off the motel management by trashing our rooms with mud every afternoon.

The first two anomalies, the ones inside the canal lock, we were unable to find, as they were covered by slump from the canal banks. We refrained from dredging these two unknown magnetometer hits since we did not want to disturb any of the lock structure, but their locations, on either side of the lock and near opposite ends, indicated metal hinge parts for the lock gates.

The large anomaly one hundred meters south of the lock was easy to locate, as was the large anomaly further south. These two items turned out to be two of the wooden lock gates, supposedly from the nearby canal lock. We dredged enough of the mud and sand covering the gates to determine that our magnetometer had recorded the thick wrought-iron reinforcing bands holding the corners of the gates together and a sliding iron plate that acted as a sluice gate in one corner. With time being short, we moved on without fully excavating and recording the gates.

The small anomaly across from the second lock gate turned out to be a jumble of wire, perhaps the remains of a small fish trap. The other small anomaly was an unidentifiable wooden construct consisting of longitudinal planks and one curved cross member. Nails, spikes, and iron dowels held the wooden pieces together.

Searching for the cultural remains with our feet was successful in locating most of the magnetic anomalies. The seventh anomaly eluded us, however. The strength of the magnetometer reading (469.2 gammas) indicated a large object. By comparison a metal boat trailer we found in Station Creek off Port Royal Sound registered 358.1 gammas. We probed with a wooden pole. We struck nothing. We got into the canal and probed with our feet. Again we found nothing. There was a small mound of sand, perhaps one foot high and two feet across, at the location, but we dismissed it as the site of our anomaly. We assumed that
an anomaly with such a large signature could not hide in such a small mound of sand. After searching everywhere else, though, we returned to the sand mound. In the center of the mound, at the very bottom, we found a fist-sized chunk of metal. A clear break indicated that it was part of a larger object, making it hard to identify. Despite being small, it was heavy, weighing about four and one-half pounds. We discovered another attribute when the metal object kept attaching itself to any ferrous metal it met. Once attached to some metal object, our metal weight belt buckles or steel air tanks, it was nearly impossible to pry off. We determined the object was a piece of an electric motor magnet.

One day archaeologist Jodie Simmons decided he was tired of struggling through the chest-deep mud to get from one section of the canal to another. He had a solution. He was going to walk on top of it. The
The Day the Johnboat Went up the Mountain

theory was that if he spread out his weight over a bigger area he would be able to stand on top of the mud without sinking to his waist. So he tied two pieces of plywood to the soles of his dive boots. Each piece of plywood was oval, eighteen inches in length and about twelve inches wide. The first time Jodie tried his new mud shoes his descent into the mud was slowed little, if at all. In fact, instead of sinking straight down, the plywood pieces skittered sideways as they cut down into the mud, causing Jodie to fall backward onto his butt. Undaunted by his first attempt, he tried again. This time he fell forward onto his face. Never a quitter, he repeated his attempts several more times. At last he gave up.

A discussion among the onlookers ensued. The theory was correct but the math was off just slightly, we decided. The plywood would have to be much larger. Spreading his weight was the right idea. He just needed more spreading. We figured that one complete four-by-eight sheet of plywood would do the trick—one on each foot.

Our attention then turned to the sternpost we saw near the south end of Area A. Probing the area, we discovered a vessel resting parallel to the east bank of the canal. A fallen tree covered the wreck. After sawing the tree into segments and removing it, we could take some basic measurements. The vessel turned out to be fifty-five feet nine inches long and nine feet ten inches wide—the right size to fit through the canal locks. We excavated a portion of the bow area, revealing clear evidence of burning. Probing the interior of the hull indicated a double-ended vessel of light construction.

