

## From the President

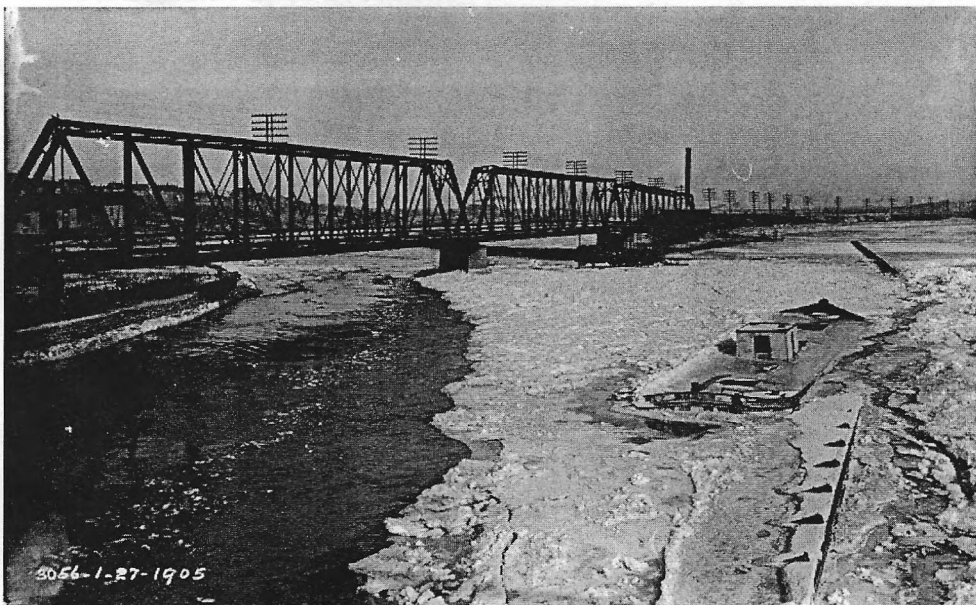
By David G. Barber

This spring we held the annual ACS Directors' Meeting in conjunction with the joint Canal Society of Ohio/Pennsylvania Canal Society spring field trip to the Akron Summit area of the Ohio & Erie Canal. It was very interesting to see all of the work that has been done in the area to develop a through towpath trail despite considerable obstacles. The number of expensive bridges built and the replacement of the floating towpath at Summit Lake were most impressive. One regret was the necessity to reroute the trail south of Snyder Avenue in Barberton to avoid

"Lime Lakes" area, which is a chemical byproducts waste area still undergoing remediation. Unfortunately that meant that the trail does not pass over or near the concrete Wolf Creek Aqueduct, the only concrete aqueduct in Ohio. But maybe that can be corrected in the future after the remediation is completed.

Two other regrets were noted. One is the lack of boats on the nine-mile-long summit level despite it being watered. Some dredging would be needed at a few spots, but nine miles would be one the longest stretches of navigable towpath canal in the US. The other missing item was the lock that used to connect the summit level to Long Lake next to Manchester Road. Reportedly, the lock was removed when the road was widened. But land appears to be available to replace it. I do congratulate all who have worked so hard to open the trail from New Philadelphia to Lake Erie.

The following weekend I attended



I & M Canal, Towpath Bridge, Joliet, IL, 1/27/05 - This bridge was built as part of the original Sanitary & Ship Canal to replace an earlier bridge. Both carried the towpath over the Des Plaines River which flows under the bridge from the left top. The I&M Canal goes north to the right of the bridge. The combined waterways flow off the lower edge to the left to reach Joliet. The bridge carries a 12' wide roadway through the trusses on the upstream side and the 6' towpath on a porch on the right. The bridge was three spans of 624.3 feet total length. The bridge was removed in 1910 between July and October to allow extension of the Sanitary & Ship Canal from the new powerhouse at Lockport, upstream, to the Upper Basin in Joliet, downstream. The photo was taken to show the effects of ice in January, 1905. Note that the canal boat on the right is sunk.

Metropolitan Water Reclamation District photo, Illinois State Archives

the Canal Society of New York State's spring field trip to the central part of the Chesapeake and Ohio Canal. The national park that includes the entire canal is now celebrating the 60<sup>th</sup> anniversary of the Justice William O. Douglas hike that led to the canal's preservation. It is always encouraging to see the great results of all of the efforts that have been given to this canal and park. It was also great to visit the Great Falls Tavern on Sunday and ride on the replica

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# American Canals

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# WORLD CANALS CONFERENCE, TOULOUSE, FRANCE, SEPTEMBER 2013

Story and photos by Rod Mackler, C&O Canal Association

## Waterways of Southwest France

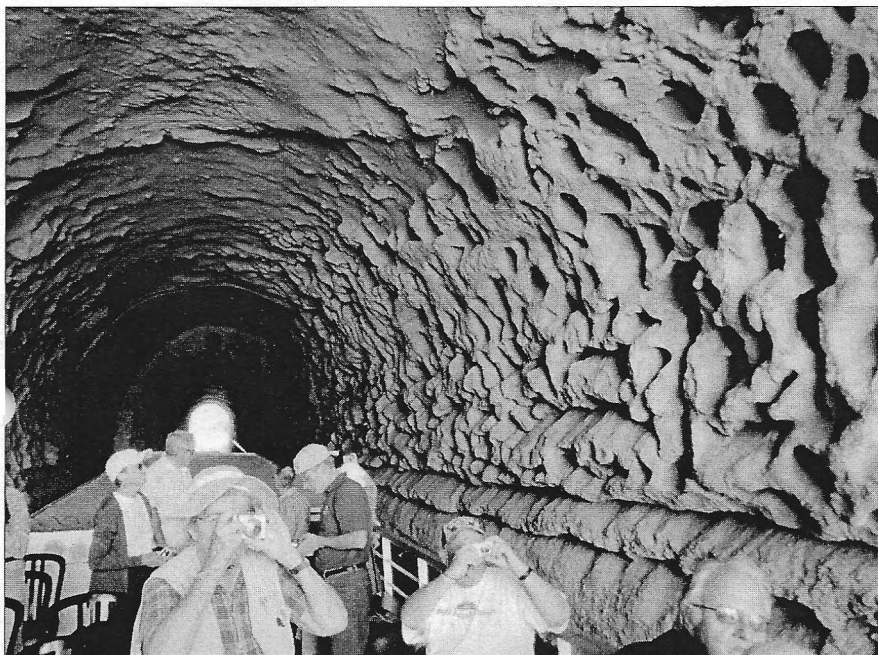
Ten members of the Chesapeake & Ohio Canal Association attended the World Canals Conference in Toulouse, France, September 16-19, 2013. Toulouse is near the mid-point of the Canal des Deux Mers (Canal of the Two Seas), between the Mediterranean and the Atlantic. We all combined the meeting with other canal-related travels in this beautiful corner of France. Of the other sites, easily the most spectacular was the Pont du Gard, an aqueduct built by the Romans in the 1<sup>st</sup> century A.D. to supply water to Nimes.

The key section of the canal system, and the most scenic, is the Canal du Midi, from Toulouse to the Mediterranean port of Sète. The Canal du Midi is almost exclusively the product of the genius of one man, Pierre-Paul Riquet. The idea of a canal across this relatively narrow neck of southwestern France had been kicking around since the time of the Romans. Augustus, Charlemagne, and François I had all dreamed of such a project to avoid the long, dangerous, and expensive trip around Spain and through the Strait of Gibraltar.

The most vexing problem for a canal from the Mediterranean to the Atlantic was not digging a ditch, but

rather assuring a regular flow of water for it, in the relatively dry south of France. Riquet was a wealthy salt tax collector who traveled widely throughout the region. He solved the water supply question in the 1660s by harnessing the waters of the Montagne Noir (Black Mountain) in a series of reservoirs and feeder canals. The canal opened in May 1683, just a few months after the death of its creator.

Before the conference began, we traveled the length of the Canal du Midi, visiting most of the key sites along the way—the Malpas tunnel, the only tunnel on the canal; the Fonserannes staircase of nine locks; Riquet’s aqueduct over the Répudre River (plus others added by later engineers); and the feeders for the summit. We traveled by bus, on foot, by bicycles,

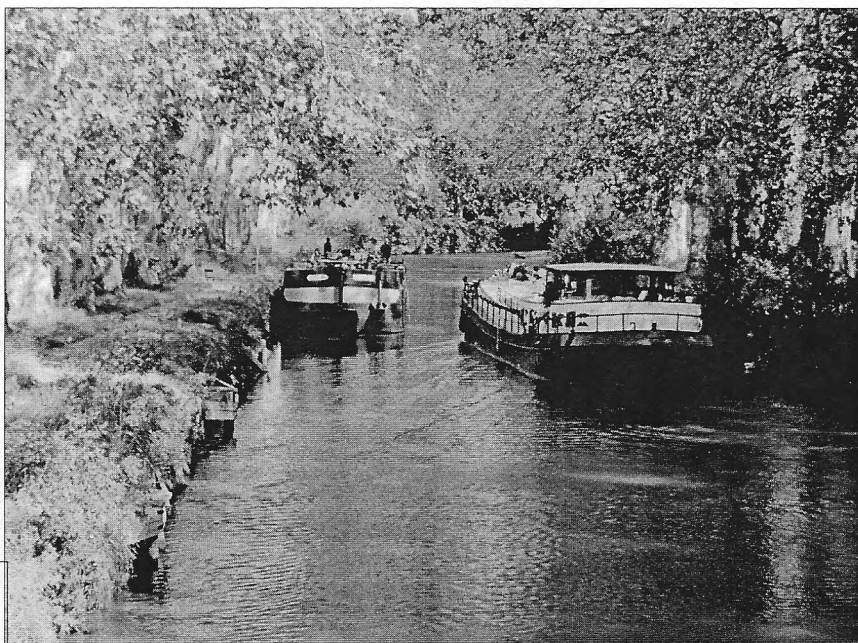


Malpas tunnel with its walls pitted by the wind

and, most pleasantly, by boat.

The canal was blessed (and financed in part) by Louis XIV. Because they were built to glorify the Sun King, the structures are built to last and are beautiful works of art in themselves—the locks and aqueducts are built of stone, with arches as graceful as they are functional.

Not all is idyllic on the Canal du Midi, however. In most places, the canal is lined with a double row of plane trees (a relative of the American sycamore), which form an arch over the canal. They are not only beautiful, but also help preserve the earthen



Before the blight, the plane trees formed a beautiful, arched canopy over much of the Canal du Midi. ►



Above, Tom Grasso chats with a friend at the “Ocean Lock” at the summit level, the first of the ones pointing toward the Atlantic Ocean. The curved lock walls are characteristic of the Canal du Midi.

banks of the canal. In the photo on page five, however, we see a break in the tree cover as the trees have fallen victim to a fungus, a so-called canker. The trees have to be removed and burned. A replanting program has been launched, but it will take years for the new trees to reach the size, the attractiveness, and the bank-holding power of the dying plane trees.

Toulouse itself is a lovely city, with about 1.2 million people in the metropolitan area, a bustling university town, and the headquarters of Airbus. It is called the “Pink City,” because the major buildings are made of red brick. At Toulouse, the Canal du Midi meets the Garonne River, which flows west to the Atlantic at Bordeaux. This unreli-

The round lock at Agde allows boats to come in from one side canal, make a 90-degree turn, and exit through a side lock. ▼





The Fonserenes staircase of locks consists of eight curved lock chambers (characteristic of the Canal du Midi) and nine gates that allow boats to be raised a height of 21.5 meters in a distance of 300 meters.

able river was tamed in the mid-1800s, with the opening of the Canal de Garonne. The two canals together constitute the Canal des Deux Mers (Canal of the Two Seas).

The general format for the World Canals Conferences is a morning of PowerPoint lectures, then lunch, and an afternoon trip by bus or boat to see local canal-related sites. This worked extremely well in France, since the food (not to mention wine) was excellent and the sites were spectacular. The high point was touring Riquet's chateau, seeing the experimental model of the canal he built in his garden, and enjoying the gala dinner in the orangerie (greenhouse) on his estate.

