World Canals Conference, Ghent, Belgium
September 7-10, 2015
By Rod Mackler

Nine members of the C&O Canal Association joined canal buffs from around the world for the latest World Canals Conference, held in September in Ghent, Belgium. We were well treated by our Flemish hosts, with a strong and varied selection of canal talks, good food and drink, and two canal cruises. The real star of the conference was the city of Ghent itself, built on canals at the confluence of the Lys and Scheldt Rivers.

The main venue for the conference was the 1826 Aula, the main lecture hall of the university. From the neoclassical façade to the domed lecture hall, it proved a great place for the lecture part of the conference. Not least, it had a good space for coffee breaks and lunches, the part of the conference where participants have a chance to mingle and compare notes. The Aula is located in the center of this walkable city.

Right around the corner is the building where John Quincy Adams and the American delegation

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Celebrating 100 Years Of Service
On August 25, 2016, the National Park Service turns 100!

The Centennial will celebrate the achievements of the past 100 years, but it is really about the future. It’s about kicking off a second century of stewardship for America’s national parks and for communities across the nation. The National Park Service is inviting the public to help celebrate.

The National Park Service and National Park Foundation are working closely with partners and stakeholders across the country to ensure that the Centennial is more than a birthday. They want people everywhere to embrace the opportunities to explore, learn, be inspired or simply have fun in their 408 national parks, as well as understand how the National Park Service’s community-based recreation, conservation, and historic preservation programs positively impact their own communities.

In celebration of the upcoming National Park Service Centennial, the National Park Foundation and the National Park Service kicked off the Find Your Park movement to inspire all people to connect with, enjoy, and support America’s national parks. They invite those who already know and love the parks and also the next generation of visitors, supporters, and advocates to join the movement at FindYourPark.com.

For canal park supporters this is an opportunity to show support for their favorite canal parks, areas and sites in the NPS system, including the Erie Canalway National Heritage Corridor, the C&O Canal National Historical Park, or another national park site.
World Canal Conference. Continued from page 1.

Stayed when they negotiated the Treaty of Ghent, ending the War of 1812. Adams, of course, was the one who turned the first spade for the C&O Canal.

Speakers at the opening session were dramatically introduced by trumpet fanfares. The formal talks included presenters from Europe, Asia, and North America, on a wide range of canal-related issues: history, ecology, tourism, and technology. A speaker from Parks Canada, for instance, told how the canal parks to our north get royalties from the hydroelectric power produced by their dams. A NPS speaker from the Erie Canalway told how his park provided pre- and post-visit materials for school groups and partnered with the National Parks Foundation for bus transportation, a program that sounded familiar to our ears. From South Korea, a map of the main canal to Seoul showed that the artificial waterway not only shortens the voyage and avoids narrow straits, but also eliminates the necessity of passing along the North Korean border.

The first day of the conference ended with an hour and a half guided tour of the city’s canals, on an open electric boat. It was a good introduction to the history and layout of the medieval town. Our second cruise was totally different, a voyage down...
the commercial canal from Ghent to Terneuzen, in the Netherlands. The 30-kilometer canal is lined with ocean-going vessels, depots for coal and gravel, refineries, chemical plants, and other industrial facilities. Again, we had a guide pointing out the history and points of interest while we feasted on hors d'ouerves and desserts.

Besides canals, one of the themes of the conference turned out to be World War I, whose centennial the Belgians are currently commemorating. One of the several outings was a trip to Flanders Field. We had already seen the impact of World War I on this part of Belgium, with a memorial plaque to the fallen in every small town, in each precinct of Ghent, and in the hall of the Aula for students who had died in the conflict. On our excursion, however, we learned the role of canals in the Great War, one hundred years ago. The Germans invaded neutral Belgium in August 1914 and swept with ease across the country, headed toward France. But in October, canal engineers came up with a way to slow that advance, flooding the fields and halting the forward progress. The result was a stalemate, four years of trench warfare, rather than an easy German victory.

On one of our field trips, to the Belgian coast, local hosts provided a lunch buffet of seafood, including fresh oysters, hake, paling,
salmon pate, herring, mussels, and tomatoes stuffed with baby scrimp. A high point of the conference was the gala dinner held in the Ghent opera house. As with all of our meals in Flanders, both the food was excellent and the venue superb.

On the Saturday following the conference, Ghent held its OdeGand festival, which celebrates music along the city’s canals. The festival offered over 60 one-hour concerts at a variety of venues around town. Your ticket was good for travel on canal boats between venues. The climax was a nighttime canal-side performance of West Side Story in the center of town, followed by a fireworks display.