The remaining area of the canal, Area B or the “dry” area, consisted of two marshy areas divided by a central area of standing water—that is, swamp. In the marshy areas, one person (usually me) carried the magnetometer while Jodie Simmons worked the strip chart and Peggy Brooks wrangled the magnetometer cable through the woods. We first set up the strip chart at the extent of the cable into the survey area. I then carried the magnetometer head, following the marked centerline of the old canal, to the extent of the cable. This was repeated ten feet on each side of the centerline. We then moved the strip chart down the canal again to the extent of the cable and repeated the process. In addition to the magnetometer head, a hundred or so feet of cable, and the strip-chart unit, several car batteries that powered the magnetometer had to be carried through the area as well. In the central, wet portion, we dragged and pushed the johnboat through the dry portions to the central area and rerigged the magnetometer out the bow on angle aluminum, and we repeated the procedures we used in Area A. Several days of carrying the magnetometer through the marshy woods and rowing it
up and down the wet portion of Area B resulted in the discovery of no magnetic anomalies.

Meanwhile Chris Amer, Bruce Thompson, and Billy Judd had joined our team. At the time Chris was the new head of SCIAA’s Underwater Archaeology Division. Bruce Thompson was an underwater archaeologist from Texas A&M University who became SCIAA’s conservator in 1988. Billy Judd was a SCIAA research affiliate and an expert on barge construction. Chris, Bruce, and Mark Newell were there to record the Biggin Creek Vessel (Area C). Billy had the Biggin Creek Flatboat (Area D).

Chris, Bruce, and Mark spent two days recording the Biggin Creek Vessel. Their task was to make a more detailed analysis of the vessel than had been accomplished the previous year. Since their time was limited, they were unable to excavate the bow section of the vessel, which extended into the creek bank, leaving them only the exposed 30 feet of the vessel to study. Nevertheless fourteen sets of frames were visible. These frames measured about 5 inches square and were spaced 18 inches apart. The 1-inch-thick outer hull planking ranged in width from 11 inches to $14\frac{1}{2}$ inches. Square iron nails and wooden treenails attached the planking to the frames. The vessel’s keel tapered from 7 inches to 5 inches at the stern and was 15 inches deep near the mast step. About 19 feet of the keelson was visible. The measuring tape showed it to be uniformly 7 inches wide, but tapered in depth from $10\frac{1}{2}$ inches at the mast step to 7 inches at the stern. Iron bolts and treenails attached the keelson to the frames and keel. Two lodging knees, indicating the vessel was decked, were still attached to the hull. Before finishing its work, the team took fourteen wood samples from the wreck.

From the observations, Chris determined the vessel was a double-ended, flat-bottomed workboat. He estimated the vessel to be from 46 feet to 65 feet in length and about 16 feet in width, which precluded it from being a canal boat. The keel and keelson were made of southern yellow pine. The frames were made of southern yellow pine, spruce, and white oak. Since the derelict vessel would have blocked Biggin Creek, it is evident it was abandoned sometime after the closing of the canal in the 1850s. Chris speculated that the vessel might have been associated with the lime mining and processing activities that took place at Stoney Landing from around 1853 until after the Civil War.

As mentioned earlier, the Biggin Creek Flatboat measured 40 feet long and 16 feet wide. Its sides measured 3 feet 5 inches deep. Billy found that the barge was decked with $1\frac{1}{2}$-inch planks running across the barge at the top of the gunnels. Five deck supports ran longitudinally. Billy also discovered that the sides, bow, stern, and possibly
bottom of the flatboat were double planked, with tar paper or roofing felt sandwiched in between. This may indicate that as the barge aged it began to leak. Instead of caulking the seams, the owner placed the tar paper over the outside of the hull and planked it over. This was consistent with our earlier conclusion that the flatboat might have been used in the construction of the Pinopolis Dam and Tailrace Canal.

The other feature in Area D were the trash piles examined in 1986. Our original thinking was that further excavation of the dump site might reveal horizontal and vertical contextual association of artifacts—in other words what was dumped when and where in relation to the other items. After reexamining the earlier findings, however, Jodie Simmons determined that no clear stratigraphy in the trash piles existed. The swift currents through the canal evidently scattered and mixed the artifacts into an unenlightening jumble. Jodie decided that further excavation of the site would be pointless.