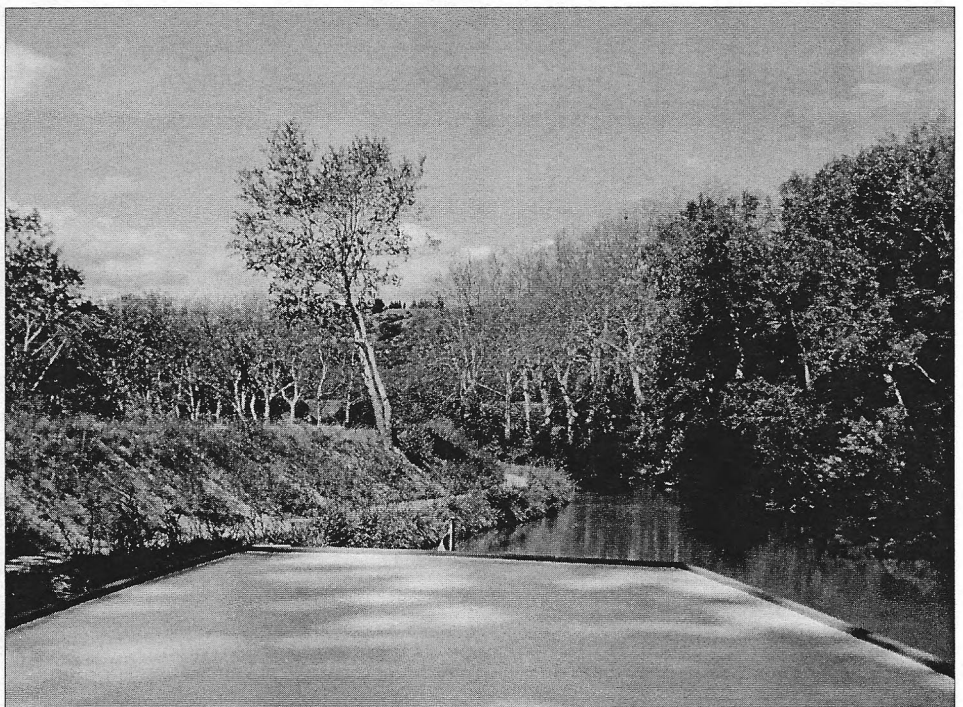
During the conference itself, we visited a number of sites along the Canal du Midi and took two cruises within the city limits of Toulouse. The conference opened with an expo of canal boats at the Port Saint-Saveur, a city canal port. Another memorable field trip took us to the Saint-Ferréol reservoir. At the time Riquet built the artificial lake, the reservoir—and the dam that created it—were the largest in the world. (And we saw his model for them in the garden of his estate at Bonrepos.) From the reservoir we bused down the Montagne Noir to the summit level at Naurouze to see where the feeders flow into the highest part of the canal. At 190 meters above sea level, the level is over 620 feet, about the same altitude as the

Cumberland terminus of the C&O Canal. The lock at the eastern end of the summit level is called the Méditerranée, the one at the western end of the level, the Océan. As with the Erie Canal, the summit is called the “meeting of the waters.”

There were over 200 participants at the conference, from Europe and North America, and a handful from Asia. As with other such conferences,

the largest number was from the host country, France. We heard papers, presented in English or French, on a wide range of subjects, including how British canal buffs used the London Olympics to renovate the city's waterways, turning Leipzig's open-pit coal mines into recreational lakes, and the waterways of Kolkata, India. C&O Canal Association member Dan Van Haften gave a talk on Thomas Jefferson, who traveled nine days on the Canal du Midi in 1787, when it was already over 100 years old.

After the conference, several of us joined the post-conference tour. While the pre-conference tour focused on the Canal du Midi, the leg from Toulouse to Bordeaux devoted more attention to the navigable rivers that feed into the Garonne. We visited the Tarn, the Lot (in three discontinuous places), the Baïse, the Célé, and the Dordogne. The challenge for these rivers is to get around the dams and the hydroelectric plants that harness those waters to make the rivers navigable again. In addition, we visited some spectacular





Vessels pass through a bridge in Le Somail, a picturesque canal town along the Canal du Midi.

sights that had little to do with canals—the Toulouse-Lautrec museum at Albi and the medieval abbey at Moissac.

It was a great experience, a chance to see these historic waterways, eat and drink well, and mix with other canal buffs from around the world. The next three conferences are in Milan (Leonardo de Vinci's canal system) in 2014, Ghent in 2015, and Scotland in 2016.

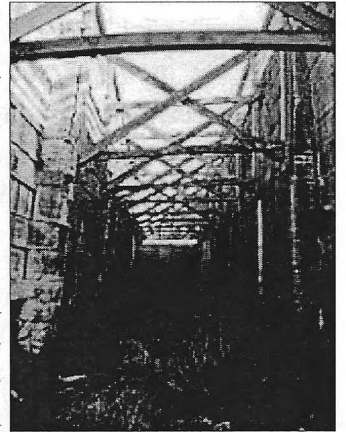


The exterior of the Malpas tunnel.

## WORK COMPLETED AT LOCKINGTON, OHIO

After years of preparation and delay, work finally began last summer on the renovation of big Lock #1 at the south end of the Miami and Erie Canal's Loramie Summit in Lockington, Ohio. Work was expected to be completed on June 1st of this year.

The limestone walls of the lock had been leaning precariously inward for many years, due to the exposure of the oak floor timbers of the lock to the air as a result of soil scouring from runoff water routed through the lock. Many years ago a large timber frame was even hung inside the lock (see photo, right) in an effort to keep the walls from collapsing inward. The lock is the uppermost of the seven locks descending from the summit.

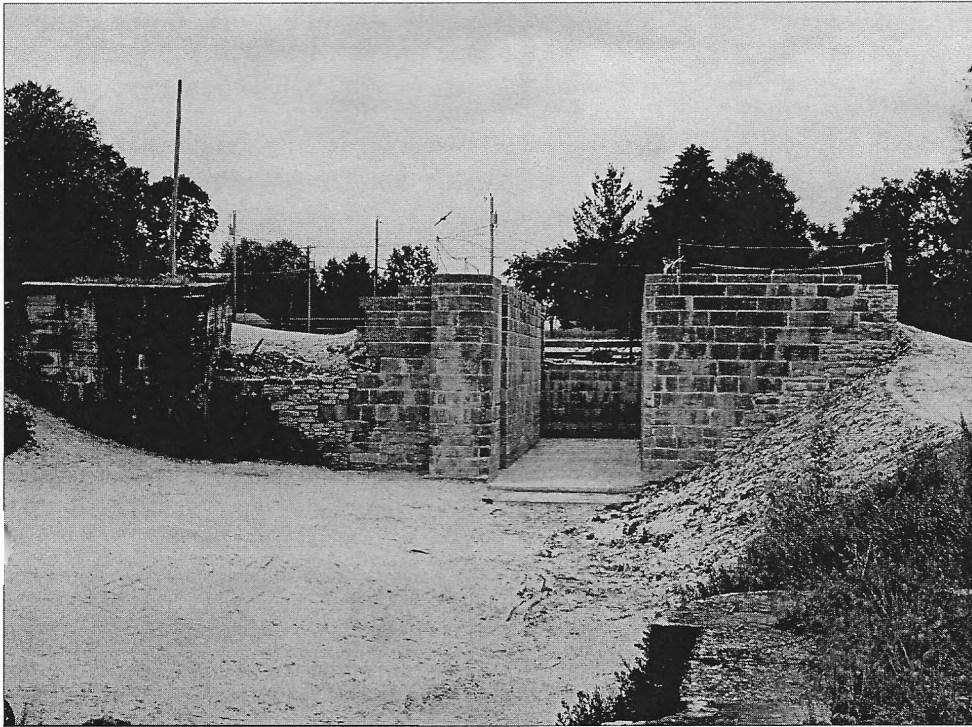


Funded by a federal transportation enhance-

ment grant and state funds, the \$2.5 million project was completed in June of 2014.

According to the *Sidney Daily News*, as the rubble and earth fill behind the cut stone lock walls was removed, the 1,250 cut stones of the lock face (most weighing about 500 pounds) were numbered, measured, and placed in a huge grid laid out on open ground nearby, so that this giant puzzle could be reassembled after a new foundation was laid.

An archaeologist was on site every day to monitor any artifacts

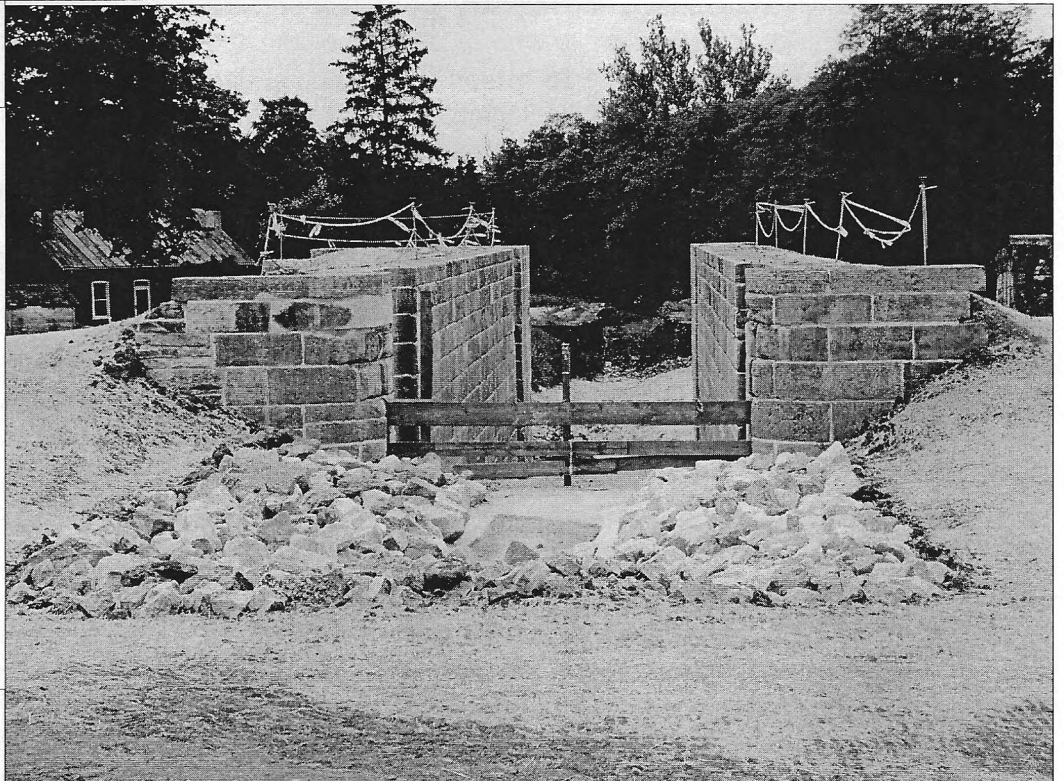


Lockington Lock 1, downstream end, finished. Photo by

found during the excavation and disassembly. One discovery has been that the mortar used in c. 1900 repairs to the top of the lock is still holding strong, much more so than the older mortar found lower in the lock.

Courtesy Canal Society of Ohio Newsletter, #2, 2013.

Thanks to Diane Fledderjohann for providing the photos of the finished lock.



Lockington Lock 1, upstream end, finished.

## LOCKED AND DAMNED: FEDERAL BUDGET RUNNING DRY FOR LOCKS REPAIR

By Len Boselovic / Pittsburgh Post-Gazette

Part four of four

WASHINGTON, D.C. -- Each year, the deteriorating locks and dams used to transport about 550 million tons of coal, grain and other products on the nation's rivers increase the pressure to fix what the U.S. Army Corps of Engineers and industry officials agree is a broken system for maintaining the nation's aging river infrastructure.

Unfortunately, the federal budget process—and the budget itself—are just as broken. That makes it difficult for those who maintain and use more than 200 locks along 27 U.S. rivers to imagine the government doing much more than it does now: funding an \$8 billion backlog in repair and replacement projects at the glacial pace of \$170 million per year.

At this rate, it will take 47 years—about as long as a new lock or dam is expected to last—to build projects authorized by Congress as far back as 1988.