Finally, the trip to Ghent provided an opportunity to visit other places in Belgium and neighboring countries. Pre- and post-conference tours took people to canal towns of Bruges, Kortrijk, and Lille. Several C&O Canal Association members — Pat White, Barbara Sheridan, Kerry Gruber, and Sandy Doveikis — took a hike in the Belgian Ardennes. Susan Van-Haften, Dan Van Haften, and I went looking for roots connections in the Netherlands, Germany, and northwestern France. Bill and Chris Holdsworth rented a car and visited World War I battlefields near Ypres, where trench warfare stalemate between British and Germans from 1914 to 1918. In addition to the dozens of British cemeteries and monuments, there is a small American cemetery with doughboys who fell during the final offensive.

The Scots were in Ghent in force, passing out samples of their best-known liquid product at coffee breaks, encouraging us to pack our bags for the 2016 conference, in Inverness, in the Scottish Highlands. And, in 2017, the conference will again be on the Erie Canal, in Syracuse, New York.

Part of the ramparts for the Casement at Ypres. Photo by Kerry Gruber
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- Best from American Canals #7 published 1996 $5
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- American Canal Guide #1: West Coast published 1974 $1
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- Canal Boat Construction Index (12 pages) published 1992 $2
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C&O Canal Association WCC representatives touring the site of an expanded lock at Harelbeke in southwestern Flanders, in hard hats and Wellingtons: (l to r) Kerry Gruber, Rod Mackler, Pat White, Dan Van Hafien, Sandy Doveikis, Chris Holdsworth, Bill Holdsworth, and Barbara Sheridan.
Photo courtesy of Rod Mackler
An 1862 Trip on a Frozen Canal
By Karen Gray

On January 3, 1862, a unit of Union sharpshooters was put aboard a C&O Canal boat for a trip up the frozen canal towards Dam No. 5. Among them was Corporal George Whittemore, Jr., some of whose letters to his father were passed down through the family and finally transcribed and annotated by a family member, Carol Patterson. In 2011 Ms. Patterson shared with me four of the letters that concerned travel on the canal, in exchange for assistance with understanding canal references and clarifying locations where possible.

Whittemore was a member of the Massachusetts Sharpshooters, First Company. Born in Boston on December 19, 1836, he was killed in action during the Antietam campaign on September 17, 1862. However, January 1, 1862 found him and his fellow sharpshooters encamped on a farm somewhere between the canal and Poolesville, Md. His letter of that date mentions that, in the future, they will have 18-pound rifles rather than those that weighed 25 pounds. He also tells of walking to Poolesville where he observed

... a young lady Zouave belonging to a New York regiment. She was dressed in a kind of bloomer costume with an army overcoat. She was very pretty. There are several of them in the New York troops.

In his letter dated January 5, Whittemore writes of their being moved from their tents to a canal boat at Whites Ferry and describes their accommodations in what was likely the cargo hold of a freight boat:

Some of our bunks (we brought our straw beds with us) were in the bottom of the boat, others on boards stretched lengthwise so as to form a kind of middle deck. It is something like stowing cattle but can’t be helped.

At the Monocacy the boat stopped (likely moored in the basin out of way of the main navigation channel) to wait for their captain to join it. Whittemore then left the boat with a party of eight others, to walk up the towpath. They passed pickets every quarter of a mile for about three miles (likely to Nolands Ferry) without difficulty but were then detained at the headquarters of the guards until Whittemore negotiated a pass to Point of Rocks for their group. It was at the Point that they had dinner (“of which the best article was coffee”) and spent the night in the St. Charles Hotel—all nine in the same room.

By the next morning their boat still had not caught up with them, delayed by the ice on the canal that Whittemore reported as being two inches thick. While waiting, they climbed the Catoctin Mountain ridge at the foot of which the canal passes and through which the lower Point of Rocks railroad tunnel passes. At the top they enjoyed the view and observed the “rifled cannon” — a ten-pound Parrott gun — on the summit that had driven off Confederates on the Virginia side who had shelled Col. John Geary’s camp. He also mentions the signal station farther along the ridge where telescopes were used to observe other stations on Sugarloaf Mountain to the east and Maryland Heights to the west. The stations were supplied with flags for signaling both day and night.

