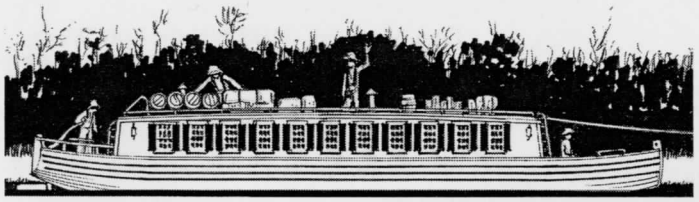

AmericanCanals

Bulletin of the American Canal Society

Vol. XXXVIII, No. 2 | Dedicated to Historic Canal Research, Preservation, and Parks | Spring 2009

From the President

by David G. Barber

Recently, I was sent an editorial and article from the Cleveland *Plain Dealer*, written as part of a series on the Cuyahoga River. Also included were various blog entries sent in by the newspaper's readers in response to the editorial and article. All of them discussed concerns about the Brecksville Dam that supplies water to the watered section of the Ohio and Erie Canal in the Cuyahoga Valley National Park.

The dam at this site, just south of the Ohio Route 82 bridge, was built as part of the canal project to supply water to the canal north to Cleveland. After the canal closed to navigation, the dam, feeder, and canal northward continued in use to supply water to steel mills located on the south side of Cleveland near Harvard Avenue. In this use, the original wood crib dam was replaced by a concrete structure located just downstream. As a result, water continues to flow down the canal through Locks 37–40, including Lock 38 at the National Park Visitors' Center. Lock 38 has been restored and is gated and used to demonstrate lock operation. The park service is currently replacing the aqueduct over Tinker's Creek to continue the watering of the canal.

The problem is that dams like this one are anathema to some environmentalists on general principles and as they prevent fish migration. They are also said to reduce stream quality. But, I wonder if this is more a generalization that the result of specific, scientific, defendable study of this particular site. The anti-dam folks are on a crusade to remove any and all dams including this one.

The letters submitted were interesting. Some said that the dam should be removed even though it would degrade the park. Others said the dam should be replaced by pumps, but I doubt that the operating costs of these would survive future budget cuts. Others said that turning the watered canal into a dry ditch was fine. There were also suggestions that replacing the lock operation demonstrations with a "virtual" simulation was just as good. Fortunately, this sort of thinking is counteracted by those who like a watered canal.

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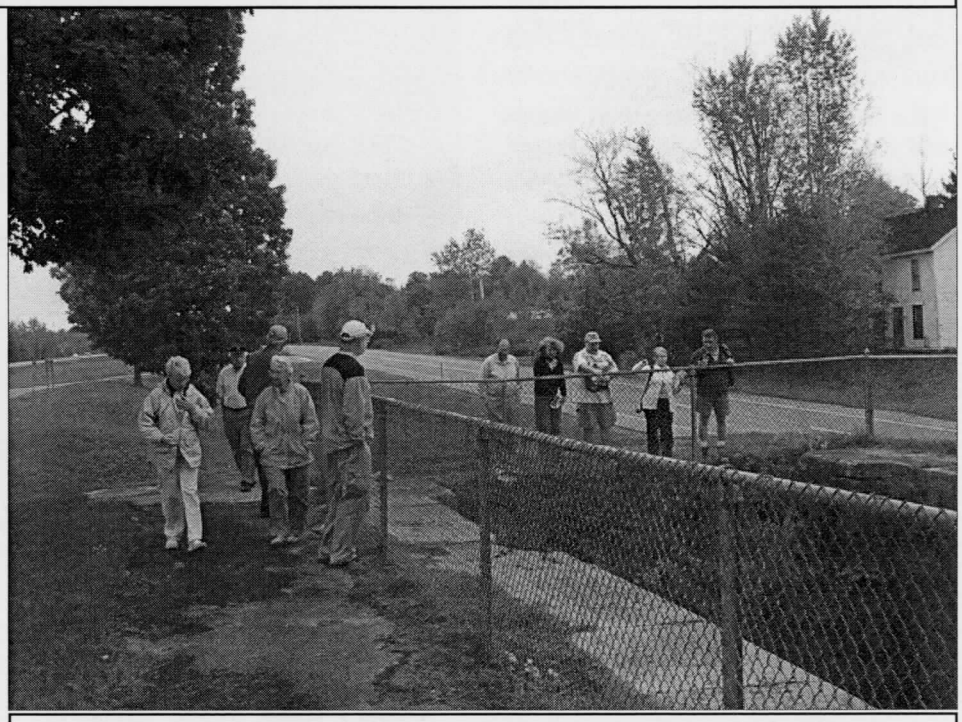

CSNJ group visits the combines on the Black River Canal. Author Dave Phraner continues his story of the tour of NYS canals below. Photo by Jakob Franke

ELEVEN-CANAL ADVENTURE IN UPSTATE NEW YORK

by S. David Phraner

(This is the fourth in a series about the Canal Society of NJ's trip to the New York State canals.)

We stayed at the Quality Inn in Rome for two nights. Our itinerary for today was to travel north to Boonville, following the trace of the Black River Canal through some wild, uninhabited and topographically challenging country.

If New York had a mountain-climbing canal approaching the engineering feats of Jersey's Morris Canal, it would be the Black River Canal. It ran from Rome, where it connected with

(continued on page three)

American Canals

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The objectives of the American Canal Society are to encourage the preservation, restoration, interpretation, and use of the historical navigational canals of the Americas; to save threatened canals; and to provide an exchange of canal information. Manuscripts and other correspondence consistent with these objectives are welcome.

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DEADLINE: Material for our next issue must be on the editor's desk no later than June 30, 2009. Send to Linda Barth, 214 N. Bridge St., Somerville, NJ 08876; barths@att.net.

Material submitted to *AMERICAN CANALS* for publication should be typed and double-spaced or sent by email in WORD format. You may send actual photographs (which will be scanned and returned), or digital versions may be emailed or sent on a CD.

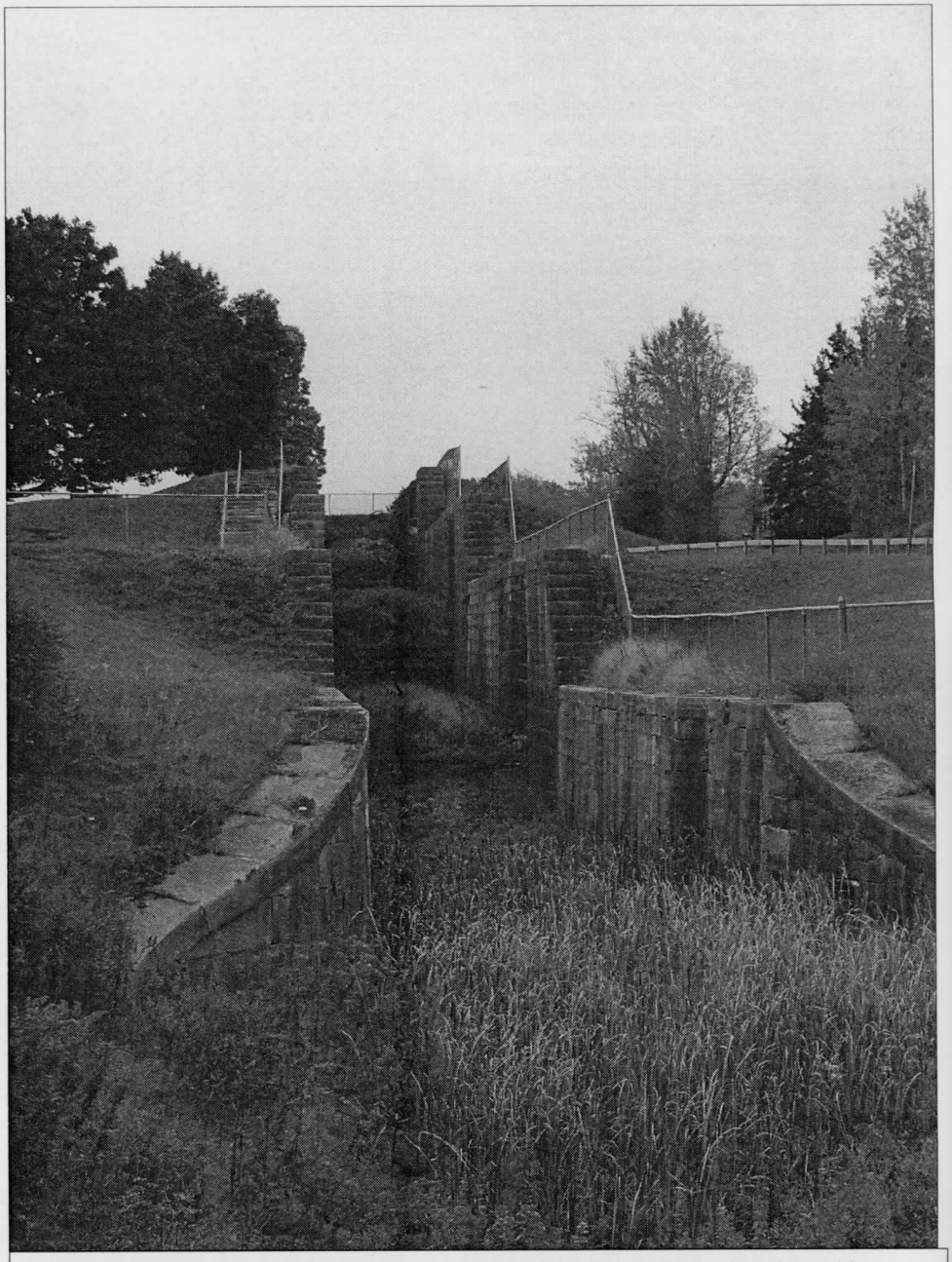
CSNJ group visits Lock 68 on the Black River Canal. Photo by Jakob Franke