In the meantime, the Corps has resorted to a triage system for maintaining fixtures long past their 50-year life expectancy. Those include the 105-year-old locks and dam at Elizabeth on the Monongahela River and a Depression-era lock upriver at Charleroi.

Under the current funding scheme, both facilities would be replaced in 2024—at the earliest. And if either fails before then, it could close the Mon to river traffic. A one-year closure could force consumers to pay as much as \$1 billion in added electricity costs, a consultant told the Corps last year.

The river industry is clamoring to pay more to build modern, efficient locks and dams at a faster pace. Two years ago, barge operators offered to pay as much as 45 percent more in fuel taxes to provide more funding for projects.

But higher revenue from the fuel tax would require Congress to provide matching funding. And Congress is dead set against tax increases and is not likely to have a change of heart in an election year. “The sad reality down here is that nobody wants to pay for anything,” said U.S. Rep. Mike Doyle, D-Forest Hills, whose district includes Elizabeth.

Barge industry officials heard that message loud and clear last month, when they descended on Capitol Hill for their annual political action day. The message came loudest and clearest from the freshman lawmakers elected in 2010, when Republicans took control of the U.S. House.

“They firmly stated they weren't elected to spend more money,” said Michael J. Toohey, president and CEO of the Waterways Council, the industry group that organized the Congressional visits.

Industry officials and economists who measure the contributions that infrastructure makes to the economy say the money must be spent. The \$8 billion for locks and dams is only one component of the nation's transportation framework. The American Society of Civil Engineers put a five-year price tag of \$2.2 trillion on required infrastructure spending in 2009.

Governments have a hard enough time finding money to repair aging roads and failing bridges, projects that are easier to justify to taxpayers. But taxpayers do not drive on rivers.

“That pothole in the highway is more important to people than a lock failing,” said Dale Roth of the Carpenters' District Council of Greater St. Louis, whose members work on lock and dam construction projects.

Two years ago, a task force of more than 40 Corps and industry officials highlighted a major cause of the cost overruns that have pushed lock and dam projects decades into the future: the piecemeal funding provided by Congress each year.

They said when the Corps gets funding for projects upfront, as was the case with the \$14.6 billion restoration of New Orleans following Hurricane Katrina, it can do the job right.

“The Corps can build on time and on budget,” said Martin T. Hettel, the American Electric Power manager responsible for moving coal on AEP barges to the Columbus, Ohio utility's power plants.

In recent years, only about \$170 million has been available to replace or make major repairs on locks and dams. Most of that has been going to the Corps' No. 1 priority: a \$3.1 billion project at Olmsted, Ill., that also has been hurt by piecemeal funding.

Half of the \$170 million available each year comes from U.S. taxpayers. The other half comes from a trust



fund financed through the 20-cents-per-gallon tax barge operators pay on the diesel fuel they use.

### **Industry: Raise our taxes**

The Corps-industry task force recommended increasing annual spending on lock and dam projects from \$170 million to \$380 million. The group estimated that would be enough to complete 25 major projects over the next 20 years, compared to six under the current funding scheme.

But getting to the higher number proved complicated.

The task force's proposal started by backing an increase for the diesel fuel tax for the first time since 1995, probably to 26 or 29 cents per gallon. Unless the 50-50 cost-sharing formula were changed, Congress would have to come up with funds to match the additional tax revenue.

Even at that new level, the tax would not bring in the \$190 million needed to trigger matching funds to meet the \$380 million target. That would require the tax to jump to 50 cents per gallon, and Corps and industry officials concluded that was not feasible.

So they recommended using revenue from the tax only to build new locks and for lock repairs costing \$100 million or more. They also proposed limiting how much of the diesel tax revenue could be used to cover cost overruns.

Under the task force proposal, the federal government would contribute more to reach the \$380 million target. It would be responsible for lock repair projects under \$100 million and for all dam projects.

Corps and industry officials concluded using taxpayer money for all dam projects made sense because barge operators are not the only group that benefits from those facilities. Municipal water companies, hydroelectric companies, recreational boaters, and industries that use river water also benefit from dams.

So far, Congress has not taken up the issue of raising the diesel tax and the White House has balked at other recommendations of the task force.

In a December 2010 letter to congressional leaders, Assistant Secretary of the Army Jo-Ellen Darcy wrote that the recommendations "could shift to the general taxpayer billions of dollars in costs that are currently, and appropriately, the responsibility of those who use these waterways."

Democrat President Barack Obama's proposed budget for the next fiscal year calls for raising \$1.1 billion over 10 years by imposing fees on barges as they pass through locks. Industry officials believe Congress will not back those fees because they would fall heavily on areas where there are multiple locks. That includes Pittsburgh, which has 33 of the more than 200 locks operated and maintained by the Corps.

Meanwhile, U.S. Rep. Ed Whitfield, R-Ky., intends to introduce legislation that would adopt measures recommended by the Corps-industry task force. Industry officials would support such a bill, but they have their doubts about whether a majority in Congress will join them.

"We've got some folks who don't want to raise taxes no matter what people are willing to pay," said Stephen D. Little, co-chairman of the task force and president of Crouse Corp., a Paducah, Ky., barge operator.

"We do have a compelling story, and we're willing to pay more," he said.

The need to reform the funding system was reinforced this month by the revised \$3.1 billion estimate for the Olmsted project. That figure is \$1 billion higher than it was when Mr. Obama submitted his proposed budget last year.

The project was authorized by Congress in 1988 at an estimated cost of \$775 million and was expected to be completed in 2000. The Corps now says it won't be finished until 2024.

"I personally have no confidence that number's going to stay at \$3 billion," said Peter Stephaich, chairman of Campbell Transportation, a Houston, Pa., company that operates a fleet of 500 barges and moves about 20 million tons of coal and other commodities annually.

"We're trying to get them to change the way they do business in exchange for giving them more money," Mr. Stephaich said.

Industry officials are quick to point out that the Corps is not responsible for escalating costs caused by the way the projects are funded by the government.

Rather than paying for projects in full up front, Congress relies on annual appropriations. Instead of buying all the steel and other supplies it needs at one time, the Corps purchases limited amounts of materials. Depend-

ing on how much Congress provides each year and what weather allows contractors to do, construction workers and equipment are mobilized or demobilized.

“The projects need to be funded in whole and built nonstop. If they’re built faster, they’re less expensive,” said Stan Lampe, president of Kentuckians for Better Transportation, a coalition of industry and government groups.

### **Dwindling trust fund**

Politics also have something to do with the inefficient funding, one former Corps officer said. Retired Major Gen. Don Riley said there is “an inherent tension” between providing money for multiple projects to build support for the overall program and giving a limited number of projects enough money to complete them in a cost-efficient manner.

Those pressures were evident in 2002, when the balance in the trust fund financed by the 20-cents-per-gallon tax peaked at \$412.6 million.

Congress approved a wave of new projects, focusing on “getting projects started, with less concern devoted to their future funding,” according to the 2010 task force report.

Ten years later, the trust fund has a balance of \$45.3 million.

“We need new ways of doing things here because the old ways aren’t working well,” said Carnegie Mellon University engineering professor David Dzombak, who heads a National Research Council committee examining the way the Corps does business.

Any hopes of addressing the funding problem rest on Mr. Whitfield’s bill, which has yet to be introduced. Members of the Western Pennsylvania delegation said they would consider backing the measure.

“The choice is getting something done or running a huge risk of safety and commerce problems,” said U.S. Rep. Tim Murphy, R-Upper St. Clair.

U.S. Rep. Jason Altmire, D-McCandless, said Mr. Whitfield’s proposal would require Congress to provide additional funding based on increased revenue from the diesel tax.

“In the current political climate, what’s the reality of moving something like that?” he asked.

The harsh budget reality is also on the mind of U.S. Sen. Bob Casey, D-Pa.

“We’ve got to be thoughtful when you have the kind of fiscal situation that confronts the country,” he said. “We’ve got to be smart about how we invest.”

Mr. Doyle said given the decaying projects on the Mon in his district, “I’ll support any proposal that will address that and get [the work] done.”

“It’s not something, unfortunately, that we’re going to pass in this session of Congress,” he said.

And if not, the costs and risks triggered by a lack of funding will likely continue.

“That’s something the Corps can’t do anything about. It’s up to the country to decide,” Mr. Dzombak said.

“It’s really up to the nation to decide what we want to do.”

Len Boselovic: [lboselovic@post-gazette.com](mailto:lboselovic@post-gazette.com) or 412-263-1941. First Published 2012-03-21

### **THE PRESIDENT’S LETTER** (continued from page one)

Mule-drawn boat *Charles F. Mercer*.

At the end of my letter in the winter issue, I noted the lack of photos of the 1899 towpath bridge over the Des Plaines River on the Illinois & Michigan Canal. Well, that remark did not fall on deaf ears. Recently, Richard Lanyon, the author of the book, *Building the Canal to Save Chicago*, has been helping the Illinois State Archives and the Metropolitan Water Reclamation District to better catalog the 10,000 plus photos from the Chicago Sanitary and Ship Canal Project. Just recently, Mr. Lanyon sent me a photo of the 1899 towpath bridge taken in January, 1905 after ice jamming had caused problems on the canal. Not only is the bridge in the photo, but ice is too, plus a canal boat apparently sunken by the ice. (See the photo, p. 1). I greatly appreciate help like this in our continuing efforts to assemble the photo record of our canals.

(Editor’s note: To see more of these great I & M photos, see Dave’s article, beginning on page 12.)

## NEW MUSEUM WILL PROVIDE AN INTERACTIVE GREAT LAKES EXPERIENCE

Written by Jay Hathaway; [jhathaway@toledofreepress.com](mailto:jhathaway@toledofreepress.com); Toledo Free Press

A new Toledo museum will provide visitors with an interactive Great Lakes experience. The Great Lakes Historical Society (GLHS) has announced the grand opening of the National Museum of the Great Lakes, located at the Toledo Maritime Center, 1701 Front St., on April 26, 2014.

Along with visiting the museum, visitors will be able to step aboard the *SS Col. James M. Schoonmaker*, formerly the *Willis B Boyer*, and enjoy an outdoor maritime park.

Anna Kolin, development director for the museum, said that the idea for the location began in 2003 when the GLHS decided to move its original museum in Vermillion, Ohio, to a more expansive facility. They found the then-unused Maritime Plaza in Toledo, along with the *Willis B. Boyer*, which was then being maintained by the city.

“They were very close to scrapping the ship,” Kolin said. “There was a group of diligent people at The Toledo Club who had gathered together to save the ship, and it was about the same time that the Great Lakes Historical Society started having conversations with them. It seemed like a perfect connection to move the ship down there and bring the museum to Toledo.”

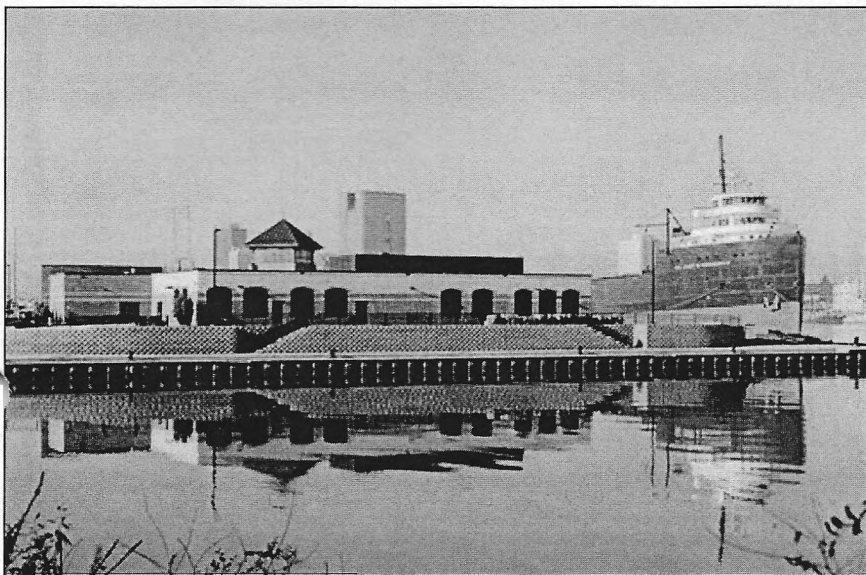


Photo credit, [inlandseas.org](http://inlandseas.org)

In 2009, restoration began on the *Boyer*, including a reversion to its original name and colors. One year later, it was moved next to the new site of the museum. Though it is not the first museum dedicated to Great Lakes history and lore, Kolin said that the National Museum is unique in its comprehensive exhibits and interactive experience. “It’s not just a regional museum. It talks about how all the Great Lakes affect the continent as a whole. It truly includes all of the Great Lakes,” Kolin said. “We talk about industry, the War of 1812, World War II, and the training of Air Force pilots on the Great Lakes.