The boat finally did arrive at Point of Rocks, having followed a canal icebreaker. Whittemore and the others were ordered back on the boat, where the learned of trouble on the previous night. Members of the company had stolen a barrel of whiskey, been shot at by pickets, and gotten drunk, leading to a situation in which their captain
struck a man. Whittemore, whose letter is directed to his father, asks: “What do you think of all this for the first day out of camp of the Independent Company of Andrews Sharpshooters?”

The boat arrived in Harpers Ferry at 8 p.m. on January 6th in a thick snowstorm and bitter cold. As they continued (pulled by horses, as he specified), they entered country he describes as “wild and mountainous.” In what appears to be the area between Lock 36 and Lock 38, the ice was so thick that the iceboat could not break it until a gang of men, as well as the horses pulling the troop boat, were added to the icebreaker’s horses. When the icebreaker was two miles above where the troop boat had been left, the troop boat’s horses were sent back for it. They continued in this way until they reached the next lock and found that the ice above it had already been broken for them.

We don’t know what the civil war "iceboat" was like, but in Roy Bender’s oral history he describes an iceboat in the receivership era as a scow loaded with pig iron and pulled by about 20 mules. In his account the so-called iceboat was used to help boats caught in an early, unexpected freeze to get upstream to where each boatman following it preferred to leave his boat for the winter. If they couldn’t get up to the preferred location, the boats would be left in the canal at the point beyond which they could not continue. Ideally the canal would be closed before the first hard freeze and the boatmen would be told in advance and would be responsible to take their boats to where they wanted them to winter over.

The next letter is dated “Wednesday” (which would be Jan. 8) and Whittemore notes that they are near Dam 4 — not Dam 5 as he had indicated at the end of his previous letter. Interestingly, in neither the previous letter, nor this one, does he make reference to Big Slackwater, which raises a couple possibilities. One is that they passed those 3 1/4 miles of river navigation in the dark, and that the men down inside the boat were unaware that they were in the river for some distance.

It seems equally possible that the river was not frozen over as was the canal, due to its more-rapid current, and there may have been only pieces of ice forming on the Potomac. Whittemore’s reference to a lock with ice broken above it may actually have described their passage through Big Slackwater. Generally he does not display a clear understanding of the canal and its structures and if it were dark when they left the inlet lock and traveled up the river shore, he may not have understood the distinctive character of that passage. That would especially have been true if he were down in the boat’s hold where the troops may simply have been told that the ice was broken for a section upriver from them.

In any case, the difficulties that they experienced on their way to Williamsport were remarkable. Above one lock the water level in the canal was too low and their boat was stuck until more water was let in. Also ice was forming so rapidly that at times the boat breaking it got too far ahead and had to turn and come back to break ice again. At another location where the ice boat needed to be turned, the canal was too narrow to do so and the ice boat was hauled stern-first back towards the troop boat. Whittemore describes the canal as “brimful of ice, the cakes running one under another and freezing together.”

During their canal trip they are at risk of being shot at by Confederates on the opposite shore, and Whittemore reports that they have “a four pounder mounted on deck, extemporized from a stove funnel” that is “well calculated to frighten a rebel at that distance.” In this final letter of the four made available to me, Whittemore comments that he doesn’t know whether they shall go to Hancock by canal or road, but it appears that their canal adventure ended when they reached Williamsport.
Abba Lichtenstein

The society regrets to report the passing of ACS director Abba Lichtenstein, P.E. last March. Mr. Lichtenstein was the former President of A.G. Lichtenstein & Associates, which he founded in 1963. The firm specialized in the design and evaluation of bridges, aqueducts, and canal locks. He was a Civil Engineering graduate of Ohio State University and help develop national standards for the inspection and rating of bridges and waterfront structures. In 1988, he was accorded the Presidential Award of the American Society of Civil Engineers for his work in the restoration of the Roebling Delaware Aqueduct. He was a registered Professional Engineer in several states.

- Dave Barber

Robert (Bobbie) McAfee Styran

Robert Styran passed away on July 18, 2015 at the age of 88 in the Welland County Hospital. She will be deeply missed by her sister Elizabeth Charge of Aurora, ON, her nephews, Dick of Lethbridge, AB and Lawrence of Vancouver BC, as well as her great nephews Nathan and Mackenzie, great niece Erika, and friends and colleagues in the Niagara area and beyond.

Born and raised in Fredericton, NB, "Bobbie" had a B.A. and an M.A. from McMaster University and a Ph.D. from the University of Toronto (in History). She taught History at Brock University and later worked for the Ministry of Education in Toronto.