the main line Erie Canal, climbing the escarpment northward, following the Mohawk River, then the Lansing Kill upstream to Boonville and the summit level. Elevation difference was 693'. The Forestport Feeder Canal joined the Black River Canal there at the summit level. The canal then descended 386' to Lyons Falls, where it joined the namesake Black River and followed that natural (but dredged for navigation) waterway for 42 miles to Carthage. Substantial steamboats towed the canal boats on the Black River navigation between Lyons Falls and Carthage, but they were isolated, since they were too large for the locks on the canal south of Lyons Falls. The river from Carthage to Watertown and emptying into Lake Ontario is too menacing for navigation. There was an attempt to build a canal alongside the river between Carthage and Watertown, but the effort was curtailed after only a few segments were dug. Had it been completed, one could have voyaged between Rome and the Erie Canal directly into Lake Ontario via the Black River Canal and river without having to go further west to Syracuse and then north to Oswego. The Black River navigation was finally completed in 1851 after several long interruptions of construction.

The profile of the Black River Canal is its most distinguishing feature. It had 109 lift locks in the 35-mile excavated portion of the canal. This averages out to 15 locks per each five miles of canal. We later learned at the Boonville Museum that the canal builders did consider using inclined planes and inspected the Morris Canal (completed to Newark in 1831) to evaluate using planes. The idea was rejected as too technically risky (remember at the time, the Morris Canal was still using its early crude plane technology with water wheels rather than turbines, chain or hemp rather than Roebling wire rope and summit locks at the top of each plane rather than plane rails directly entering the canal over a brow. The Black River Canal lasted longer than any of the other lateral canals in the NY State system (except those three that survive today). The canal was surveyed and designed in 1828, but all that planning expended the company resources and there was nothing left to build the canal (sounds like the Second Ave. Subway...and lots of other moribund rail transit projects). Construction began 14 years after the opening of the Erie Canal. The section between Boonville and Lyons Falls was abandoned in the 1890s and the section between Rome and Boonville ended official navigation in 1922 (in '24 a state scow journeyed between Boonville and Rome as the last boat to navigate the canal). Sections of the canal and its feeder today still function as a water supply for the main line barge canal. The water travels a somewhat different route today, via the Lansing Kill than when the canal was in navigation. Though I was entertained and informed by many of the canal features that we observed on this trip, the Black River Canal holds the greatest fascination for me. The Black River is an O&W Railroad equivalent among canals in New York.

This morning we passed up the Delta Dam and continued north. We would visit this important canal feature the next day. At the mid-point in our journey to Boonville from Rome, we entered the Lansing Kill Gorge. This area is extremely rough terrain with the canal at times being a hundred feet above the rushing waters of the kill (remember the reservoirs were being drawn down to keep

the main line canal in navigation). The gorge is so narrow that the road and the canal bed are often within sight of one another. A close succession of overgrown locks is evident, culminating in the five combines in the heart of the gorge. It's a most impressive display of 19th-century civil works. The gorge being narrow with steep sides, there was no room for Cody to park Minnie along the narrow, curvy road (no shoulders), so we continued north a short distance to Pixley Falls State Park within the gorge. Cody turned into this pleasant park with camping and clean sanitary facilities. On the south end of the park site, the Lansing Kill drops about 40' in the impressive Pixley Falls cascade. Much of the water originates upland from the Kayuta Reservoir. The water originally reached the Erie Canal at Rome by way of the Forestport Feeder to Boonville, thence via the Black River Canal to Rome. That changed. The Delta Reservoir was built in the early 1900s in preparation for the conversion of the improved Erie Canal into the Barge Canal. Both the Lansing Kill and the Mohawk flow into the present-day Delta Reservoir. The Delta project dammed the Mohawk River and inundated its namesake village of Delta. After the 1924 Black River Canal abandonment, the water destined for the Barge Canal was diverted at a point just south of Boonville from the canal prism to the Lansing Kill; therefore, the kill was running bank full over the falls at Pixley Falls, regardless of the drought and low level of water in the upland reservoirs. The canal towpath is developed into a trail extending north and a short segment south to the 5 combines. A local trails advocate group maintains the trail. It appeared to be well kept, even for trail bikes. As with all stops en route, the bus emptied out and we swarmed the site.



Canal Society of New Jersey tour members visited the Black River Canal combines on Route 12, near Boonville, New York. Photo by Jakob Franke.

Continuing north along the scenic Lansing Kill, we entered into the picturesque and once prosperous village of Boonville. The "boon" in Boonville is long past and like so many places (outside of New Jersey where money rules), Boonville is trying to reinvent itself using heritage tourism and its natural attractions. We were all impressed with their canal museum. I have noted appreciable and sustained progress in greater Boonville and specifically at the museum complex. The museum consists of several contiguous elements: a new building using rough-milled native lumber that gives off a wonderful aroma of fresh cut wood; a former warehouse/mule barn/auto garage; a newly-constructed Black River canal boat; a portion of the restored and watered Black River Canal; a

moved-intact Whipple Arch bridge; the basin (used as a municipal park and bathing beach) at the confluence of the watered Forestport Feeder and the Black River Canal; and finally a large ornate covered bridge crossing the feeder. The latter provided a great opportunity for a group picture. Multiple "click-whirrs." The covered bridge is all-new and is an authentic historical construction design, but is otherwise unauthentically and ornately decorated to take on aspects of a kookoo clock at its gable ends.

The downtown is a short, pleasant walk from the canal neighborhood. I had thought that we would eat at the large old (once grand) hotel downtown. On a previous trip to get a (good) $4.00 haircut two years ago, I stopped at that hotel for lunch. It was a satisfactory experience and they do serve good tap beer. The Boonville downtown has substantial and quite attractive building stock in several commercial blocks. It reflects the wealth of the timber and other industries that once brought prosperity to this part of Oneida County.

Local residences, commercial establishments, and two old hotels complete the image of Boonville around the railroad station and canal. There, we had lunch at the Boonville Hotel, the more prosperous looking of the two hotels in the vicinity of the railroad. The other, The American Hotel, appeared to be a somewhat dilapidated combination apartment and SRO flophouse. Perhaps I am being too unkind. It might have been a classic small town hotel at one time. The Boonville Hotel, however, retained its rectilinear false front, its front verandas, and its dual functions as a restaurant/bar and basic, 6-room overnight stays upstairs for transient trade. Tenants went down the hall for the accommodations. Each room consisted of an ancient (I would hesitate to use the term "antique") bed covered with a quilt (Elaine later confirmed that they are the contemporary Chinese quilts), a well-used dresser and a distressed side chair. I cannot imagine what it costs to stay there. For railfans looking for a place to crash, it would be ideal; for others, it's 1910-era Microtel walk up.