“Then we move into shipwrecks and survival, which is probably the most romanticized of all of the areas.” Kolin said there have been more than 8,000 shipwrecks on the Great Lakes, and the museum will include artifacts from many of them, including a life raft from the most famous, the *Edmund Fitzgerald*.

Visitors will also be able to take part in simulated shipwreck dives and control a camera that will allow them to explore the wreckage. “There’s a lot of footage that you can see from actual dives,” Kolin said. “It’s kind of like you are actually diving down into the ship. It’s an integration of hands-on exhibits and artifacts.”

During warmer months, a tour of the ship will be included with admission. Kolin said a lower price of admission will be offered during inclement weather and cold months, because the walking surfaces of the ship can get slippery.

Adjacent to the museum is a 3.5-acre, maritime-themed park area. Inside the park is a “grand plaza,” featuring a huge concrete inset of the state of Michigan. The Arts Commission worked with the GLHS to provide several Great Lakes-themed poems in the concrete paths leading into the plaza.

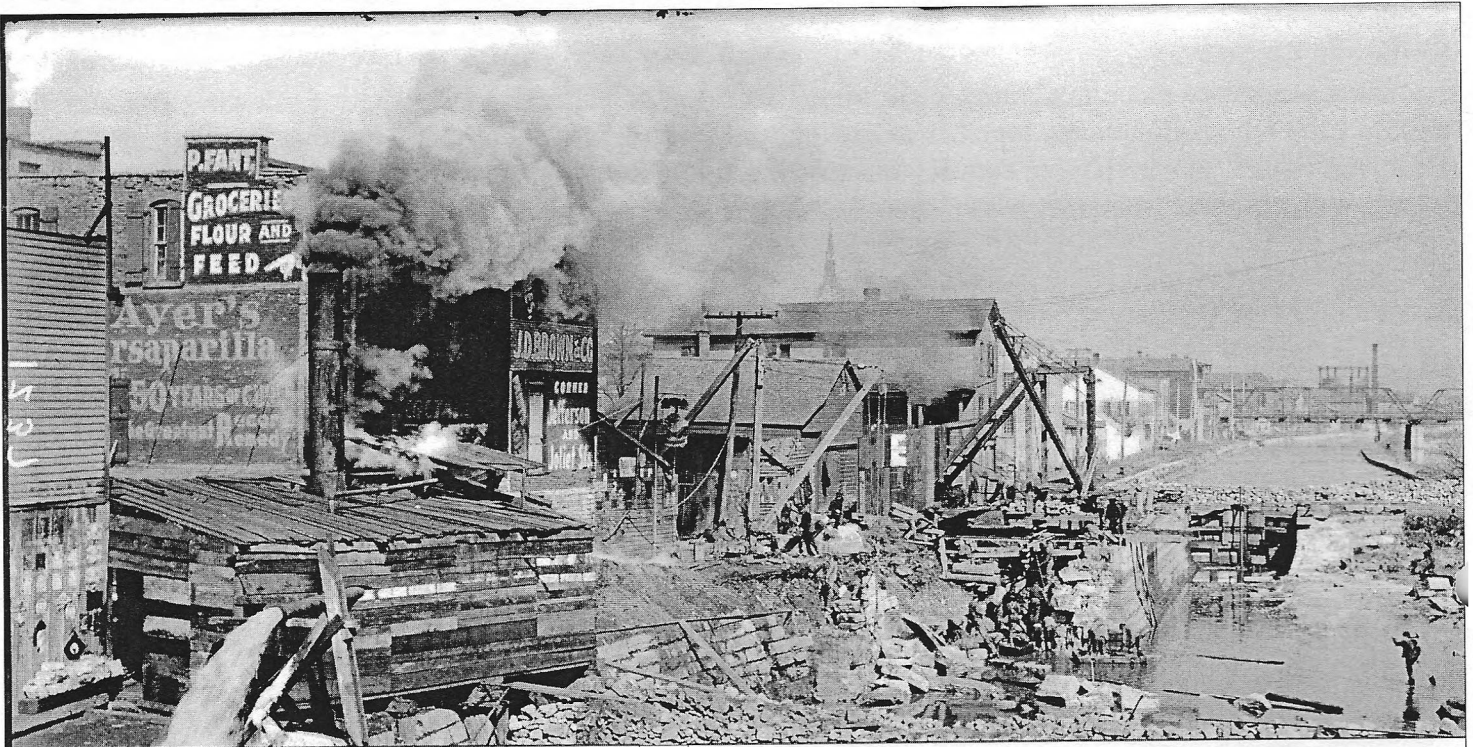
Regular hours of operation will be 10 a.m. to 5 p.m., Tuesday-Saturday and noon to 5 p.m. on Sunday. Adult admission for both the museum and the ship is \$12, \$8 for the museum only. Children ages 6-18 and seniors older than 65 get \$1 off. Children 5 and younger are free.

For more information, please visit [www.inlandseas.org/museum](http://www.inlandseas.org/museum).

## Photos of the I & M Canal

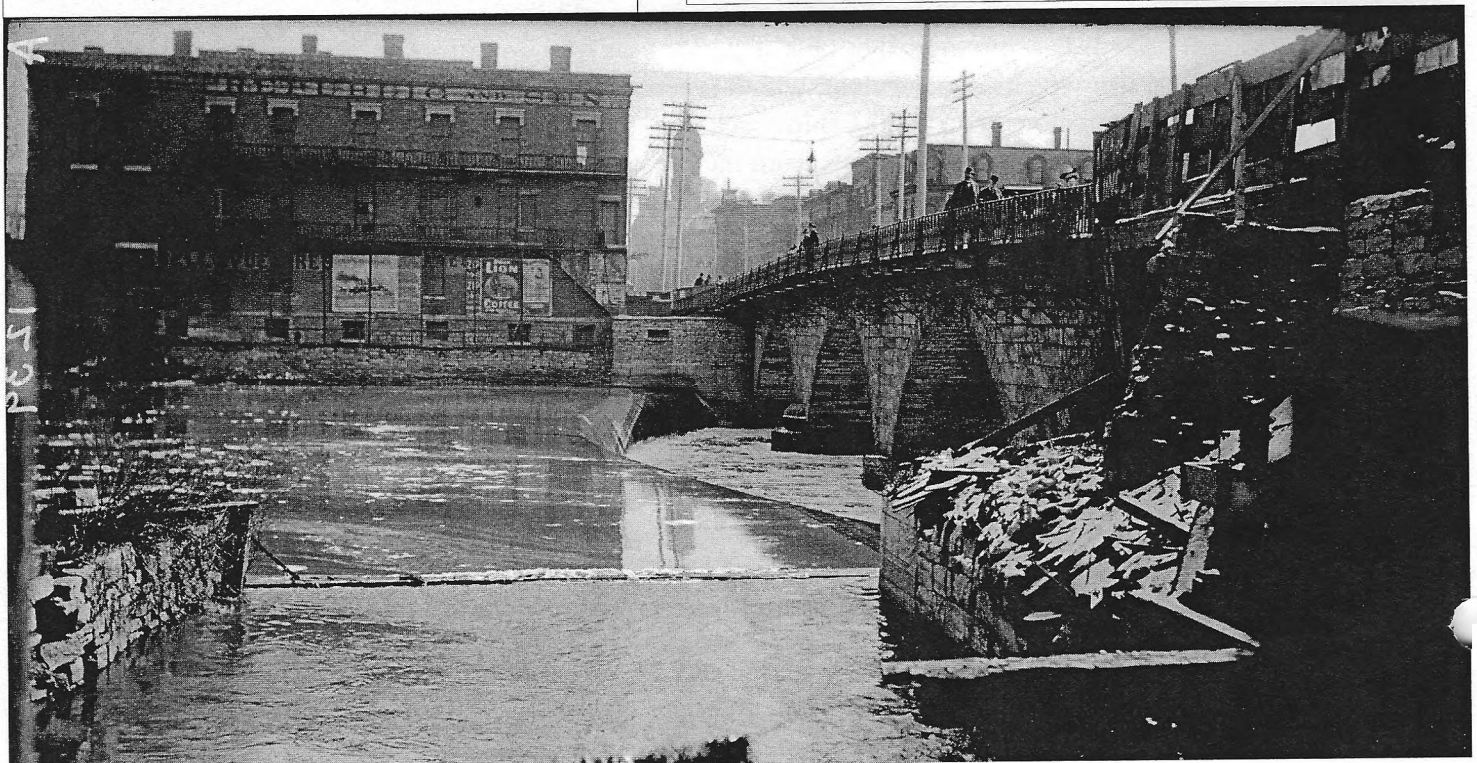
By Dave Barber

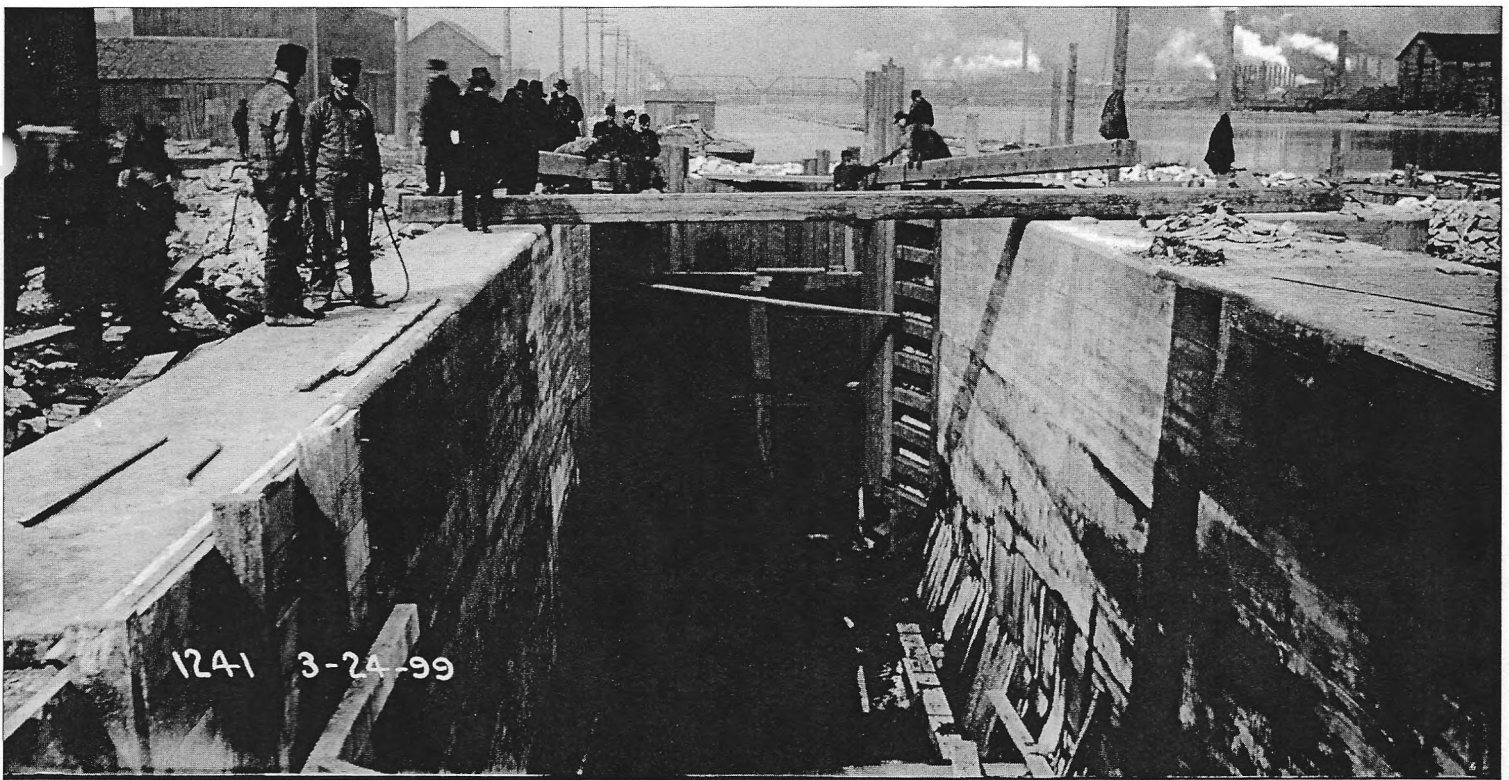
As I noted previously, a collection of over 10,000 glass plate negatives taken by the Sanitary District of Chicago was recently discovered by its successor, the Metropolitan Water Reclamation District of Greater Chicago. The collection is now in the Illinois State Archives in Springfield. These photos are numbered and dated and cover the waterways between Lake Michigan and the outlet of the Illinois River at Grafton, IL between 1890 and 1940. They were taken to document the construction of the Sanitary and Ship Canal and its branches and their effects on the Illinois River.