With just a few days left of our allotted twenty days, we realized we needed to wrap up our efforts. Plans called for the park contractor to drain the canal and remove most of the mud using heavy machinery. This meant we needed to provide some protection for the artifacts we had discovered and partially exposed. For this we used some heavy machinery of our own, in the form of a backhoe. First, the backhoe dug a trench about three feet from each of the remains, which included the two lock gates, the two vessels, and the unknown wooden construction. We then covered each area over the item with a thick layer of burlap sacking. Over this we spread large sheets of black plastic film, pinning these in the trenches with stakes and granite rock. Stakes were driven around each site to warn the construction equipment operators of the locations. We then returned to our offices.

We considered the project a success. We had discovered and partially recorded the canal’s terminal tide lock, the remains of a vessel that may well be an elusive canal boat, two of the lock’s gates, and another unknown wooden construct. We added to our previous knowledge of the Biggin Creek Vessel and the Biggin Creek Flatboat. And we provided some protection for these sites from possible harm during the coming canal park construction. Not bad for just twenty days of work. We figured we had won our struggle with the mud.

In May 1988, because of our discoveries in the park portion of the canal, the South Carolina State Historic Preservation Office entered into an agreement with Santee Cooper for further archaeological work in the proposed park area. This agreement stipulated that SCIAA do that work.
So on June 1, 1988, we packed our bags, loaded our equipment, and headed back to the Berkeley Motel. I wondered if they would be glad to see us. Despite our best efforts in the Tailrace Canal, a good amount of canal mud managed to find its way into the motel rooms, particularly our showers. Our dripping wet suits draped over balcony railings had not been a pretty sight, either. Nevertheless they greeted us cordially, saying they were glad to see us. The fact that our rooms were on the very backside of the motel this time did not go unnoticed, however.

We had several tasks to accomplish. We had eight weeks to accomplish them. We wanted a better look at the canal lock and the two lock gates. We were determined to identify the wooden construct. In addition we had to provide these items and the small vessel found at the south end of Area A with protection from the elements and park construction.

As we headed for the canal on the first day back, we decided to walk the old pathways that led along the side of the canal for the length of Area A. We were curious to see what if anything had changed during our six-month absence. Several things popped out. First, we immediately noticed the contractor had cut several roads through the woods surrounding the canal. We also noticed the water and mud had not been removed as we expected. This didn’t mean the contractor had not been busy. He had installed a well-point system north of the canal lock, just south of Highway 343, lowering the water level just enough to get a large backhoe into the canal. This backhoe was in the process of filling huge ore trucks with the watery mud from the canal. We continued down the canal. The second thing we noticed, after passing the canal lock, was that our fears of not having marked the two lock gates and other sites well enough were, except in one case, unfounded.

The locations of the relics could not have been more obvious. The marsh gas had built up under their black plastic coverings and, aided by the hot June sun, expanded the airtight protective sheeting like hot air balloons. My dictionary says methane, the primary ingredient of marsh gas, is odorless. Perhaps so, but something about it is anything but odorless. Bursting pockets of marsh gas as we pushed through the built-up silt and leaves in the canal during the project often created the impression that the mud was an entirely different type of brown, mushy “soil.” Guess who had the job of slithering into the still-mud-filled canal and slitting the black plastic, allowing the balloons to deflate as the foul gas gushed out into my face. Protecting the canal’s large artifacts would take more thought.

The contractor told us that the work in the area north of the canal lock would be done in a few days, and work would then commence in
the area below the lock. At first the contractor’s plan was to load the mud into large ore trucks and haul it off to a local landfill. This plan was soon abandoned when much of the soupy mud slopped over onto the roads of Moncks Corner before it could ever reach its intended destination. This did not make Moncks Corner officials overly happy. The contractor then began dumping the mud on the hillside between the old canal and the Tailrace Canal. We decided the best thing we could do would be to re-mark the areas around our sites in the area below the canal lock. While we did this, the contractor moved to the area where we were working and set up a well point there. Again the water was lowered somewhat, but it was not removed altogether. Nevertheless the process of removing the mud continued. We decided to cease our operations while the contractor struggled with the water and mud.