In St. Catharines she helped to found the Welland Canals Preservation Association and served as president of the Canadian Canal Society. She was editor of the Society's newsletter for several years and was an Honorary Life Member. A Director of the American Canal Society, she was also on the governing Council of Inland Waterways International. In that capacity she organized the Canadian Canal Society's memorable tour of English canal sites in 1996 and organized and chaired the 2004 World Canals Conference at Brock University.

She was the co-author of several books and articles on the history of the Welland Canals, including The Welland Canals, The Growth of Mr. Merritt's Ditch (Boston Mills Press), Mr. Merritt's Ditch, A Welland Canals Album (Boston Mills Press), The Great Swivel Link, Canada's Welland Canal (University of Toronto Press), This Great National Object, Building the Nineteenth-Century Welland Canals (McGill-Queen's University Press) and The Welland Canals Corridor Then and Now (Looking Back Press).

In recognition of her services to Canadian engineering history, she was given the W. Gordon Plewes Award by the Canadian Society for Civil Engineering in 2009.

In historical and heritage circles, her dynamism, intelligence and sense of humour were much appreciated. In lieu of flowers or sympathy notes, her family requests that a donation in Bobbie's name and memory be made either to the St. Catharines General Hospital/Niagara Regional Health or to the Canadian War Museum in Ottawa. Following Bobbie's wishes, no funeral or service was held.

- Robert Sears
Nolan T. Jones

Nolan Jones, age 88, of Sacramento CA, formerly a long-time resident of Winchester MA, passed away on July 14, 2015. Nolan was the longest serving President of the Middlesex Canal Association, having held the office for a total of about 18 years.

Nolan suffered a stroke about five years ago, from which he only partially recovered. Soon after, he and his wife, Joan, moved to California to be near Nolan’s daughter and her family.

In a recent birthday greeting, Betty Bigwood wrote: “You served as President of the Middlesex Canal Association longer than anyone and we thank you for your many years of service - all 18 of them. You handled our meetings with confidence and grace - the association was in good hands. We loved your aerial photographs taken when you flew over the entire length of canal - they helped in planning and understanding. You led more than your share of walks and with Joan often docented at the Museum.”

Born in Manhattan KS, Nolan served in the U.S. Navy during the final months of WWII. He was stationed in California, serving as an Electrician and Technician Mate, Second Class, in ETM School in San Francisco, Treasure Island. Following his discharge from the Navy, Nolan used his GI Bill benefits to attend the University of Nebraska in Lincoln. He earned a BS there, followed by a MS from the Massachusetts Institute of Technology, both in Electrical Engineering. Nolan was especially proud of being involved in early computers, including the “Whirlwind” while at MIT. Thereafter he worked his entire career for Mitre Corporation in Bedford MA.

Nolan married Beverly M. McCoy of Minneapolis MN who predeceased him in 1981. Subsequently Nolan married Joan Lloyd Borum with whom he enjoyed Democratic politics and exploring the historic canals of Europe, Canada, and the United States.

While in Winchester (1963-1985), he was active in the Unitarian Church, the Conservation Commission, and the Middlesex Canal Association. Nolan was an Eagle Scout and was very active in the Boy Scouts of America in various capacities for fifty years, earning the Silver Beaver award for distinguished service. Nolan’s interests included bridge, camping, conservation, historic canal preservation, and tinkering with electronics.

He is survived by his wife Joan, her children Christopher Borum (Michelle) of Minneapolis MN, Owen Borum (Jennifer) of Boulder CO and three step-grandchildren, and his children Susan Jones (David Wright) of Sacramento CA, Nolan Thomas Jones Jr of Mt. Carmel UT, and Cynthia Jones (Fred LaPlante) of Woodinville, WA, as well as his grandson Galen.

“The purpose of life is ... to be useful, to be honorable, to be compassionate, to have it make some difference that you have lived and lived well.” — Ralph Waldo Emerson.

Friends wishing to make a remembrance gift for Nolan may send a contribution to the Middlesex Canal Association, c/o Howard Winkler, 1010 Waltham St., Lexington, MA 02421.

— Bill Gerber
Driving along the Millstone Valley Scenic Byway is a trip back into the history of central New Jersey. The villages of East Millstone, Millstone, Griggstown, Rocky Hill, and Kingston offer the visitor a glimpse into the life of the valley as it was and still is today.