Old Jefferson Street Dam #2, March 1899 ▼

Dismantling of Joliet Guard Lock, March 1899 ▲



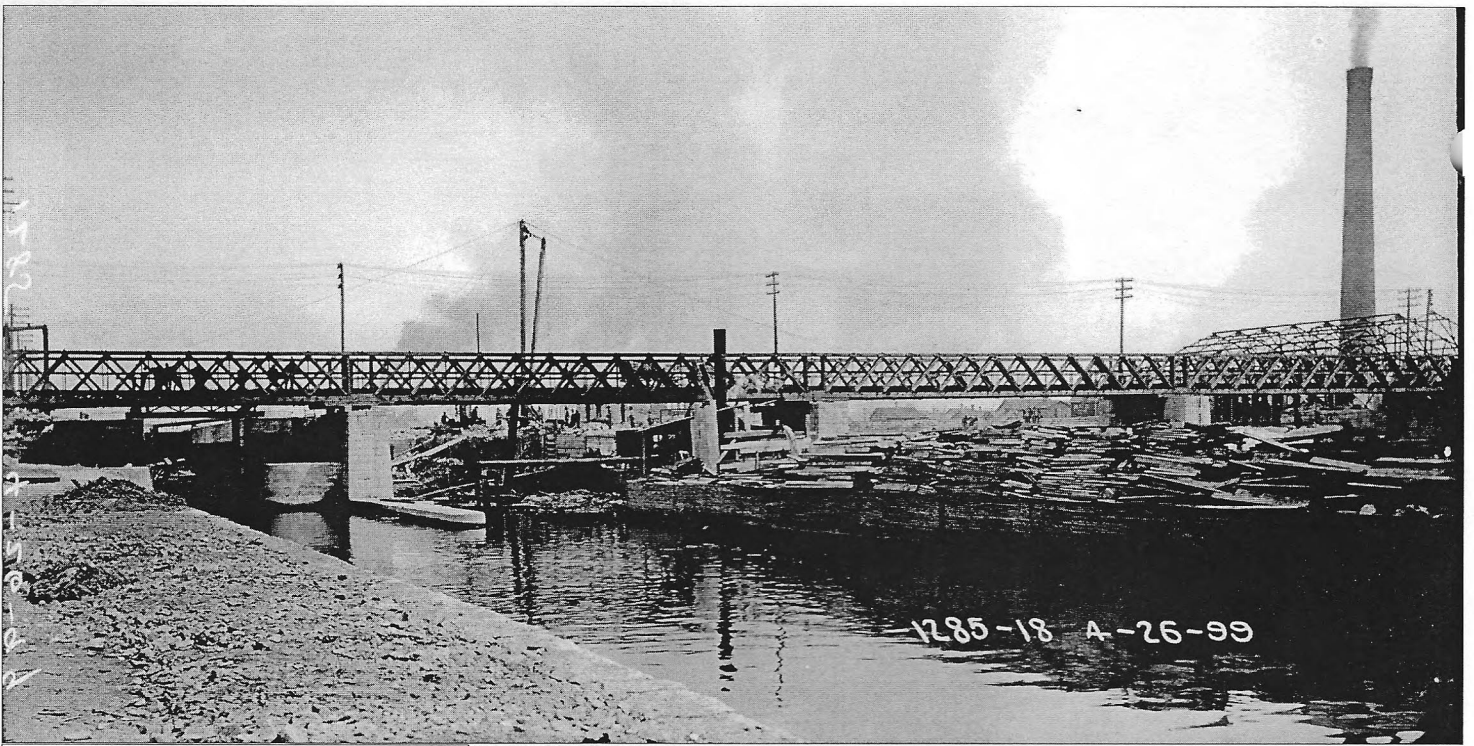


1241 3-24-99  
 Interior of Lock 5, Joliet looking north during rebuilding 3/24/1899

Included in the collection are at least four sites of interest about the Illinois and Michigan Canal. Progressing from Lake Michigan, the first site of interest is the wood crib lock at Bridgeport, where the canal connects to the South Chicago River. Originally, there was a masonry lock at Bridgeport, which lifted the canal ten feet to its summit level to cross the divide between the Chicago River and the Des Plaines River. The summit level was built as a cost saving measure in the original construction of the canal and extended for ten miles. Pumps were installed at Bridgeport to water the summit level. In the period of 1865 to 1871, this level was cut down through the underlying rock to the originally planned level that continued to Lockport. Presumably, this work was done in winter, so as not to close the canal during its operating season. On completion, the north and south summit locks were eliminated and

Dismantling of Joliet Guard Lock, March 1899





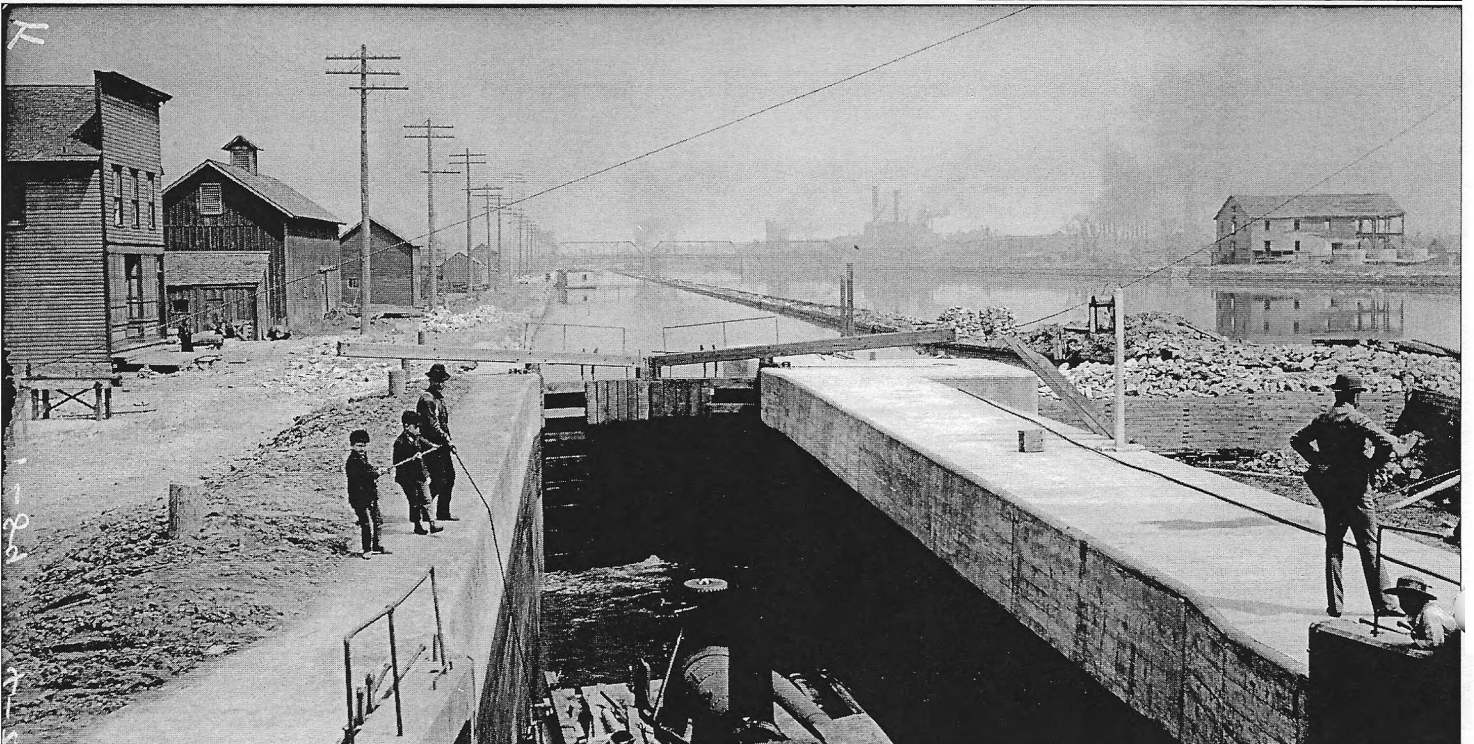
Lock 5 and Jackson Street bridge,  
April 26, 1899

water was free to flow by gravity from Bridgeport to Lock 1 at Lockport. However, the free flow of water did not solve the pollution problem of the

South Chicago River, and pumps were later added at Bridgeport (p. 15) to force more water south. Apparently, when the pumps were reinstated, it was necessary to install a guard lock at Bridgeport to prevent pumped water from short-circuiting back into the South Chicago River. Two photos in the collection of a deteriorated lock in 1914 show this to be a wood crib lock with wooden gates. To work in this mode, the “V” of the miter gates would have had to point south.

A second site of interest in the collection is the 1908 lock at Lockport. This lock and the adjacent power house were opened in 1908 along with a two-mile extension of the Sanitary and Ship Canal. The powerhouse made use of the drop at this site for water flowing through the Main Channel canal from Lake

Rebuilt Lock 5 with boat locking  
through, April 26, 1899





Bridgeport Lock looking south, Note that this is a wood crib lock. 5/2/14

Michigan to the Des Plaines River. The lock was required to replace the original I & M Canal Locks 1-4 to allow the branch Cal Sag Canal (short for "Calumet-Saganashkee Channel") to be built across the alignment of the I & M Canal. This lock is 22 feet wide and 130 feet long with a maximum lift of 41 feet. For a short period of time, this lock was claimed as the highest lift lock in the world. (The New York Barge Canal lock at Little Falls with a lift of 40.5 feet built in 1916 also makes this claim.) Today, this lock has a concrete wall installed at its upper end, and traffic uses the adjacent, larger Illinois Waterway lock. The photo (p. 16) of this lock is an interior view of the lock being repaired in May, 1924. Interestingly, the photo shows side outlets to fill the lock rather than valves in the upper gates.