Like other dramatically successful projects of local nature, the Boonville Black River Canal Museum has a sparkplug leadership: one person who is patient, indomitable, persistent, indefatigable, inventive, intelligent and with unlimited energy. He spoke to us candidly on the depressed economics of the area and knowledgably on local history and the heritage of the canal system. Collections appear to be cataloged, and the exhibits appear to be professionally organized and displayed. They thoughtfully provided coffee and donuts, a kindness overlooked at more prosperous places that we visited.

The members of the Canal Society of New Jersey tour group pose in front of an ornate covered bridge that crosses the Forestport Feeder near the Black River Canal. Photo by Jakob Franke.

We reciprocated their kindness by buying stuff and stuffing their donation jars.

The replica canal boat appears to be a large shed with a door cut in the side. The bow is very blunt with only a trace of curvature. The roof/deck has not yet been weatherproofed, so tarps cover the cabin tops with eyebrow windows characteristic of this canal boat architecture. Inside, the marine construction leaves no doubt as to the function of this vessel. Forward, there is a raised platform for keeping the extra set of mules. At the stern is the cabin for the captain and crew/family. Again, as with the museum building, the sweet aroma of fresh cut conifer pervades. The three main exhibit structures are lined up in a row along the canal. I did not inquire as to the seaworthiness of the finished canal boat, but it appears that it could be launched laterally into the watered canal. The Whipple Bridge was removed from a site further north, restored and moved intact (by highway) to a crossing of the watered canal just south of the freight station.

We drove or walked the short distance to lunch. Mini was parked in front of the hotel and we repaired to that venerable structure for a served lunch (they also have a limited selection of brews on tap). Food was plentiful, surprisingly good, and served promptly in their main dining room that accommodated all 30 of us comfortably. Jakob had prearranged lunch and we had previously made our selections, leaving nothing to chance.

To be continued in the summer issue

THE STATE OF THE MUSKINGUM

by

Terry K. Woods

June 1992 and June 2008

The Muskingum Improvement, as authorized by the Ohio State Legislature in 1836, was planned as a one-hundred-thirteen-mile canalization of the Muskingum River to its junction with the Ohio River at Marietta. As proposed by the legislature, this river canalization was to be an extension of the state's existing canal system. A short, three-mile branch canal with three locks already existed, connecting the Ohio & Erie Canal with the Muskingum River at Dresden. A privately financed dam and lock arrangement had been started at Symmes Creek to provide a slackwater pool to Dresden. Another dam, lock, and short canal was in place to bypass the falls at Zanesville. Both of these works were taken over by the state and included in the overall plan that called for eleven locks and dams (lock No. 10 at Zanesville is a double lock) and five short canals to make the river navigable for the largest steamboats then navigating the Muskingum from Marietta to Dresden. The completed and 'improved' Muskingum River was opened for through navigation on September 17, 1841.

Except for the Symmes Creek lock, which was completed as originally designed at 160 feet by 21 feet, all the locks on the Muskingum Improvement were designed to a standard 220 feet by 36 feet (the actual widths vary from 34.5' to 35.5 feet). Types and design of valving to fill and empty the locks vary as locks were repaired and rebuilt by the U.S. government in the late 19th and early 20th centuries. While the state numbered the locks from upstream to downstream, the U.S. government took over the system in the 1880s and reversed the numbering. The latter system prevails to this day.

Currently, all the locks have bell valves in the lock walls to fill the chamber, except No. 10 (Zanesville) and No. 3 (Lowell), which have gate valves. Lock No. 3 also has one bell valve in the upper outside lock wall.

There is also considerable variation in valving for emptying. Locks No. 2 (Marietta), No 4 (Beverly), No. 5 (Luke Chute), and No. 10 (Zanesville) have gate valves. The rest use a variation of the wall bell valve. In addition, Locks No. 3, 6, 7, 8, 9 and 11 have wall or butterfly valves to empty the locks. The rest employ ball or cylinder valves in the lock walls. Windlasses and pinion-gear mechanisms are used to manually operate the valves and gates for each lock. The engineering of this system is a fine example of the 'bridge' to 'modern' civil engineering and hydraulics.

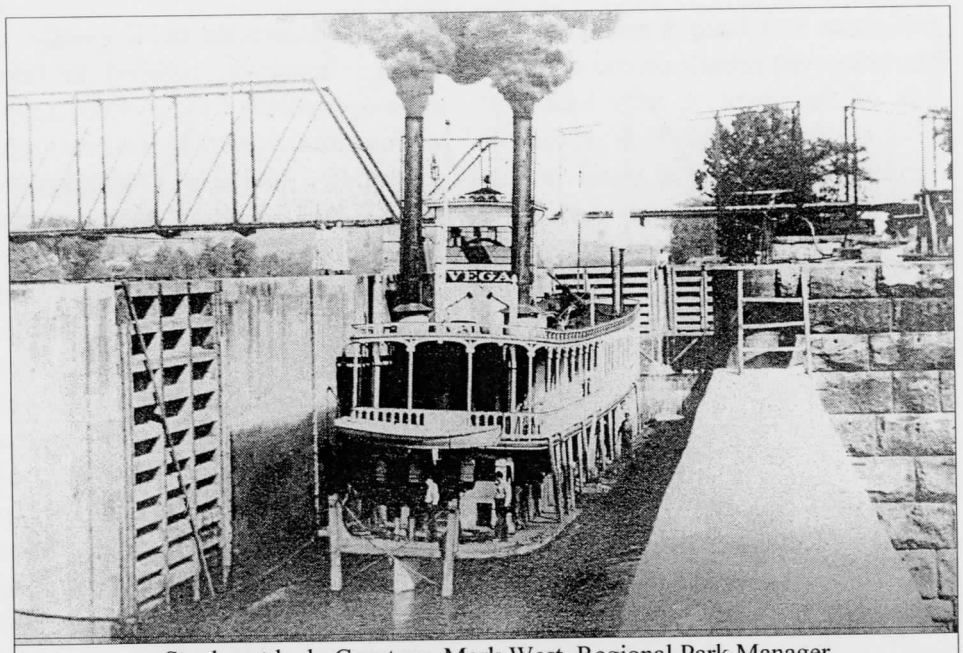
Because of the size of the locks, and the types of craft that navigated it, the Muskingum Improvement never really fit into the norm of Ohio's canals. Though 'improved,' it has remained more a river than a canal. And it developed the mystique and lore of both.

Only two boiler explosions ever occurred on the Improvement. One, on the *L.C. McCormick*, near the foot of Dana's Island on February 15, 1879, resulted in one death. Much more serious was the explosion of the *Buckeye Belle* at the head of the Beverly Canal on

March 12, 1852. Here twenty-six lives were lost. Eyewitness accounts state how pieces of seared flesh and charred timber rained down on the countryside for a half-mile radius.

Surprisingly, no steamboat ever went over a dam, though there were some very close calls. There was the thirty seconds the *Lizzie Cassel* took leaving the Lowell Lock in April of 1885. The *Lizzie* reached Lowell late Monday morning with a large load of lumber for Zanesville. As the water filled the lock and the craft began rising, nearly all of the crew were off the boat, standing on the lock wall. Mate Robert Longley and Pilot Billy Richardson were standing on top of the lower gates. When the lock was nearly filled with water, the pressure became too great for the old wooden gates. They burst, throwing Longly and Richardson into the river – followed by the *Cassel*, which shot by the two men like an arrow. Frank Sprague, the mail agent, rushed up to the pilot house, took charge of the wheel, and landed the boat. The two men got safely ashore and, after examining themselves, concluded that they were unhurt. The *Lizzie Cassel* spent the last six years of her life as a government towboat. She was dismantled in March of 1895 and her engines used in a new boat, the *Hasel Rich.*

The justification to 'improve' the Muskingum River was that it would funnel great quantities of merchandise and services from the southern areas of our nation, via the Mississippi and Ohio rivers, into the Ohio & Erie Canal, Cleveland, Lake Erie and East Coast markets. After the mid-1840s, though, just the opposite took place. Produce from the interior of Ohio found its way, through the Muskingum Improvement, to southern markets. Because goods took the short route out of the state, total toll receipts did not come up to expectations. Then, after the mid-1850s, Ohio's canals faced ever increasing railroad competition. Overall canal toll receipts fell below maintenance expenditures in 1856. Then, in 1861, all of Ohio's canals, including the Muskingum Improvement, were leased to a consortium of twenty-three Ohioans.