A month later it was apparent that the contractor had mounted a losing battle with the water in the old canal. He had lowered the mud to about a half foot, but this had been replaced by water.

This changed our plans. Okay, we told ourselves, the water was still there. We could deal with that. Actually this could turn out to be a good thing. We no longer had to worry about the boat and lock gates drying out from not being submerged in water. With the water still in the canal, it would also be easier to remove the hundreds of cubic yards of mud from the canal lock site.

When we turned our attention to the south lock gate, we were saddened to find it destroyed. Bashed to bits. Stomped to splinters. We thought we had marked the site clearly enough. Apparently we had not. After being loaded the large ore trucks drove down the canal bed to one of the exit points. Our marker poles had been mowed down on one of these passes. Without the markers the trucks began driving over the lock gate. Repeatedly. The damage was total.

We were relieved to find that the north lock gate, located about one hundred meters south of the canal lock, had fared better. After removing our temporary coverings, we water-jetted most of the mud overlaying the gate. Close to the artifact, we used trowels to remove the remaining mud by hand. With the mud removed, water filled in and covered the gate at high tide. At low tide the gate was partially exposed to air. We decided that after recording the gate we would move it out into the canal, where water would cover it at all tide stages. Also, lifting it up to move it would make it easier to record. We then measured, drew, and photographed every feature of the gate. The gate consisted of two large side posts connected by four cross members, giving it an overall width of 9 feet 6 inches. The bottom cross member joined the bottom
ends of the side posts. The top cross member connected the side posts about three-quarters of the way up the posts. The two other cross members were equally spaced between the top and bottom cross members. The upper ends of the side posts would have been fitted into the gate’s balance beam. All members of the gate were made of cypress and joined by mortise and tenon. The side posts measured 10 feet and 11 feet 6 inches in length. The difference in their lengths allowed the gate to hang vertically from the downward-angling balance beam. The side posts averaged 10 inches by 7 1/2 inches. The top and bottom cross members measured roughly 8 inches by 7 1/2 inches. The two middle ones averaged 6 inches by 6 inches. Metal straps 2 1/2 inches wide and a half inch thick reinforced the middle cross members.

A small upright post was located between the bottom cross member and the one above and 22 1/2 inches in from the outside side post. A frame around the resulting square hole held the gate’s sluice, which could be lifted to allow water to flow into or out of the lock. Except for the sluice, cypress planking covered the outside of the gate. These boards were of random widths, ranging from 11 inches to 16 inches, and were butted against each other to form a watertight, or as close as possible, covering.

When we were finished recording the gate, we wrapped it in geofabric and buried in on the bottom of the canal. Geofabric is a woven monofilament fabric designed for erosion control. Manufactured by Exxon Corporation, the fabric allows water to pass through it but not soil or sand. It is used primarily along highway and waterway embankments. To keep the gate in place, we nailed the edges of the geofabric into the bottom of the canal using hundred-penny galvanized nails.

The unidentified wooden anomaly we discovered on our first project turned out to be the flat transom of a small boat. This became apparent after removing the overburden of mud, leaves, and debris and raising the wooden construct to the surface. Constructed of three planks held together by iron spikes, the transom measured 7 feet 4 inches by 2 feet 6 inches. After examining the transom, a thought struck us. Could the rest of the vessel be somewhere nearby? Sure enough, some 15 feet north of the transom we found the remains of a small vessel. These remains consisted of a keelson and hull planking sticking out of the bank. No keel was present. Instead the vessel had a king plank, essentially an outer hull plank, indicating a small boat intended for use in shoal waters. Because only a small portion of the vessel was exposed, it was impossible even to guess at its actual length and width. We placed the transom with the rest of the vessel and dredged a blanket of mud.
over the remains. Over this we placed geofabric, again nailing the edges into the canal bottom.