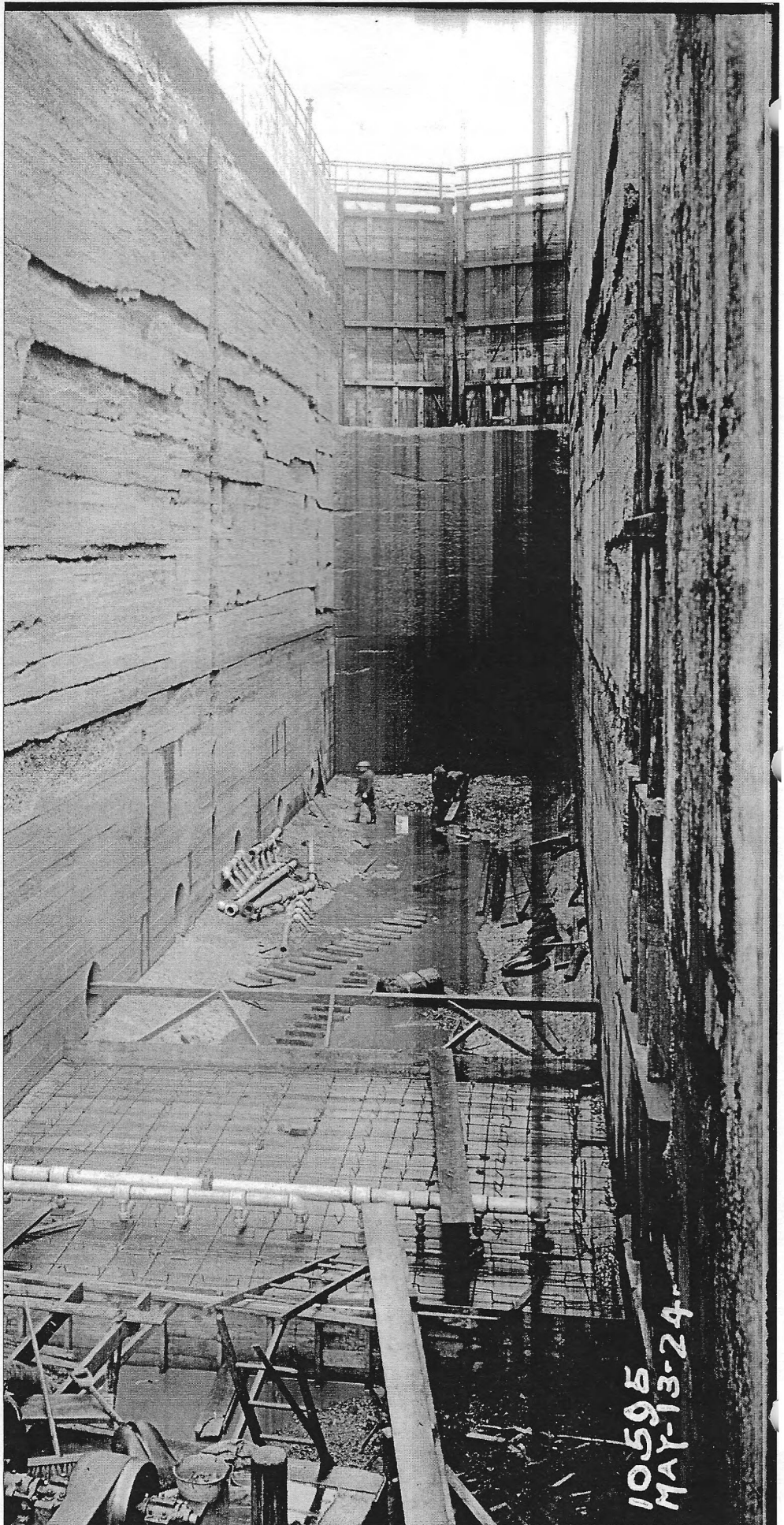
A third site is Lock 5 in Joliet. This lock originally connected the pool north of the Jackson Street Dam (Dam #1) to the pool of the Jefferson Street Dam (Dam #2). As part of the Sanitary Canal project, it was rebuilt

Bridgeport Lock looking north showing wood cribs 5/2/14



and raised in height in 1899. The photos (p. 13) show the lower view of the lock, its interior, and a barge locking through. They also show the lightly built Jackson Street Bridge. Careful examination of the photos show that the valves in the upper gates were pivoted horizontally. When this lock was rebuilt, a wall was built to separate the canal from the river both southward to Jefferson Street and northward past Ruby Street. The canal crossed the river in slack water north of Ruby Street to reach the separate canal through Lockport. In the Sanitary Canal project, a flume was installed next to Lock 5 to supply river water to the resulting level between Lock 5 and Lock 6 at Channahon.

The fourth site of interest is the Guard Lock at Jefferson Street and the Jefferson Street Dam (Dam #2). Prior to 1899, the Guard Lock was needed to protect the canal south of here from the flooding of the Des Plaines River as the canal proceeded through the pool of the Jefferson Street Dam. But when a wall was built between the canal and the river and the Jefferson Street Dam was removed to allow for higher flows from the Sanitary Canal, the Guard Lock was no longer needed. Instead, rebuilt lift Lock 5 served the protection purpose as well as being a lift lock.



Interior of Lockport Lock being repaired May 13, 1924



# WHAT LIES BENEATH? THE SANTEE CANAL

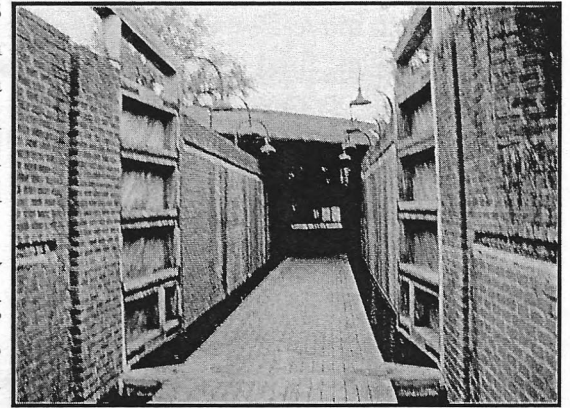
Story and photos by Carolyn I. Schmidt

*The Hoosier Packet*, May 2012

What lies beneath the Spanish moss-covered leaves of huge live oak trees in South Carolina is the first summit canal built in the United States—the Santee Canal.

Birds wade along its banks, dragonflies flit overhead, the voices of frogs fill the air along with the drone of bugs, turtles sun themselves on logs, and alligators lie beneath its surface. Its use as a transportation canal passed long ago, but today it has recreational use for canoeists and fishermen. The Santee Canal is on the National Register of Historic Places and has an outstanding visitor center and museum at Monck's Corner

My husband Bob and I have visited the canal and museum many times but always enjoy returning to the picturesque setting; visiting with Mary Bell, the education coordinator; and viewing the exhibits, the most impressive of which is a replica of a brick lock (photo, right).



Signs both outside and inside the museum explain how and why the canal was built in simple, concise words. I have used the wording on them as the foundation for this article and they appear within quotation marks.

## SANTEE CANAL (side one)

“This canal, twenty-two miles in length, connects the Santee and Cooper Rivers. It was chartered by act of March 22, 1786, with capital of £100,000 sterling. Construction began in 1793 and the canal was completed by 1800, under the direction of Col. John Christian Senf, a native of Sweden, as Chief Engineer. The canal was in operation until about 1850.

## SANTEE CANAL (side two)

“The Santee Canal was opened to traffic from the Santee River to the Cooper River in 1800. It was 22 miles long, 20 feet wide at the bottom and 35 feet wide at the surface. It was 5½ feet deep, carrying 4 feet of water, and was capable of carrying boats with loads of up to 22 tons. The canal ceased operations about 1850.”

## Building America's First Canal

“The Industrial Revolution in America may well have started on this very spot—when the first soil was turned to build the Santee Canal. With its ten locks and one wooden tide lock, vessels were lifted up from the Santee River and back down to the Cooper River. This was the first true summit canal in North America.

“The War for Independence had devastated South Carolina's plantation-based economy. The grand age of canals was at its height in England. A group of entrepreneurs decided a canal was needed to provide a fast, safe route to the port of Charleston for the goods and produce that would soon spring from the new state's soil. Idled plantation slaves were put to work in 1793 under the direction of the State Engineer, Col. Christian Senf, a Swedish colonel who was hired by stockholders in the Santee Canal Company to build the canal.”

## The Route to Charleston

“The rivers were South Carolina's highways throughout its early history. Most upstate plantations shipped tobacco, cotton, and rice down the many tortuous miles of the Santee River, and then along a dangerous ocean voyage south to Charleston.

“The need for speed and safety prompted plans for a canal from which Santee River craft could reach the Cooper River. Several routes were considered as early as 1786. By 1793 Colonel Christian Senf, deciding upon his own route, began work on the 22-mile project, which was the greatest industrial undertaking of the times.”

## Colonel Christian Senf...Builder of the Santee Canal

“South Carolina's State Engineer, a Swedish colonel named Christian Senf, built the Santee Canal between

1793 and 1800. He overcame tremendous difficulties to complete the task—the greatest industrial project the new nation had ever seen. Lack of skilled men, inflated labor costs, and deaths from accident and disease all contributed to huge cost overruns. While the canal was a dismal failure for its investors, it was a boon to planters and merchants, and greatly contributed to the development of Charleston and the upcountry.

“Senf, apparently using technology developed a few years earlier in England, built the canal to connect the Santee River at White Oak with the Cooper River at Biggin Creek. At the height of activity a thousand slaves toiled to each move 54 barrow loads of rock and earth a day along the 22-mile route. Local craftsmen, many of them also slaves, fired brick, fabricated gates, built boats, and forged ironwork for the massive project.

“The canal operated from 1800 to the 1850s and was the forerunner of inland navigation projects throughout the nation. During the latter years, competition from railroads and steamboats drew business away from the canal. Only small portions of the canal now survive. Archaeological investigations have recently begun to reveal the scope and importance of Senf’s genius and the vision of the South Carolinians who employed him to build this monument to America’s spirit of enterprise.”

### **Colonel Senf’s Plan**

“Senf’s final report to the canal company in 1800 included a map of the canal. His location of the tide lock at Biggin Creek was amazingly accurate. The canal avoided natural waterways—sediments would have quickly clogged the locks. Instead, natural waterways fed huge reservoirs. Here sediments settled out and clear water was supplied to the canal. Senf’s General Plan was accompanied by 38 other drawings detailing areas of the canal. The ‘38 particulars,’ as Senf called them, are believed to be in private collections in South Carolina.”

### **The Work Force**

“When work began on the canal in 1793, Senf employed 10 laborers and by year’s end the number had increased to 1000. Among these were slaves contracted from neighboring landowners at the rate of \$75-\$80 per year. By 1800 the rates for male slaves had increased to \$120 and females to \$100. Black and white skilled tradesmen who were carpenters, masons, blacksmiths, wagon drivers, cooks, and overseers were also working on the project. On the average there were 800 men and women working at any given time.”

### **The Santee Canal Opens for Business**

“A cargo of salt traveling from Charleston to Granby just below Columbia was one of the first shipments to pass through the Santee Canal in July of 1800. Two-way traffic quickly followed. In the year 1814 one thousand vessels traveled through the canal, 720 vessels brought 70,000 bales of cotton into Charleston.

“Narrow barges, mountain boats, and “cotton boxes”—an entirely new type of craft—were used to bring raw goods from upland areas into Charleston. Some cargoes came from as far away as North Carolina. Many of these vessels traveled down the Cooper River. Others unloaded their cargoes into coastal schooners that entered the lower end of the canal through the tide lock, which was built wide enough to accommodate them.”

### **The Built-up Dugout**

“Plantation Boats or ‘Pirogues’ were developed from dugouts. A dugout hull was expanded by building up the sides with planks. These were the first true locally built sailing vessels.

“Pirogues were used to carry rice and produce downriver from newly developed plantations. They were probably introduced by the Spanish. They were built more easily than conventional ships and were able to navigate rivers and coastal waters.

### **Early Flats**

“Flat-bottomed barges were also introduced early in the colony’s history—probably as ferries. They were made of solid cypress logs with pine planking and were most widely used in rice plantation canals.

“Expanded log barges were made by splitting a cypress tree and carving it out. Heavy pine planking was laid from side to side and fastened with wooden ‘treenails.’ This type of barge was a common design most likely derived from the dugout.”