This natural north-south corridor in Somerset County, New Jersey is a rare oasis of natural beauty and historic integrity. It offers a glimpse into the past, where rich layers of history—from the earliest Dutch settlement through the Revolutionary War to the canal era—live on. Many of the valley’s roads follow original trails used by the Lenape to travel between their summer camps at the shore and their inland homes. These native inhabitants peacefully ceded their claims to the land as the Dutch and English arrived. The new settlers were eager to clear this fertile land for their farms and villages, but as new people arrived, the Lenape gradually moved away.

The roadways connecting major urban towns and waterways were crucial for troop movements during the American Revolution. General Washington led his tired, freezing soldiers northward after the Battle of Princeton on January 3, 1777. In the Kingston Cemetery, he held a “conference on horseback” with his officers. Here they made a key tactical decision to turn north and take the exhausted troops through the Millstone Valley to winter and rest in Morristown, rather than confront the British in New Brunswick. In June 1778 Washington marched the Continental Army through Rocky Hill and Kingston toward Monmouth Courthouse. En route, the General had tea with Mrs. Berrien at Rockingham.

Near the end of the war, the French General Comte de Rochambeau and his 4,000 troops passed through the Millstone Valley on their way to Yorktown, Virginia. Rochambeau met with Washington in Princeton, where they planned their strategy for the decisive Battle of Yorktown, which ended the American Revolution. The Washington-Rochambeau Revolutionary Route, a National Historic Trail, runs through the valley. About 600 miles long, the trail follows the route taken by the armies of Washington and Rochambeau en route to Yorktown in 1781. The Millstone Valley is also part of the Crossroads of the American Revolution National Heritage Area and the East Coast Greenway.

The visitor center for the byway is a restored bridgetender’s house next to the Delaware & Raritan Canal. The D&R Canal flows across the narrow waist of New Jersey, connecting the Delaware and Raritan rivers. Built in 1834, the canal was one of the most successful towpath canals in the United States and part of the Atlantic Intracoastal Waterway.
The canal was primarily used to transport anthracite coal and other goods that stimulated many industries. For over a hundred years, the sound of the conch shell echoed over the water, announcing the approach of canal boats to locktenders and bridgetenders. While Griggstown’s history goes back to the 1600s, it was in the 18th century that Benjamin Griggs built his mill on the Millstone River, near the present-day causeway. The village also supported a fulling mill, a stamping mill for copper ore, a blacksmith shop, a general store, and two taverns. Griggstown was home to John Honeyman, reputed to have been a spy for General Washington during the Revolution. Posing as a cattleman, Honeyman gathered information that helped Washington defeat the Hessians at the Battle of Trenton.

Farther south on Canal Road are the remains of the Atlantic Terra Cotta Company, which in its day produced ornamental clay tile used for architectural embellishment. The company’s work can be seen on the Philadelphia Art Museum and the Woolworth Building in New York. Enroute to Kingston, the visitor will see the historic Trap Rock Quarry and just beyond that the Rockingham State Historic Site. Rockingham served as General George Washington’s final Revolutionary War headquarters in 1783. Here he awaited news that the Treaty of Paris had been signed and the thirteen colonies were independent of Great Britain.

The town of Kingston grew up where the main road between New York and Philadelphia crossed the Millstone River. Long before the coming of the canal, Kingston was a thriving stagecoach stop with a number of taverns and inns. The Kingston Mill is to many a symbol of the town’s historic past. Today Kingston retains its charming character and small-town appeal.

Rocky Hill dates to 1702. A traveler in 1748 called it Rockhill, because it was covered with rocks so big it would take three men to roll them! Today Rocky Hill is a charming example of a 19th-century village, where visitors can see many architectural styles, including Federal, Greek Revival, Second Empire, Queen Anne, Carpenter Gothic, Italianate, and Bungalow.

Millstone Borough, once called Somerset Court House, was established at an important crossroad of north-south and east-west travel. This strategic location brought opposing armies here during the American Revolution. A daring foray of the Loyalist Queen’s Rangers, led by Col. John Simcoe, burned the courthouse, and so the name was changed to Millstone. It is the smallest municipality in Somerset County.

The canal and the railroad turned the village of East Millstone into a thriving commercial and manufacturing town. A factory that produced cornhusk mattresses later became the Fleischmann Distillery, the major industry in town for thirty years. The architecture of the churches and private homes make this a lovely stop for a stroll. It would be hard to find a 19th-century vignette as nicely preserved as Blackwells Mills with its picturesque garden and bridgetender’s house, lovingly restored as an art gallery and museum.