Stockport lock. Courtesy, Mark West, Regional Park Manager

The consortium defaulted on its lease in 1878 and, after a court ruling, the state found itself back in the canal business in 1879. Conflicting claims concerning the condition of the canal system before and after the lease will probably never be resolved. It is sufficient to say that the Muskingum Improvement was unnavigable above Zanesville after 1870. And through navigation, even below Zanesville, was impossible during many seasons due to the malfunction of one or more of the lock and dam combinations. It was necessary during these times for boats to operate in teams, one above a problem lock, and one below – with goods being transferred from the upriver craft to the lower one.

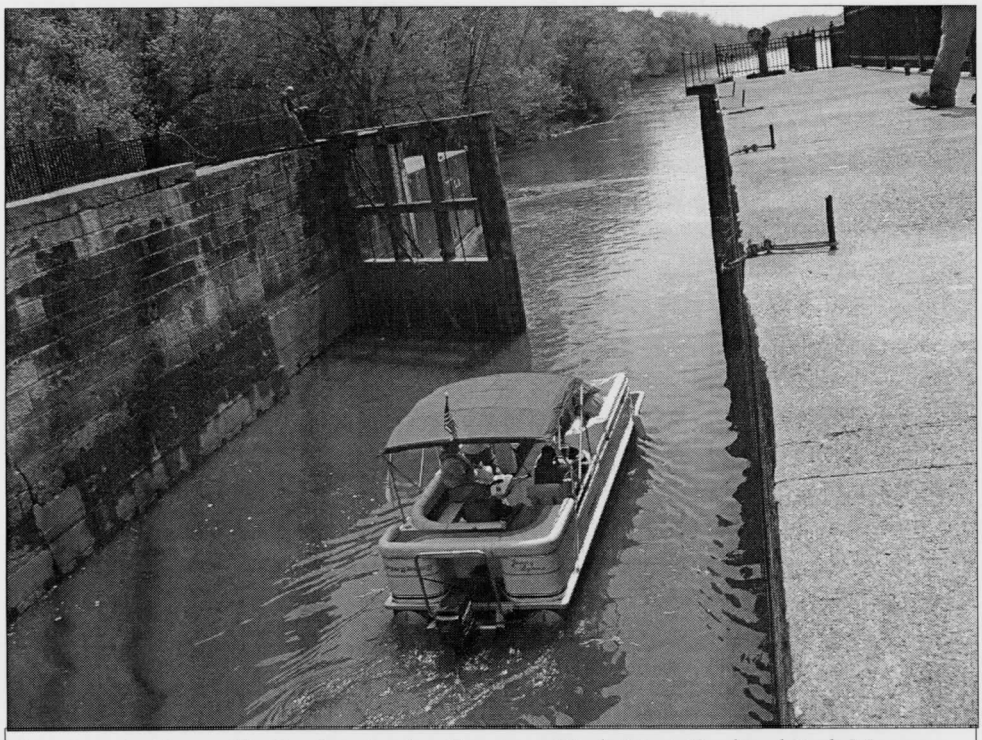
The federal government was induced to take over the Muskingum Improvement (along with $12,000 owed to the state in tolls) in 1886 as one of the nation's navigable rivers.

The first craft to navigate the new toll-free Muskingum was the *General H.E. Devol* on April 10, 1887. On board were two men who had formed part of the crew of the *Itaaska*, when, in March, 1838, that craft had been the last one to make a toll-free trip down the river prior to the Improvement. The steamer *Tuscaroras*, on September 17, 1841, had been the first craft to pay toll for traversing the new, state-owned Improvement.

The Army Corps of Engineers completely refurbished the Improvement during the late 1880s and into the early twentieth century. Most of the existing locks

date from that time. Lock No. 1, at Marietta, was rebuilt on the opposite side of the river. A new lock was built at Philo in 1896 to eliminate the long, crooked lead canal (a section of canal from the slackwater pool to the lock), and the small lock at Symmes Creek was replaced in 1910 by a new, larger one built some two miles downriver at Ellis.

Traffic patterns changed on the nation's rivers over the years. By 1906, only three traditional steam boats were still operating on the Muskingum. Most of the existing traffic was pulled or pushed in barges by steam- and gas-engined towboats. Even this traffic gradually slackened, though there was a short rush during World War II. In 1950, the Corps of Engineers studied traffic density on the Muskingum Waterway and found that commercial traffic was practically nonexistent; therefore, the Corps closed Locks #2 (Devola) through #11 (Ellis) on June 30, 1952, and closed Lock #1 (Marietta) on June 30, 1954. The Corps of Engineers then made plans to demolish the river locks and dams. The state of Ohio, however, offered to take over operation of the system again – this time due to its recreational potential. And on October 16, 1958, the federal government transferred the Muskingum Improvement (plus a sum of $235,000 that had been appropriated for demolition) to the state of Ohio. The Ohio State Department of Natural Resources then began a ten-year program of restoration of the structures that culminated, in 1969, with then Governor James A. Rhodes traveling down the newly operating Improvement in a houseboat. Since 1958, recreational facilities had been added at Lock Nos. 2, 4, 5, 6, 7, 8, and 11 and at Dams No. 3 and 9. Boat launching ramps are provided at Lock Nos. 4, 5, 6, and 11 and a campground is located at Lock No. 11. The island that is formed between the canal and river in Zanesville contains a fitness trail that extends nearly the entire length of the canal. The waterway was renamed the Muskingum River Parkway, and has remained under the jurisdiction of the Ohio Department of Natural Resources.



Leaving the Zanesville Tandem Locks. Courtesy, Mark West, Regional Park Manager

Completion of the Belleville Locks & Dam in the Ohio River, 31 miles below Marietta, in the late 1960s, raised the level of water at Marietta 3.6 feet. This increase made Lock # 1 on the Muskingum unnecessary. It was removed by the Corps of Engineers in 1969.

The remaining locks and dams and four stretches of canal have been maintained by the Ohio Department of Natural Resources for public recreational use ever since. Though the facilities are well used, the locks and dams require constant maintenance and are strung out along eighty-six miles of river. As many of the structures reached their 100th birthday, deterioration got well ahead of standard maintenance.

The lower gates at Lock No. 3 at Lowell failed in July, 1988. Fortunately, no vessels were in the lock at the time, and no injuries resulted, but the Department of Natural Resources immediately closed Lowell Lock and ordered a thorough inspection of the remaining structures on the system. As a result, Lock # 6 at Stockport was closed in 1989. An engineering survey, with recommendations for repairing the entire system, was issued in 1990, calling for more than $5,000,000 to be spent on the lock and dam structures on the Muskingum Parkway to bring it back into a condition where normal, everyday maintenance would keep it going indefinitely.

Even before the final report was issued, special appropriations had been passed by the State Legislature to repair and refurbish Locks No.3 and No. 6. All ten locks and

the companion dams were in operation for the annual Muskingum River Days Celebration in 1991; the event concluded with the 150th anniversary of the opening of the Improvement.