### **The Mountain Boats**

“As the Frontier moved ever westward there came a need for a new type of craft. Boatmen had to safely navigate the shallow, fast running rivers of the upper Piedmont and mountain regions. The mountain boats

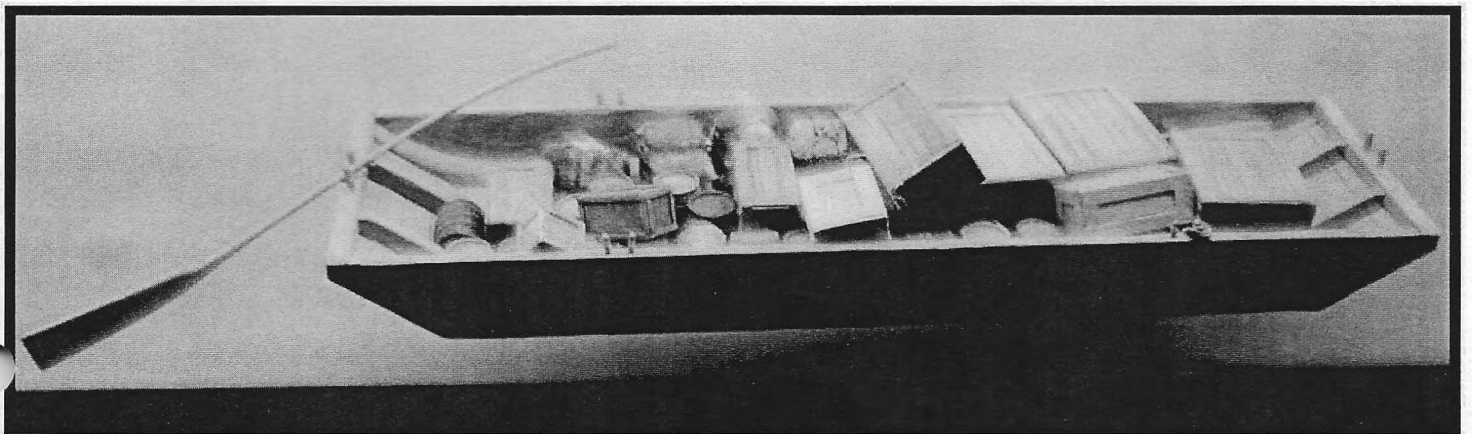
were built long and narrow. A huge steering oar guided the craft through narrow 'sluices' as the crew fended off rock outcrops with iron tipped poles.

"Carrying cotton or tobacco, the mountain boats raced downstream to rendezvous with coastal schooners and transfer their cargoes. The free lifestyle of the men that 'ran the rivers' became the source of romantic lore and legend. In fact, it was grueling, dangerous work. This was especially so during upstream journeys when the boats were 'walked' against the current by the crew using their poles."

### **The Santee Canal Boat (photo below)**

"South Carolina began to develop a canal system after the English—late in the eighteenth century. The canal joining the Santee River to the headwaters of the Cooper River, here at Biggin Creek, saw the greatest fleet of canal craft. Mountain boats were the only existing craft to navigate the canal. Specially built craft included narrow barges, 'Cotton Boxes,' 'Narrow Boats'—the true canal boat design now regarded as traditional and the Santee Canal Boat.

"The Santee Canal Boats, unlike traditional canal barges, were built for one way voyages through the canal. They were constructed out of many wood planks that could be torn down and re-used. Upon reaching their destination, the wood was sold as raw lumber."



### **The Coasting Schooners**

"Traditionally designed and built ships plied local rivers early in the eighteenth century. English shipwrights adapted them to local rivers, building wide-beamed, flat-bottomed craft. Carrying as much as 15 tons of cargo, they were the freight trucks of the colonial era.

"Coasting schooners traveled far up rivers such as the Santee, the Pee Dee, and the Waccamaw to load cotton, tobacco, and naval stores from upland plantations. After navigating the tortuous rivers, the ships still faced a hazardous ocean journey along the coast to Charleston. Many cargoes were lost on these sea journeys."

### **Operations and Events of the Canal**

"It is known that most of the crews of canal vessels and mountain boats were slaves. Many of the captains, or 'patroons,' of the vessels were black. Carpenters, brick masons, and blacksmiths were part of the permanent staff of the canal. Constant maintenance was needed to keep the canal in operating condition. A lock tender and his family lived beside each lock. It was their task to operate the main lock gates, sluices, and swing bridges as each vessel passed through.

"Not all passages through the canal were uneventful. In May of 1824 a canal boat exploded when the patroon's lantern ignited ether fumes and gunpowder. The explosion occurred in the lower end on the canal on the Ravenel Plantation."

### **The Last Years of the Canal**

"The early petitions to close the canal met with opposition from the populace around Biggin Creek. Evidently, while upland planters now had alternative routes for their cargoes, plantations bordering the southern end of the canal still wished to use it. Counter petitions were made to the legislature to force the canal company to continue operations.

“The canal company finally sold its holdings some time during the 1850s. It is believed that the lower reaches of the canal continued to operate until the cotton trade collapsed during the Civil War.”

### **The End of an Era**

“Steamboats began to ply South Carolina’s rivers in the 1820s. Soon large shallow draft paddle steamers, loaded with 600 bales of cotton and pushing 400 more in barges, made trips from Columbia to Charleston via the Santee River. The boats and their huge cargoes were serious competition for the canal. At about the same time, America’s first railroad began to run from Hamburg, S. C. to Charleston. By mid-century, railroads crossed the state.

“Periods of drought plagued canal operations. Attempts to use steam pumps for a reliable water supply failed. These difficulties served to aid the development of the steamboat and railroad industries. During the 1850s the canal company petitioned the state legislature for permission to close the canal.”

### **Unraveling the Story of the Santee Canal**

“The waters of Biggin Creek and the Santee Canal have been shown to contain much more than abundant wildlife. When archaeologists investigated the small remaining section of the canal and Biggin Creek, they found a rich trove of artifacts, which paint intimate pictures of the daily lives of the men and women who built, ran, and used the canal.”

### **The Canal Builders**

“The tide lock, a large masonry lock which allowed coasting schooners and other large craft into the lower end of the canal, was found buried in the mud in the north end of the park. It provided new information about how stone masons, brick masons, blacksmiths, and carpenters built the locks and the canal. Bricks imbedded in hydraulic mortar were recovered from the floor of the tide lock.”

### **Doctor Drayton’s Observations**

“Many unknown details about the construction of the canal were revealed when the diary of Dr. Charles Drayton came to light. Dr. Drayton was a diarist who owned a plantation in Charleston and took great interest in the construction of the canal. Studying the progression of the canal and speaking with Senf, he kept meticulous notes and made exquisite pencil sketches showing how bricks were made, the type of wheelbarrow used by laborers, and how pilings were rammed into the soft earth to support the masonry lock structures.”

### **Lock Gates and Hollow Quoin Stones**

“The two miter gates are reconstructions of the original gates made by master carpenters and blacksmiths for the 10 locks on the Santee Canal. The original gates were made of cypress cut in local swamps and were fastened with wrought iron straps called dogs and stirrups forged at Big Camp where canal construction began.

“The quoin stones, into which the gates fit, are the originals and were probably carved by stonemasons who traveled the country doing this specialized work. It is believed that these stones came from the northern locks of the Santee Canal. Two of the stones were found and donated by Mr. and Mrs. Thomas M. Martin of the old village of Eadytown, Berkeley County, South Carolina.”

### **Old Santee Canal Park**

Today a 195-acre park, constructed by Santee Cooper in 1989, is located in Moncks Corner in an area bordering the Cooper River and Tailrace Canal off U. S. 52 By-pass at 900 Stony Landing Road. It has a 13,000-square-foot interpretive center and more than 3 miles of boardwalks and paths through a section of Biggin Swamp and along the last one-mile section of the nation’s first “true canal” connecting the Santee River system to the Cooper River system. Also, the history of the *CSS David*, a semi-submersible torpedo boat, is displayed. The *David* was constructed during the Civil War on the park grounds when the area was known as Stony Landing. The Confederate torpedo-ram *David* made history on the night of Oct. 5, 1863 when it made the first ever torpedo attack on the Union sub *New Ironsides*.

(continued on the next page)

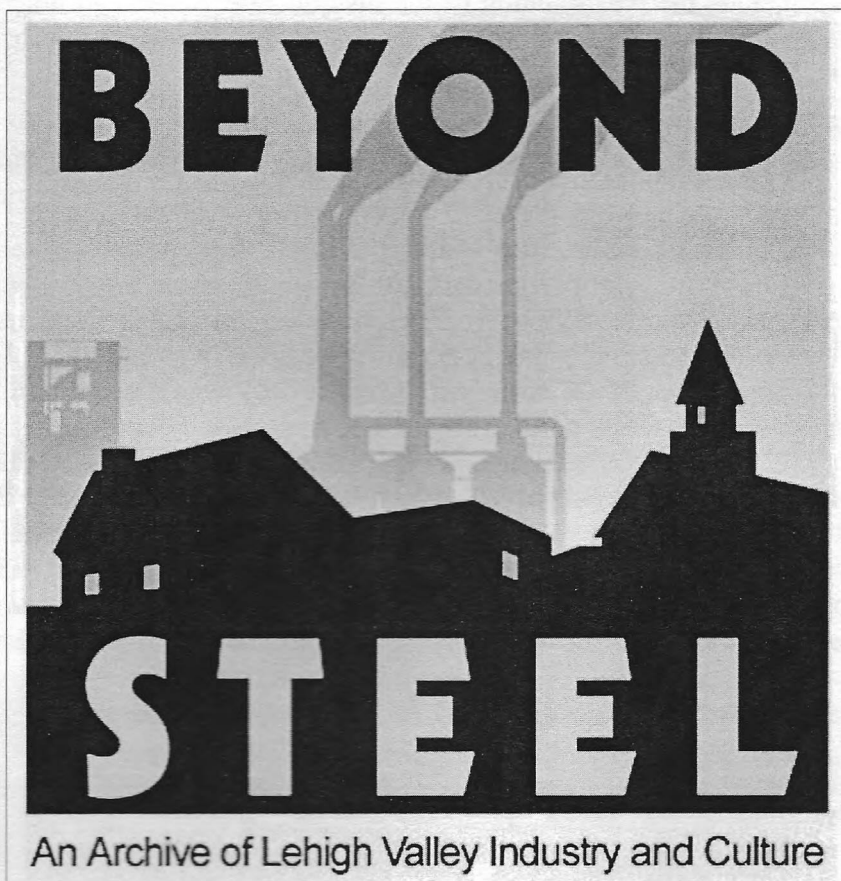
## Santee Canal Statistics

Also called Santee and Cooper Canal because it connected the two rivers  
Built as direct water route between Charleston and Columbia, South Carolina  
Survey proposed: 1770  
Surveyed: 1773 by Henry Mouson, Jr.  
Delayed by: Civil War  
Charter granted to Santee Canal Company: 1786  
Prominent shareholder: South Carolina Governor and former General William Moultrie.  
Construction began: 1793  
Completed: 1800  
First boat to traverse canal: June 1800  
Closed by severe drought: 1816-1817  
Busiest year: 1830—720 boats or barges; 70,000 bales of cotton  
Lost state charter: 1853  
Not used after: 1865 Most of the canal has been flooded by construction and is under Lake Moultrie  
National Register of Historic Places: May 5, 1982  
Architect: Col. John Christian Senf

Cost: \$800,000  
Type: Summit canal  
Length: 22 miles (35 km)  
Width: 35 feet (10.7 m) at water's surface  
20 feet (6.1 m) at the bottom  
Depth: 4 to 5½ feet (1.2m)  
Number of Locks: 10—2 double locks, 8 single locks  
Built of brick and stone  
Lock dimension: 60 x 10 feet except for larger guard lock  
Rise: 34 feet through 3 lifting locks  
Fall: 69 feet through 7 lifting locks  
Net difference between rivers: 35 feet  
Number of aqueducts: 8  
Towpath: 10 feet wide on both sides of prism  
One sandy section of prism lined with heavy planks  
Ancillary buildings/structures along route: warehouses, lock keepers' houses, turning basins, lock bridges  
Tolls: \$21 per boat loaded or unloaded  
Boats could be loaded atop each other to save one toll when returning unloaded

### LEHIGH UNIVERSITY (PA) DIGITIZES LEHIGH COAL AND NAVIGATION COMPANY COLLECTION

Lehigh University has digitized its Lehigh Coal and Navigation Company (LCNC) collection, including drawings of canal locks, boats, and maps that include locations of the locks and property lines surrounding the canals, providing a snapshot of regional technological and industrial history. Founded in 1822, LCNC emerged as one of the most important companies of the American Industrial Revolution, known for its innovative approach to canal systems, iron production, and coal mining. LCNC transported anthracite coal from Mauch Chunk (now Jim Thorpe) to Easton and Philadelphia.