Reminders of the valley’s prosperous agricultural past can be seen along River Road, both down on the flood plain and up on the bluffs. New developments are set back, maintaining an aura of “old times.” The Van Derveer-Campbell Farm is one of several that have been placed in the Farmland Preservation Program, assuring that they will remain farms in perpetuity.

As hundreds of people come daily to hike, bike, fish, and canoe in the Delaware & Raritan Canal State Park, they discover the beauty of the Millstone Valley Scenic Byway. This route affords a charming glimpse of the rural past surviving in the heart of America’s most densely populated state. Follow the Millstone Valley Scenic Byway through natural areas, farmland, historic villages, and early industrial sites, linked by the tranquil ribbons of water that give modern New Jerseyans a sense of their 19th-century heritage.

Come often. Spend a day, an afternoon, or a lifetime, savoring the charm of this unexpected, rural oasis.
A three-lock staircase was completed in 1798 by Loammi Baldwin on the south bank of the Merrimack River. Each lock is 11' x 84', sufficient to accommodate the maximum boat allowed by the canal company, 9 1/2' x 75'. The width is based on Lewis Lawrence, who wrote in 1942's *Middlesex Canal*, p. 105, that locks generally were 10 feet wide at the bottom, 11 feet wide at the top. The length is based on George Rumford Baldwin's 1829 survey showing the distance between the first and last miter gate to be 3 chains, 80 links (250.8'). The lift of a lock is 8' based on Baldwin's 1830 profile showing that the difference in elevation between the highest miter sill and lowest is 24.31'. The lift of 24.31' from the Merrimack to the canal agrees with the 24' 6'' lift in the 1794 report of William Weston, the English engineer who was a consultant to the canal company. The report is Appendix 2 of Mary Stetson Clarke's *Old Middlesex Canal*, 1974.

Loammi Baldwin on March 13, 1797 wrote to Weston that the first course of granite “about 5 feet in breadth & 20 inches in height was all laid in Terras mortar.” (Lawrence, p. 25.) The granite came from Tyngsborough and the terras, a volcanic rock used to make a mortar that would harden underwater, was imported by chartered sloop from a Caribbean island. The 400 tons of terras delivered to the construction site cost $3800 (Lawrence, p. 24) which is ~ $1.5 million today based on Harvard president’s pay of $1,400 in 1800 compared to $640,000 in 2009. Given the great expense of granite blocks and hydraulic cement, the directors of the canal company chose to build the rest of the locks of wood with drystone retaining walls. The wood locks rotted. The granite locks survived.

In 1860, Samuel Hadley, the former locktender, sold the granite from the 62-year-old locks to the Nashua & Lowell Railroad. The sale was part of a plan whereby the railroad bought land the Canal Company had reserved for passage under the railroad when the railroad bought a right-of-way across canal company land in 1849. In 1860, the railroad intended to replace the iron bridge over the former canal with a culvert.

“Also all of my right and interest in the stone now remaining at the locks of said Middlesex Canal near said premises, with the right of entry upon and passage through my land, in a convenient manner and direction, for the purpose of removing and loading said stone on to the cars at or near where the said Iron Bridge now is, said right of entry and passage to continue for one year from the date hereof [April 21, 1860] for the stone of the upper lock, and two years from the date hereof for the remainder.” — North Middlesex Registry, book 23, p. 446.

Note that the railroad was not required to remove the granite. In 1911, Judge Samuel Hadley, the son of the former locktender, published the following:

“The only relics of this old public work at Middlesex Village are the collector’s toll house erected in 1832, which I have endeavored, with poor success, to save from the depredations of tramps and mischievous boys, — the cellar of the storehouse, and a large part of the stone-work of the lower lock, which although under the water of the inflowing river, is still intact.” — Samuel P. Hadley, “Boyhood Reminiscences of Middlesex Village”, Contributions of the Lowell Historical Society, 1911, Vol. 1, No. 2, p. 242.