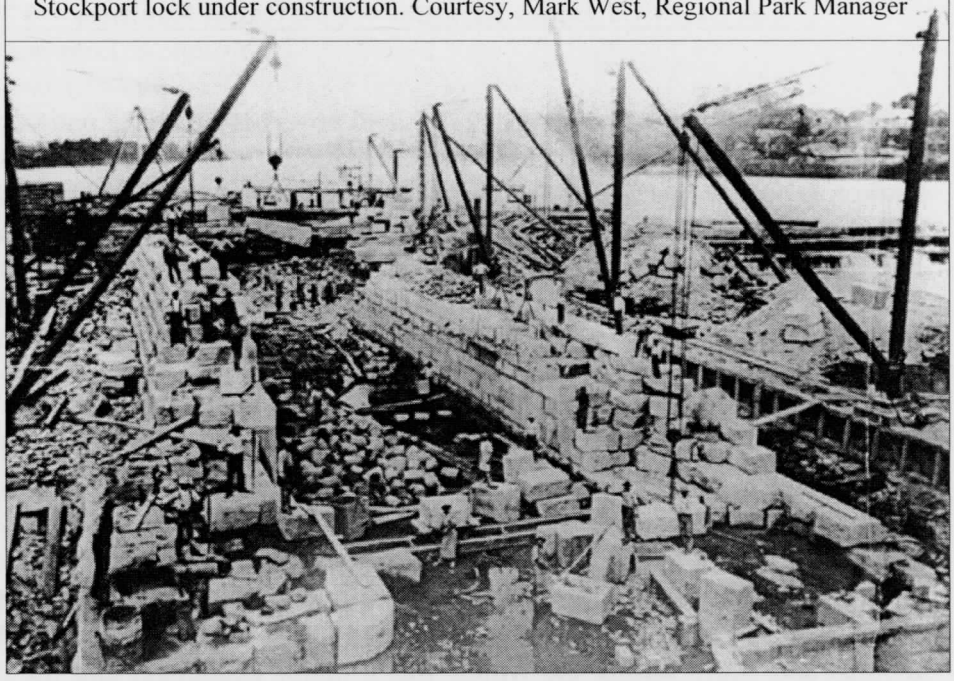
* * * * * * * * *

That is how things stood with the Muskingum in June of 1992 when I presented the above paper to a group of canal buffs from the U.S., Canada, and Britain at Rochester, New York.

Recently I had reason (a seven-hour, forty-two-mile ride down the Muskingum aboard the *Valley Gem*) to delve into the state of the Muskingum during the last seventeen years or so. The good news is that the Muskingum Improvement, dubbed the Muskingum River Parkway in 2004, is still open for business. The parkway office and duties are now being shared with several of Ohio's other parks, but the busy employees are anxious to share their pride of accomplishment and ownership in the Muskingum Parkway. Lock No. 11 (Ellis) has been closed since the late 1990s and is awaiting funding to place it back in operation. Four of the remaining locks and dams have been refurbished within the last ten years, and another, Lock No. 4 (Beverly), is "awaiting funds" for a major overhaul.

Unfortunately, the early 1990s refurbishment didn't result in the added river lockings that had been anticipated. After more than 10,000 in 1991, they fell steadily to a low of 2,800 in 2004, despite a locking fee schedule that has remained unchanged since 1995. An additional study indicated, however, that Ohioans were rather proud of the historical heritage of the Muskingum Parkway and were willing to have a portion of their taxes used to refurbish the old locks and dams. A new system of including the historical content evaluation of the Muskingum Improvement has been employed the past few years to justify rebuild projects when presented to the State Legislature.

Stockport lock under construction. Courtesy, Mark West, Regional Park Manager



Parkway officials have endeavored to promote the historical aspect of the waterway. It has been designated the second State River Parkway. In 2001 it received the prestigious National Historic Civil Engineering Award, and it was placed on the National Register of Historic Places in 2006. Work has begun to have the parkway designated a National Historic Landmark. Possible federal funding may result.

In the meantime, parkway officials are working to improve the paddling (canoes and kayaks) access and portage areas. They are continuing to work with the county visitors bureaus of the four counties which the parkway traverses to improve visibility and enhance publicity and are hoping soon to have their own website. And as always, they are working to continue bringing up the standards of the infrastructure so that many generations can enjoy a one-of-a-kind historic river experience and to provide a great recreational and unique boating experience to visitors from throughout the nation.

Lockings were up in 2007 to over 6,000, carrying nearly 20,000 people. It has also been estimated that there were 275,000 visitors this past year to the boat ramps, camping facilities, and recreational areas that have been constructed alongside many of the historic locks and dams.

So, the state of the Muskingum is pretty much what it has been for years. A bit precarious, but filled with hope and optimism. And what is most important – it is THERE and OPERATIONAL! Come out and enjoy.

The Story Of James Brindley – U.S. Canal Engineer – 1745-1820—Part II in a series

by Yvonne E. Long and Gordon Brindley, B.A. (January 2003)

The Revolutionary war ended in 1783, and now this fledgling nation called America was free to determine its own destiny. As life returned to normal, the focus turned to the development of trade and industry and with it came a renewed interest in the mobility of goods and people through inland navigation. At the time, most goods would be transported to market from the interior by dugout canoes, arks, flatboats, or keelboats, and rivers often proved treacherous. Many journeys involved navigating steep and dangerous waterfalls or rock-filled rivers and terminated at the most convenient point, with goods being transferred to wagons in order to reach Eastern market towns. Often, boats could only be used one way and were broken up and sold at the end of a journey, their owners using horses and carts to return home with supplies. These were long and arduous journeys, especially in winter.

The competition for trade amongst towns such as Philadelphia, Baltimore and Boston became increasingly intense, and so it became critical to make routes less hazardous and more accessible. The early engineers faced special challenges such as the severe North East weather that froze rivers, waterfalls, and marshes for several months each year. In addition, as a nation, they had never organized a large workforce for construction before and had difficulty finding skilled people and feeding and equipping them. Such was the harshness of conditions that many workers died during their first year. Keeping recruits disease-free during the summer months and warm during the winter was a major challenge, and the outbreak of yellow fever was commonplace, even in larger towns such as Philadelphia.

Often projects relied on forced labor such as indentured English, Scottish, and Irish immigrants, who were bought for the length of their indenture and purchased in cities such as Baltimore and Philadelphia. They were "sentenced" to hard labor alongside slaves and free men alike, and runaway workers became so frequent a problem that managers resorted to shaving heads and eyebrows weekly, so that deserters could easily be identified when on the run. Skills such as brick-making and the use of explosives for moving rocks were just emerging and most digging and excavation work was carried out by hand with picks and shovels. Paid workers were compensated by the inch and worked from dawn to dusk.

From Washington's diaries and other source material, we are slowly learning more about the projects James Brindley worked on. Unfortunately, one American historian assessed his projects to have been a failure and later others merely repeated his observations blindly; today much of that earlier research has since been called into question; however, from the outset there was distinctive animosity toward the need for foreign engineers. The lack of native expertise caused jealousy and resentment, and the work of European engineers, William Weston (1753-1833) and Benjamin Latrobe (1764-1820) included, was criticized for being too expensive. This was because they valued durability and adhered to rigid standards of design and construction by insisting on the use of masonry over timber.

Research has revealed that in the early days, individual shareholders privately funded the development of inland waterways and due to financial delinquency, many canal companies were established only to run out of money before projects could be completed. Costs were often badly underestimated by inexperienced management, and we know that other prominent engineers faced similar financial problems on canal developments, often being forced to sell off company assets. Too few canal companies ever reached profitability, and later came competition for investment between the canals and the railroads. The railroads eventually won, and thereafter many projects were cancelled with existing canals falling into neglect.

Thankfully, from historical documents discovered, we know that James was a successful engineer and did, in fact, prove his worth. From what we have learned from surviving reference materials, James consulted or advised on the following projects:

The Susquehanna Canal, Maryland and Pennsylvania.
The Harpers Ferry Armory and Potomac Dam, Virginia.
The Santee Canal, South Carolina.
The Little Falls, Virginia.
The Great Falls, Virginia.

The James River Project, Virginia.
The Potomac Canal, Maryland.
The Conewago Canal, Pennsylvania.
The Tulpehocken-Swatara Route, Pennsylvania.
The Swatara Canal, Pennsylvania.

Such was the demand for engineering services that, for several years, James was working on multiple projects. This was the cause of recurring friction between himself and his employers. Irritation ran particularly high between the Conewago Canal Company and the Susquehanna Canal Company.