Next our attention focused on the canal lock. Our first chore was to remove the tons of mud that had filled in the structure over the years. For this we turned to a tried-and-true underwater archaeology tool—the water induction dredge. Like an airlift, the water dredge creates a suction used to remove sand, mud, small rocks, leaves, and even bricks from a site. Unlike an airlift that uses air to create the suction, a water dredge uses pressurized water. A pump jets a stream of water down a hose from the surface into the dredge head about a foot behind the mouth. Shooting the water up the effluent hose creates suction at the mouth. By adjusting the pump's throttle, either a gentle suction can be generated to sift sand carefully off a shipwreck or a suction several times stronger than an airlift can dig down through layers of hard-packed sand, mud, and shell to locate a buried anomaly.

With the failure of the contractor to remove the water from the canal, we had plenty of water to use the dredge. But where should we put all the mud? We had no large ore trucks to haul it away. We couldn't pump it onto the bank of the canal. We decided the best (and most expedient) methodology would be to pump the mud several hundred feet down the canal to the culvert area, where the tidal flow would flush it into the Tailrace Canal. We had never pumped our dredge effluent that far before, though. Undaunted, we bought two dozen 12-foot sections of 6-inch PVC pipe, several Y-sections of PVC pipe, and a supply of flexible rubber connectors. We connected the sections together with the connectors, inserting Y-sections along the way to form a pipeline 220 feet long. On the front of this, we attached a length of flexible hose and our 4-inch dredge head. We realized that just the pressure from the dredge head pump would not be enough to push the mud the entire length of our PVC pipeline. To increase the flow, we attached additional pumps to force water into the pipeline at the Y-sections. We also relied heavily on gravity. We elevated the pipeline on floating fifty-five-gallon drums, adding water to the barrels in increasing amounts the further the pipeline extended away from the dredge head. This gave a downward slope to the pipeline, facilitating the flow of mud. At the end of the pipeline, we rigged a floating screen to catch artifacts. We soon realized that while the rubber connectors gave the pipeline needed flexibility, it also gave it the ability to sag. In places where the sags occurred, gravity was negated and mud and sand would pool, clogging the pipe and stopping our dredging activities. To solve this problem, we assigned one crew member to walk the pipeline continuously, lifting the sags to
prevent clogging. As it turned out, we excavated an estimated 450 cubic yards of mud through the pipeline in the record time (for us) of ten days.

With the mud removed, we recorded the canal lock features. The lock consists of four wall structures, one at each corner of the lock. These structures supported the lock gates and were made of brick. Between opposite lock walls, wooden floors laid on the bottom of the canal provided a watertight base for the gates. These floors were constructed by laying timbers across the canal at right angles to the banks. Planking was then laid over the beams and fastened with treenails and iron spikes.

We found abundant evidence that the lock was the victim of apparently deliberate destruction. One wall was completely torn down, the bricks scattered over the bottom of the lock and canal. How many of the bricks were gone was impossible to determine. One wall was intact except for the absence of the quoin stones, which were missing. These stones, which act as swivel points for the lock gates, weighed several hundred pounds each.

To complete our work, we needed to cover the small vessel found at the south end of Area A. First we used a water jet to dig a trench around the vessel. After laying geofabric over the vessel, we nailed the edges to the bottom of the canal; we did the same with the transom boat and lock gate.

The Santee Canal Park opened to the public on April 24, 1989. A brick entrance resembling a canal lock leads visitors into the interpretive center, which overlooks Biggin Creek. A scale model of a canal lock and a three-eighths scale model of the CSS David are on display in the open area around the center's theater, where a short film tells the story of the Santee Canal. Four miles of boardwalks and trails guide visitors along the canal and the Tailrace Canal, passing by remnants of the old limestone mining operations in the industrial area above Biggin Creek. Historic and prehistoric artifacts from the area are displayed in the Berkeley County Museum, which is also in the park.

So how did we do in our battle with the mud? Did we win the Santee Canal “Mud Bowl”? Looking back, it was probably a draw. Our efforts were greatly hampered by the muck. We encountered endless difficulties caused by the ever-present ooze. On the other hand, we accomplished much. We managed to discover and record several unique artifacts, including a possible canal boat and a canal lock from America’s first summit canal. Most important of all, we learned one of the great lessons of underwater archaeology: mud sucks (and smells). But it’s no match for a good water dredge.