The location of the lower lock can be determined from the railroad culvert which replaced the iron bridge in 1860, identified from the Nashua & Lowell 1914 valuation plans as #63C, 5' x 5' stone, at station 1447+14 from Nashua. The culvert is drawn midway between the abutments of the former bridge. The Boston & Maine has a 4' x 4' concrete post identifying it as 27.37 miles from North Station. After lengthening by the rail road at both ends (since 1860), the culvert outlet is currently a 42" x 48" concrete opening, and the inlet is a junction box with a 5' diameter pipe at the end of a ditch on the south side of the railroad. The junction box was likely built in 1983 after approval of the December 1982 plan for dividing the property.
Plotting George Baldwin’s 1829 survey in Google Earth, using the culvert and the Long Block, 139-143 Baldwin St, as known points, the accuracy of the distance along the line of the canal from the Long Block to the miter gates is likely ± 10’. The precision possible with 1829 compass bearings measured to a 1/4° with an estimated magnetic declination over hundreds of feet extended from the known point of the Long Block, is much less than that possible with distance by a Gunther’s chain. Rather than an imprecise location using compass bearings from the known Long Block location, the better solution is to assume that the junction box at the inlet to the 1860 railroad culvert is on the line of the canal. A back bearing from the junction box using the 1829 compass measurement will establish the line of the canal ± 10’ within fifty feet of the junction box. See also note 3. With these two measurements, the location on a horizontal plane of the miter gate between the first and second locks is known within a circle of 10’ radius.

The vertical location of the lower lock was measured by George Baldwin in 1830 at its lower miter sill as 83.25′ above a zero at the Charles River. The 83.25′ of Baldwin is equal to elevation 79.41′ (Sea Level Datum of 1929, NGVD29). For Baldwin and the conversion factor, see Townpath Topics, Sept 2013, p. 9). With a design depth of 3.5′, lift of 8′, and 1′ to towpath, total 12.5′, the top of the lock is el. 91.91′. As seen in the Google Earth photo, the ground above the first lock is paved parking lot.

In the parking lot are two manholes in the roof of the junction box at the inlet to the extended 1860 railroad culvert. The northern of the two manholes is at the outlet of a 5’ diameter reinforced concrete pipe into the junction box. Its rim is 11.9′ above the floor of the junction box and 10.9′ above the standing water in the box. When 10.9′ was measured, the gate at the Pawtucket Dam measured 4′-2½” which is el. 91.2′ (NGVD29). The rim of the manhole is el. 102.1′ (91.2 + 10.9) plus the rise in the headpond at the 1860 culvert, 6,600’ upriver of the dam, a rise much less than a foot. With the manhole rim at ground level, the top of the lock is 11′ below ground (102.1′ + rise - 91.9′, or 10.2′ + say 0.8′ rise).

The 11′ below ground is based on the first lock having 12½′ granite walls as described above, but the following description has 8′ walls for the first lock:

"That part of the Canal, which is in Chelmsford is 25 feet above the waters of Merrimack river, from which you ascend by means of three locks formed of split stone, laid in mortar. [The book as available on the internet has 25 written over a printed 3.] The lock next to the river is called the first lock. This is ninety feet long and twelve wide. The earth is removed below the bed of the river to prevent the undermining of the works, and then filled up with stones, on these a floor of oak timber, two feet square is laid; upon this another floor of similar timber is laid cross wise, and then a floor of three inch plank, all well spiked and tunnelled. On this base the walls are raised 8 feet high and 7 feet thick. The walls are constructed of hewn stone, taken from a ledge in the neighborhood, which is the property of the corporation. These stones easily split, and readily yield to the stroke of the hammer. The second and third locks are of the same length, and constructed of similar materials. The height of the second is 16’, that of the third 14 feet. The culverts
and gates are so well contrived, that a boat or raft may pass the three locks, in 8 minutes. The workmanship of these locks for neatness and strength is equaled by none in the United States.  

"The naturalist will be gratified to learn that on digging over the earth on the bank of Merrimack River, to lay the foundation of the locks, pine cones and charcoal were found at the depth of twelve feet from the surface, in a sound and unimpaired state, specimens of which are deposited in the museum at Cambridge. A small horn was also found at nearly the same depth from the surface, supposed to be that of a cow of two or three years old." History of Chelmsford by Wilkes Allen, 1820, pp. 73-74. Allen’s description also published in The Incredible Ditch by Carl and Alan Seaburg, 1997, p. 105.

Wilkes Allen’s description sets the top of the wall more like 15” below the manhole rim. Allen, born in Shrewsbury in 1775, graduated from Harvard in 1801, and not known to be a resident of Chelmsford until called as the minister of the First Church in 1803, was unlikely to have had personal knowledge of the building of the locks. He has the walls 7” thick and each lock 90’ long. Loammi wrote that the first course was about 5’ in breadth (Lawrence, p. 25); Western recommended brick 4’ 2” thick (Lawrence, p. 24); and George Baldwin in his 1829 survey measured three locks together at 251’. But Allen likely spoke with individuals who did have personal knowledge of the construction. Cyrus Baldwin, son of the builder, lived at the locks and asked Allen for his manuscript as agent of town, which paid for the printing of 400 copies.