On a more positive note, however, we learn from the *History of York County* that:

> *"One of the most notable events in the history of internal improvements in the State of Pennsylvania was the opening of a navigable canal around the Conewago Falls, on the west side of the Susquehanna River at the point, since the year 1814, known as York Haven. It was the first canal built in the State, and so far as definite records go, the first in the United States."*

James was Chief Engineer on the Conewago Falls project from 1793 to 1798, and the undertaking was a tremendous success. Despite the inaccurate statement in the previous extract, The Conewago Canal Company was the *last* canal company to be chartered and was formed by prominent men of the day such as Robert Morris and David Rittenhouse.

The opening was celebrated on the 22nd of November 1797, and from the *History of Lancaster County*, we are told:

> *"A canal was built at a cost of one hundred and two thousand dollars, the locks alone having cost forty five thousand and two hundred dollars. James Brindley was chief engineer. The work was completed in November 1797. On the 27th of that month a committee of the Legislature and Dr. William Smith proceeded through the canal in flatboats to inspect the works. The formal opening was to be celebrated the afternoon of the same day when the Governor was to be present. Holes were drilled in the granite boulders to be used as a fire salute in honor of the event. The Governor and his attendants arrived unexpectedly on the eastern side of the river, in sleet and snow. Boats were sent over to bring the distinguished party, and when they arrived a number of salutes were fired. When the part passed through the canal they met at its head, a number of keel-boats that came down from Middletown filled with people. When they returned to the foot of the canal five hundred people were there to receive the Governor and rejoice with him on the successful completion of this great work. There were two locks or chambers, eighty feet long and twelve feet wide. When the Governor and his party entered the lower chamber and the gates were closed behind them, all were astonished to find the boat raised to the level above in a few minutes."*

In 1802, a letter from Thomas W. Francis requesting permission to charge a toll of $2 per boat provides an interesting glimpse into the financial problems that beset the Conewago Canal Company. Lack of funding was an inherent problem for most canal construction of the era. Francis, a shareholder and company treasurer was faced with trying to recover the $105,000 cost overrun, as it appears the original budget of $5,000 was proposed in 1789 by commissioners who had no experience with canal construction. They proposed to dig a sluice canal around the falls and let the water run through unchecked. The only technical research they did was to ask a local boatman, who assured them a 19-foot drop would present no problem. When work actually began on the canal, this approach was considered impractical because the water velocity would have undermined the canal wall and made navigation impossible. The maximum practical descent, according to experts, was 500:1 in the length to the drop, or 10.1 feet in 306 perches. The Conewago Falls descent was nearly double that, and James measured the water velocity at a speed of 12-15 miles per hour, based on the timed descent of a raft at five minutes and large logs at four and a half minutes. Taking a boat in reverse would have been impossible.

Before the canal was built, the few times a boat was brought up the Conewago it required 30-40 men for most of the day at a cost of £5 or £6 and the process required jumping from rock to rock pulling the boat. The actions must have been humorous because locally these men were referred to as "blackbirds." Apparently,

horses could not be used because of slippery rocks and an uneven shoreline. The final cost of the canal was as follows:

Ground purchase and cutting of canal	$56,726
Locks and regulating gates	$45,274
Miscellaneous	$17,000
Total Cost	$119,000

Compared to the lockkeeper's $200 annual salary (as listed in the same report) the shortfall can be placed into true perspective. A further extract from the *History of York County* written in 1886 states that:

> *"It was well constructed, the work being excellently done and the canal substantially built. The bricks used are still in excellent state of preservation, and are again being put to use by the paper-mill company, which is erecting works there. They were made from clay found in the vicinity, the pits being still visible. The canal when completed was about one mile long and contained substantial locks. It was finally completed in 1797. It was a great event to the interests of the interior of the State and became a great center of attraction."*

Conewago Falls is located in Pennsylvania on the Susquehanna River, about fourteen miles above Wrights Ferry (near Harrisburg, Pennsylvania) and near to the mouth of Swatara Creek. The Conewago Falls was an obstacle that, at the time, was described as: "*A dangerous and great obstruction and bar to the wealth and population of the region, and an earlier examination by prominent civil engineers found them appalled at the magnitude of the work and means require to clear the channel."*

Before the completion of the Conewago Canal, all goods travelling between Philadelphia and its northern settlements had to be unloaded north of Middletown. The site of the canal is close to the now "infamous" Three Mile Island and a park next to the Pennsylvania Power and Light Company occupies the land. Some of the original canal bed can still be traced.

A drawing of the Conewago Canal, signed by James Brindley (dated 1795) has recently been discovered at the New York Public Library and in December 2002, a replica was presented to the Brindley Mill Preservation Trust in Leek, Staffordshire.

Ed. note: Stay tuned for the further adventures of James Brindley in the summer issue of *American Canals*. Our thanks to Yvonne Long and Gordon Brindley for permission to publish this biography of an important figure in U.S. canal history.

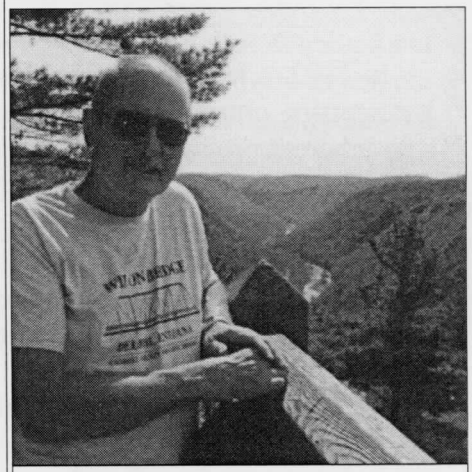
DAN MCCAIN HONORED FOR LIFETIME ACHIEVEMENT

Thanks to Carolyn Schmidt for permission to reprint this story from the *Hoosier Packet*.

ACS Director Daniel McCain, of Delphi, Indiana, received the Eli Lilly Lifetime Achievement Award at the annual Founders Day dinner of the Indiana Historical Society in December 2008 in Indianapolis. The award is bestowed upon individuals who have made extraordinary contributions over an extended period of time to the field of history and/or the affairs of the IHS.

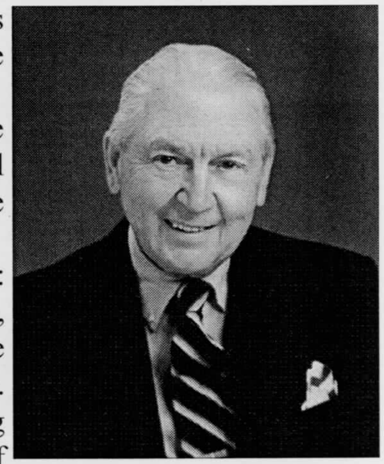
In 1994, after a thirty-four-year career with the USDA Soil Conservation Service, during which time he had national and international speaking engagements and hosted foreign diplomats to the United States, Dan set about devoting his time to two of his loves: Wabash and Erie Canal history and his small farm beside the canal.

Dan was instrumental in coordinating the development of Delphi Historic Trails, Canal Park and the newly completed Wabash and Erie Canal Conference and Interpretive Center, leading a $3 million fundraising campaign to make the latter a reality. His role as president of Carroll County Wabash and Erie Canal, Inc., currently has him spearheading an effort to add a replica canal boat, warehouse, and dock to the reconstructed portion of the canal in Delphi, Indiana.



Dan relaxes at the Grand Canyon of Pennsylvania, en route home from the World Canals Conference in Kingston, Ontario, Canada.

CANADIAN CANAL SOCIETY MOURNS PASSING OF LOU CAHILL



The Canadian Canal Society has lost one of its early driving forces and founders with the passing of Lou Cahill. Lou was also the first society member to be recognized for his achievements by the awarding of an Honourary Membership.

Lou started with the St. Catharines *Standard* at the age of 18 in 1932. In 1936 he founded the Niagara News Bureau, which eventually became the Ontario Editorial Bureau in 1949, now OEB Enterprise. Lou loved to work and be involved, and he was at the office until he was 91.