<http://digital.lib.lehigh.edu/beyondsteel/>

## THRUWAY AUTHORITY AND CANAL CORPORATION ANNOUNCE THE PORT BYRON, NY, OLD ERIE CANAL HERITAGE PARK

The New York State Thruway Authority and Canal Corporation announced in May a project to create the Port Byron Old Erie Canal Heritage Park, an attraction for Erie Canal enthusiasts and upstate tourists curious about the history of the canal and its impact on the development of both New York State and the United States. Part of Governor Cuomo's popular "Path Through History" initiative and developed in conjunction with the Canal Society of New York State, the park will be the first facility of its kind to offer access directly from the New York State Thruway to a historic site. Visitors will be able to access the park directly from the eastbound Thruway (I-90) and also from N.Y. Route 31 in the Village of Port Byron, as part of a later project in 2016.

"This project is a perfect example of the cooperation we have cultivated between the Thruway Authority and Canal Corporation," said Authority Chairman Howard P. Milstein. "The Thruway and Erie Canal have been economic engines for New York, both commercially and recreationally, and this site will tell Port Byron's story to thousands of tourists each year."

The park will give visitors an authentic glimpse into life on the Erie Canal from the mid-19th century to the early 20th century. Key historical elements include the Enlarged Erie Canal Lock 52 from the 1850s and the Erie House Complex, which dates back to 1895 and includes the Erie House Tavern and Hotel, a mule barn, and blacksmith shop. Additionally, a new visitor center will be constructed as part of a future phase and will offer interpretive displays and educational materials.

"The Erie Canal is part of our state and national legacy and a monumental and colorful chapter in American history," said Canal Society of New York State President Thomas X. Grasso. "Thanks to the leadership and vision of Governor Cuomo and the Thruway and Canal Corporation, this project will come to fruition and provide an opportunity for thousands of school children and the general public to not only learn but literally touch a part of history they too have heard so much about. What a marvelous example of what can be achieved when we all work together."

Phase 1 will include ramps to and from the eastbound Thruway, a parking area, paved trails connecting the parking lot with the historic lock, and interpretive signing. This work is expected to be completed this year. Future phases will include the rehabilitation of the historic Erie House and other on-site buildings, construction of a parking lot accessible from Route 31, the visitor center with historical information, and additional trails connecting the entire site.

### William Austin Burt...Mill Builder with a Canal Connection

By Deborah J. Remer

William Austin Burt, with his brother-in-law John Allen, was responsible for building mills in Erie County, New York and throughout southeastern Michigan after his move to what became Mount Vernon, MI in 1822. Some of those mills were located in Frederick, just west of Mount Clemens, adjacent to where the Clinton and Kalamazoo Canal would be built. While best known for his invention of the solar compass, Burt has canal connections, too. The solar compass replaced earlier surveying devices as it allowed very accurate and quick mapping of vast areas. Burt was part of the group pushing for the building of the Clinton and Kalamazoo Canal in the 1830s, along with Nathaniel Millard of nearby Stony Creek. After Burt's election to the Michigan legislature in 1853, he headed the committee on the St. Mary's Falls and Ship Canal Plan, which would become the Soo Locks. The original bill to build the canal at Sault Ste. Marie was signed in 1852 by President Millard Fillmore, Nathaniel Millard's cousin. William's son John was the first (1855-57) superintendent of the locks at Sault Ste. Marie. John held a patent for a system allowing locks to fill from the bottom. Elisha Calkins, John's brother-in-law, became the second canal superintendent (1857-59). Julia Calkins, Elisha's wife, was the sister of Lydia, the wife of Austin Burt, another of William Austin Burt's sons.

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**Connecting Links: From Chicago to the Mississippi River**

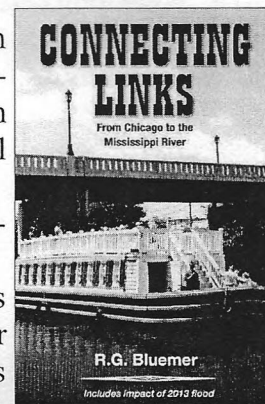
by R. G. Bluemer

Reviewed by David G. Barber

Lately, *American Canals* has reviewed several books on the waterways between Chicago and the Mississippi River. Another recent one is *Connecting Links* by R. G. Bluemer, a local school teacher. This self-published book is one of several he has written on local history. It covers the Illinois and Michigan Canal, the Illinois and Mississippi Canal (Hennepin Canal) and the Illinois Waterway.

The book is 204 pages and includes many photographs. It is very readable and informative and is targeted to the broader audience.

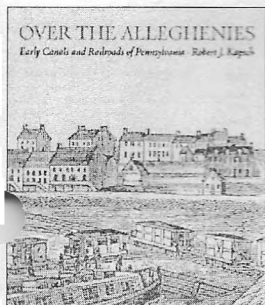
Signed copies of the book are available in Illinois by mail for \$23, which includes sales tax and a modest shipping fee. Out-of-state purchases can be made for \$22. The author accepts personal checks or cash and sends books by USPS media mail the day he receives a check unless it's a weekend. His mailing address is Ron Bluemer, 134 Cleveland Circle, Granville, IL 61326. Phone: 815-339-1082.



**Over the Alleghenies: Early Canals and Railroads of Pennsylvania**

by Robert J. Kapsch

Reviewed by David G. Barber



Robert Kapsch has written a more scholarly discussion of the history of the state canals and railroads of Pennsylvania than prior treatments of the subject. Despite the title, all of the state canals are included, not just the Main Line of Public Works.

The book discusses their origin, construction, operating problems, and eventual disposition to private companies. The work contains many quotations from original sources and is extensively footnoted. Also included are 134 maps and images.

This is a very thorough and readable discussion of these waterways and railroads in 376 pages. The book is available from the West Virginia University Press at \$39.99 plus shipping and handling or on the internet from Barnes and Noble or Amazon at lower prices.

**PERSONAL MEMOIRS OF U. S. GRANT, from Chapter 2**

“I took passage on a steamer at Ripley, Ohio, for Pittsburg, about the middle of May, 1839. Western boats at that day did not make regular trips at stated times, but would stop anywhere, and for any length of time, for passengers or freight. I have myself been detained two or three days at a place after steam was up, the gang planks, all but one, drawn in, and after the time advertised for starting had expired. On this occasion we had no vexatious delays, and in about three days Pittsburg was reached. From Pittsburg I chose passage by the canal to Harrisburg, rather than by the more expeditious stage. This gave a better opportunity of enjoying the fine scenery of Western Pennsylvania, and I had rather a dread of reaching my destination at all. At that time the canal was much patronized by travellers, and, with the comfortable packets of the period, no mode of conveyance could be more pleasant, when time was not an object. From Harrisburg to Philadelphia there was a railroad, the first I had ever seen, except the one on which I had just crossed the summit of the Alleghany Mountains, and over which canal boats were transported. In travelling by the road from Harrisburg, I thought the perfection of rapid transit had been reached. We travelled at least eighteen miles an hour, when at full speed, and made the whole distance averaging probably as much as twelve miles an hour. This seemed like annihilating space. I stopped five days in Philadelphia, saw about every street in the city, attended the theatre, visited Girard College (which was then in course of construction), and got reprimanded from home afterwards, for dallying by the way so long. My sojourn in New York was shorter, but long enough to enable me to see the city very well. I reported at West Point on the 30th or 31st of May, and about two weeks later passed my examination for admission, without difficulty, very much to my surprise.”

## CANALENDER

**July 24-August 3 - Cape Cod Canal Centennial Celebration, MA.** Weeklong celebration filled with maritime-themed events, historical exhibits, tall ships, tugboat parade, children's activities along the canal opening gala and a grand ball; tour of the Charles W. Morgan, the last surviving wooden whaling ship. See [www.capecodcanalcentennial.org](http://www.capecodcanalcentennial.org).

**July 26**—Waterloo (NJ) Canal Heritage Day, Waterloo Village, Stanhope, NJ. Boat rides on the Morris Canal. Museum open. [nj-cnial@googlegroups.com](mailto:nj-cnial@googlegroups.com); 973-292-2755.

**August 9**—Waterloo (NJ) Canal Heritage Day, Waterloo Village, Stanhope, NJ. Boat rides on the Morris Canal. Museum open. [nj-cnial@googlegroups.com](mailto:nj-cnial@googlegroups.com); 973-292-2755.

**August 23 - Wharton (NJ) Canal Day.** Boat rides, crafters, vendors, tours. John Manna, 973-989-0237; [canalday.org](http://canalday.org).

**August 30**—Waterloo (NJ) Canal Heritage Day, Waterloo Village, Stanhope, NJ. Boat rides on the Morris Canal. Museum open. [nj-cnial@googlegroups.com](mailto:nj-cnial@googlegroups.com); 973-292-2755.

**September 1-4, 2014 - 2014 World Canals Conference,** Navigli Lombardi, Milan, Italy; <http://inlandwaterwaysinternational.org/world-canals-conference/>

**September 12-14 - Canal Society of Indiana Fall: the Wabash & Erie Canal in Allen County.** Fort Wayne, IN area. Trolley tours to canal sites. [indcanal@aol.com](mailto:indcanal@aol.com)

**September 13**—Waterloo, NJ Canal Heritage Day, Waterloo Village, Stanhope, NJ. Boat rides on the Morris Canal. Museum open. 973-292-2755. [nj-cnial@googlegroups.com](mailto:nj-cnial@googlegroups.com);

**September 21-23 - The New York State Canal Conference** Geneva, NY & the Finger Lakes "*In Harmony With Nature, People + Products.*" For information about sponsorship and exhibit space, call 585-586-6906; [www.newyorkcanals.org](http://www.newyorkcanals.org) [nyscanalconference@riversorg.com](mailto:nyscanalconference@riversorg.com)

**September 27**—Waterloo (NJ) Heritage Canal Day, Waterloo Village, Stanhope, NJ. Boat rides on the Morris Canal. Museum open. 973-292-2755; [nj-cnial@googlegroups.com](mailto:nj-cnial@googlegroups.com)

**October 5 - Middlesex Canal Bike Tour,** northbound, starting at 9:00 (tentative date; see <http://middlesexcanal.org/> for confirmation and more information)

**October 19 - Middlesex Canal Association-AMC Fall Walk,** (tentative date; see <http://middlesexcanal.org/> for confirmation and more information)

**October 26 - Middlesex Canal Association Fall Meeting** (tentative date; see <http://middlesexcanal.org/> for confirmation and more information).

**October 11**—Waterloo (NJ) Canal Heritage Day, Waterloo Village, Stanhope, NJ. Boat rides on the Morris Canal. Museum open. 973-292-2755; [nj-cnial@googlegroups.com](mailto:nj-cnial@googlegroups.com);

**October 17-19—First time in 16 years: tour the eastern division of New Jersey's Morris Canal with the Pennsylvania Canal Society.** Contact Bob Barth at 201-401-3121; [barths@att.net](mailto:barths@att.net).

**October 17-19 - Canal Society of Ohio tour,** Upper Hocking Canal, Carroll to Logan. David Meyer and David Neuhardt, [David.Neuhardt@ThompsonHine.com](mailto:David.Neuhardt@ThompsonHine.com).

**October 19 - Middlesex Canal fall walk,** Billerica to Chelmsford. <http://middlesexcanal.org/>

**October 23-26** The Society for the Preservation of Old Mills, annual conference at the Rochester Hills Museum, Van Hoosen Farm, Rochester Hills, Michigan. The conference will feature tours visiting local mill sites, adaptively re-used mills, moth balled mills, and working mills. **On Thursday, an optional tour will trace the path of the Clinton and Kalamazoo Canal, Michigan's first internal improvement project dating from 1837.** For more information, visit [www.spoom.org](http://www.spoom.org) or [ww.rochesterhills.org/museum/spoom](http://ww.rochesterhills.org/museum/spoom). The site is about 90 minutes from the Toledo area. Canal boat tours listed in the Spring 2014 *American Canals*.

**October 25**—Waterloo, NJ Canal Heritage Day, Waterloo Village, Stanhope, NJ. Boat rides on the Morris Canal. Museum open. 973-292-2755; [nj-cnial@googlegroups.com](mailto:nj-cnial@googlegroups.com);

**April 24-26, 2015** Pennsylvania Canal Society tour of Western Pennsylvania canals.