He was instrumental in the founding of a number of organizations: the Welland Canals Foundation, the Mackenzie Printer and Newspaper Museum, and the Canadian Canal Society. The Welland Canals Foundation has sponsored the Top Hat Ceremony for the first vessel to pass through the Welland Canal each year. The Foundation, under Lou's guidance, also obtained Trillium Foundation funding to produce "Conquering Niagara," a film produced to mark the 175th anniversary of the Welland Canal; it premiered at the World Canals Conference in 2004 in St Catharines.

Lou was able to witness in his early years the transition from the Third to the Fourth Welland Canal. Perhaps it was this exposure to canals and shipping which led to his lifelong fascination with this subject. In 1976 Lou became the second Canadian to become a director of the American Canal Society, six years before the founding of the Canadian Canal Society. Perhaps it was his involvement at that time that led to his efforts to form a Canadian society.

ACS Sales

If you haven't checked the ACS website lately, you might not know that the society has the following items for sale:

Best from American Canals #2 -5	published 1984	$4
~~Best from American Canals #4~~ -1	~~published 1989~~	~~$4~~
Best from American Canals #5 -3-9= 12	published 1991	$4
Best from American Canals #6 -3-2=5	published 1993	$5
Best from American Canals #7 -5	published 1996	$5
Best from American Canals #8 - 4	published 1998	$6 ?
	1993	$5
American Canal Guide #1: West Coast	published 1974	$1 -20
American Canal Guide #2: South, NC to FL	published 1975	$2 (Copies Only)
American Canal Guide #3: Lower MS & Gulf	published 1979	$3 -20
American Canal Guide #4: WV, KY, Ohio River	published 1988	$3 (Copies Only)
American Canal Guide #5: DE, MD, VA	published 1992	$3 -25
~~Canals of New York State (60 pages of AC articles)~~	~~published 1991~~	~~$5~~ -1
20 year American Canals Index 1972-1992	published 1992	$2 -30
Canal Boat Construction Index (12 pages)	published 1992	$2 -32
Canal Terminology (100 pages) Hahn & Kemp	published 1998	$? -5 Price
ACS Burgee (blue on white cloth)		$15 - 37
~~Canal Lock Print (8-1/2" x 11-1/2") color~~		~~$2~~
ACS cloth sew on patch (2"x3" red, white & blue)		$3 - 4 437
"Save Your Local Canal" bumper sticker		$1 - 0 114

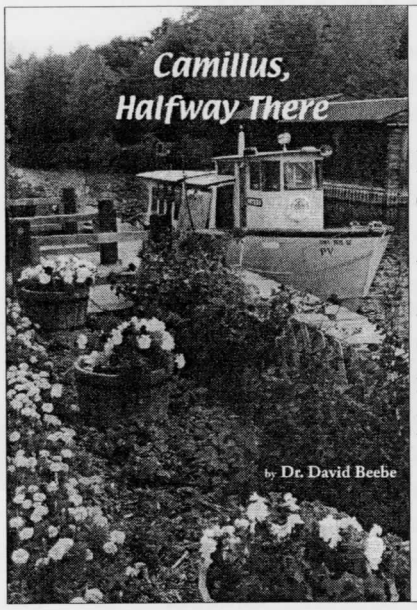
POSTAGE:

BEST, NY canals, Canal Terminology ---------first item $2; each additional item $1
American Canal Guides #3, 4, 5 -------------$ 0.75/ea
other items -----------------------------------$ 0.50/ea
max postage per order: $ 5.00

Checks payable to: American Canal Society. Send orders to: Robert H. Barth, 214 N. Bridge Street, Somerville, NJ 08876-1637

908 722 7428, BBARTHS@ATT.NET

Canal Capt Press
McKelvey
103 Dogwood Ln



CAMILLUS, HALFWAY THERE
By Dr. David Beebe

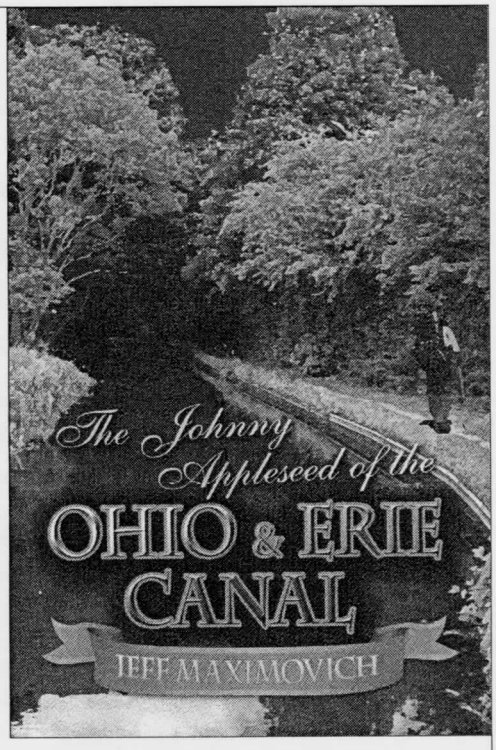
One of the most successful, volunteer efforts to develop a canal park is that led by Dr. David Beebe and his wife, Liz, along the original and enlarged Erie canals in Camillus, NY, west of Syracuse.

In this very entertaining book, Dr. Beebe talks about their experiences in building the park and of the canal itself and its structures. Included are sections about Gere's Lock 50, located on the east side of Camillus, and Nine Mile Creek Aqueduct. After a 35-year effort, the aqueduct will be completely restored to navigation in 2009. For anyone interested in canal history and preservation, this is a must read.

The book is available from the author, Dr. David Beebe, 109 East Way, Camillus, NY 13031 for $19.95 plus $4.25 shipping and handling (prepaid – no charges). See the park web site, www.eriecanalcamillus.com, for further information.

Reviewed by David G. Barber

THE JOHNNY APPLESEED OF THE OHIO & ERIE CANAL
By Jeff Maximovich



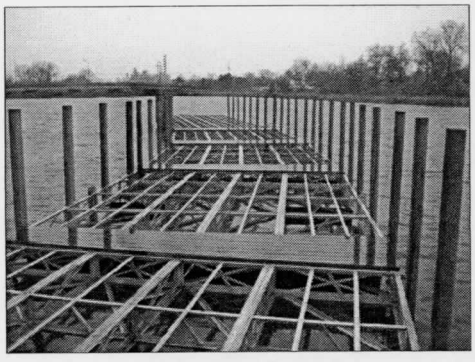
This is a different book about the Ohio and Erie Canal. The canal linked the Ohio River near Portsmouth, OH, to Lake Erie at Cleveland. This book is about the author's series of walks in the late spring and summer 2005 along the entire length of the canal, north to south. Mr. Maximovich also maintains a web site, www.thejohnnyappleseedofthe ohioanderiecanal.com, with photos of all the locks on the canal as well as other views. Included are underground views of the locks in Akron and the Wolf Creek Aqueduct in Barberton.

This is a very entertaining read of actually bashing the way through all the obstacles that are encountered when exploring abandoned canals today; however, the reader has to overlook the author's negative attitude to canal organizations and other canal enthusiasts. In addition, there are a few glaring errors that probably result from inexperience with canals in general and lack of contact with the folks that he is negative about.

As a bonus, in the back are summaries of the canal and its locks plus a table listing the GPS coordinates of each lock.

The book is privately published and retails at $24.95 via amazon.com or Barnes and Noble.

Reviewed by David G. Barber



OHIO & ERIE FLOATING TOWPATH

In December construction began on a floating towpath at the south end of Summit Lake in Akron on the Ohio & Erie Canal Towpath Trail. Floating about a foot above the lake on plastic supports, the bridge features a deck of Ipe wood, a rot-resistant Brazilian hardwood. When finished, it will extend 1645 feet. The bridge is being constructed on shore in 20-foot sections which are then floated into place. This towpath is less expensive than acquiring the right-of-way along the lakeshore. Historically, a floating towpath was used on the lake during canal days.

CANALENDER

April 17-19—"Wait 'Til You Get To Wabash" is the theme of the Canal Society of Indiana's spring tour on the Wabash & Erie Canal in Wabash County, Indiana. Bob & Carolyn Schmidt & Tom Castaldi. Questions? 260-432-0279; indcanal@aol.com.

April 19-May 2—Thru-hike, C&O Canal; reservations required; Barbara Sheridan, membership@candocanal.org; 301-752-5436.

April 24-26—CSNYS spring field trip, Chenango Canal. Canal Society of NYS. www.canalsnys.org. Norwich, NY; mbeilman@twcny.rr.com.

April 25—Middlesex Canal Association Spring Canal Walk, Winchester/Medford Medford, MA. Info: Robert Winters 617-661-9230 or Roger Hagopian 781-861-7868. Meet at the Sandy Beach parking lot off the Mystic Valley Parkway by the Upper Mystic Lakes in Winchester. Follow the route of the Middlesex Canal and see the aqueduct and mooring basin, segments of the canal bed and berm visible off the parkway, and the stone wall of the Brooks estate.

May 3—Spring Meeting Middlesex Canal Museum, Faulkner Mill, Faulkner Street, North Billerica. David Barber will speak on restorable canals. Check www.middlesexcanal.org for details.

May 9—Hands Along the D&R Canal for its 175th anniversary; 10 am; handsalongthecanal2009@yahoo.com; 732-340-1411; pick a spot and celebrate the canal's anniversary.

May 9—Spring canoe trip through the historic Santee Canal. Learn about the plants and animals in the swamp. 1pm-3pm; $15; pre-register by May 13th; meet at the Interpretive Center. Contact: Brad Sale, Old Santee Canal Park, 900 Stony Landing Road, Moncks Corner, SC 29461; 843-899-5200; parkinfo@santeecooper.com; www.oldsanteecanalpark.org;

May 16—Canal Authors Extravaganza to celebrate the 175th anniversary of the opening of the D&R Canal; Griggstown, NJ. For details, contact Linda Barth at 908-722-7428 or barths@att.net.

May 16-17—Two one-day canoe trips on the Monocacy River. Bill Burton, 703-801-0963; billburton@earthlink.net

June 7—Garden Party at the Port Mercer Canal House & Canoe the Canal Day on Lawrence (NJ) Canal Day. Boating on the canal followed by ice cream, music and tours at the historic Port Mercer Canal House. Call 609-844-7067 to reserve a canoe through the township and join other paddlers between 1-4.

June 27—Waterloo Canal Day, Waterloo Village on the Morris Canal, Byram, NJ; Canal Society of New Jersey, 11-4. Free admission and boat ride. Food, sales items. Museum open. 908-722-9556. www.canalsocietynj.org.

June 27-28—Heritage Tour Days, Monocacy Aqueduct, C&O Canal.

June 28-29—Two-day Mississippi River cruise—a fundraiser for the Canal Society of Indiana. Interested? Contact Bob and Carolyn Schmidt, 260-432-0279; indcanal@aol.com.

June 28—27th Schuylkill Canal Day; 9-4 at Lock 60. A day of family fun with much excitement. 610-917-0021; info@schuylkillcanal.com.

August 22—Wharton (NJ) Canal Day. Boat rides on the Morris Canal. Boat rides, canal lecture, vendors, food. 908-722-9556; www.canalsocietynj.org.

August 30—D&R Canal's 175th anniversary picnic at Prallsville Mills, near Stockton, New Jersey; noon to 4; 609-397-3586.

September 12-13—South Bound Brook (NJ) Canal Days on the D&R Canal. Boat rides, lectures, Abe Lincoln, and much more. 732-469-5836; www.staatshouse.org; info@staatshouse.org.

September 23-25—World Canals Conference, Belgrade, Serbia. Pre-conference trip, Sept 21-22; post-conference trip, Sept. 26-27. www.worldcanalsconference.org.

October 7-12—Thru-hike, C&O Canal; reservations required; Tom Perry, 301-223-7010.

October 16-18—Canal Society of Indiana's fall tour will explore the Ohio & Erie Canal in Piqua and New Bremen, Ohio. Questions? 260-432-0279; indcanal@aol.com.

September 19-23, 2010—World Canals Conference, Rochester, NY. www.worldcanalsconference.org.

FROM THE PRESIDENT (cont'd)

In all of this, I think that many don't understand engineering. The original and replacement structures were built to supply water to the canal at minimum cost. That would have been the objective the engineers worked to. If other factors are to be included, such as fish migration or safety over a low head dam, that is a redefinition of the goal and a new design can be produced that meets all of the now defined needs at some other cost. Then it is a matter of financing the construction costs of that solution. One thing that I think reduces the value of this canal section is the lack of boats to carry the public through the lock. Then the public would get the whole experience. Such boats don't have to be replicas. They could be metal ones with electric power. Or they could be outboard-powered such as the ones that the park service uses on the canals in Lowell, MA. Even better, would be the restoration and re-gating of locks 37, 39, and 40 so that such tour boats could navigate the whole watered stretch. The more used the canal is, the better it will educate the public and be protected from the well intended "anti" forces.

ST CATHARINES PORT PROJECT APPROVED

P.R.O.U.D. DISAPPOINTED WITH OMB DECISION NOT TO UPHOLD CITY'S REGULATIONS VOLUNTEERS STILL READY AND WILLING TO WORK WITH PORT DALHOUSIE DEVELOPERS

At the 2004 World Canals Conference in St Catharines, Ontario, Canada, we learned of a proposal to build a 20-story condo tower in the heart of Port Dalhousie's low-rise designated heritage district on the waterfront in that city. PROUD (Port Realizing Our Unique Distinction), a Port Dalhousie, community-based, all-volunteer organization founded in 1999, opposed the plan, saying that it is not the type of development that its members and the majority of residents wanted to see. "We are very disappointed. ...it is contrary to the intent of the municipal and provincial regulations that are in place to protect this important Heritage District in Port Dalhousie. Our lawyer is currently reviewing the 68-page decision in detail and has advised us to keep all our options open," stated PROUD President David Bergen.

PROUD has recently concluded participation in a grueling, extremely expensive, 21-week Ontario Municipal Board (OMB) Hearing on the proposal. "We participated in the process in support of the City because, like the vast majority of Niagara residents, and most heritage experts who testified at the OMB, our over 600 members recognized that the tower proposal was not in keeping with Port's unique heritage or with the policies designed to direct development in the heritage district." added Bergen.

"This was truly a community-wide effort and we thank the numerous individuals and organizations that supported us from throughout the Region and beyond. In particular, we commend our Mayor and Council for standing up for the City's approved regulations," said Carlos Garcia, PROUD's Executive Vice-President. PROUD is concerned that the ruling will lead to a development that is not consistent with applicable regulations and will restrict access by residents and negatively impact traffic and parking. This ruling is particularly disappointing given the **recent discovery of Lock 1 of the first Welland Canal** in Lakeside Park. The ruling by Hearing Chair Susan Campbell significantly weakens the Heritage Act and sets a precedent that makes not only Port Dalhousie but the other 91 heritage districts in the Province vulnerable to towers and inappropriate development.

A development that preserves the 'village feel' and historic character will truly revitalize Port Dalhousie and generate major economic benefits for our City and Region. PROUD continues to be ready and willing to work with this or any developer, and with the City, to seek and provide community input on proposals for the Port Dalhousie Heritage District. For more information, please call 905-937-7012 or visit www.saveport.ca.

A CANAL FOR WINDSOR, ONTARIO?

On 29 July 2008, Mayor Eddie Francis announced a development proposal for Windsor that included digging a new canal. The proposal would initially see the development of a marina, and then, in a later phase, a canal would be built as the focus for an urban village.

The creation of a canal where none previously existed has already proven successful in San Antonio, Phoenix, and Oklahoma City. A proposal is being studied to rewater the Old Erie Canal in Rochester, NY. There are also many European examples where formally derelict or under-utilized canals are now vibrant centres of their communities.

The plan has been well received by the business community, who are pledging $75,000 of private funding for the feasibility study. A preliminary estimate puts the project at $60 million.

Thanks to Bob Sears for permission to reprint this article from the Canadian Canal Society's newsletter.