Allen, after the title page: The top of the lower lock if 12½’ at 91.9’ is just below the top of the Pawtucket Dam’s 5’ flashboards, el. 92.0’. The top is 4½’ lower with Allen’s 8’ walls. Judge Hadley published in 1911 that “a large part of the stone-work of the lower lock, which although under the water of the inflowing river, is still intact.” The 1917 photo shows the water backed up through the railroad culvert over the lower lock.

“...cleaned out 1st Lock Middlx Canal stopped the Bucket machine I passed down the E. culvert & up the west marked “LB Oct. 20, 1796” on the mouth of E. Culvert bottom Stone.” — Loammi Baldwin, age 51, in Lawrence, p. 24, from the Baldwin manuscripts, Baker Library, Harvard.

The builder’s initials are likely still there.

Notes

1. George R. Baldwin’s 1830 profile of the locks is at: http://tinyurl.com/otbfyle. The locks are drawn with the same lift. The complete plan and profile are at: https://archive.org/details/Middlesex_Canal_Plan_and_Profile


3. The accuracy of the canal bearing would be confirmed by its being parallel as seen in the Google photo to the western boundary of the lot on the NW corner of Baldwin and Middlesex Sts., site of the old Middlesex Tavern, if the deed uses the canal as a basis for the boundary.

Reprinted from the September 2015 Middlesex Canal Association Towpath Topics by permission of the author.
Cutler's Grove
by Terry K. Woods

At the division of the old, brick Erie Avenue that cuts off from the current asphalt version, in Jackson Township, Ohio, just a bit north of Millport or Crystal Springs, lies an area that is steeped in canal and recreational history.

Asa Cutler, and others, often brought boat loads of Massillonians up the canal 4 1/2 miles to this place to have picnics and outings during the 1880's and 90's. Later, in the 1920s, when Erie Street was extended along here, there was a 'wide spot' area made above this point where tired motorists could pull over and enjoy the site. Some of the old concrete guard rail supports along this turn-off and canal could still be seen prior to Stark Park's acquisition of the area. There are still a few of these posts visible along a remaining bit of Old Erie. Still later, when Route 21 was built along the same side of the river, that by-passed portion of Erie Road and the old side-cut became a popular park and recreational area.

In 1938-39 the State Conservation Board allocated $25,000 to turn ten-plus miles of the canal and towpath into a recreational area between the feeder above Canal Fulton and a new concrete dam across the canal above Lake Ave. in Massillon. At this time two Davenport Bow-String Truss Bridges were taken out of retired storage at the Stark County Jail. One was installed across the canal at Cutler’s Grove to allow people to cross to this tranquil spot and the other was installed a bit south of the crossing of the canal by Cherry Street in Canal Fulton to allow access from Erie Avenue to the village park. The Civilian Conservation Corps (CCC) supplied labor for this project and the Work Projects Administration (WPA) provided additional funding. The total expenditure for this project totaled nearly $300,000. Most of this outlay was for labor costs. Upwards of 500 men were employed on this project, which lasted from October 1938 until mid-September, 1939. Early in my Goodyear career I worked with a fellow, Dick Rousch, who, as a 19 year old, worked for the WPA in this area. This canal park was officially begun on October 13, 1938 at a spot “near Crystal Springs” (Cutler’s Grove).

Shortly after World War II, the Park Motel was built just north of and to the east of the old brick road running past Cutler’s Grove. A number of individual cabins were constructed with pine trees planted between them along the west shore of a pond that was stocked with goldfish. An office was constructed at the northern edge of this complex on the old Erie Street with access, east, to the current Erie Avenue. The motel was abandoned in the early 1950s when a new Route 21 was constructed on the other side of the river and the whole area fell into disrepair.

Several service clubs from Massillon restored the Crystal Springs Davenport Bowstring Truss bridge across the canal in the early 1960s. A proposal to convert portions of the canal lands from Cleveland to New Philadelphia into parklands was entertained by the State in the late 1960s. The Canal Fulton Library no doubt still has one or two copies of the illustrated brochure describing the project. A mini-park was slated for the Crystal Springs/Cutler's Grove area. The project died after a change of political administration in Columbus in the early 1970s.

I bought the property (three and a quarter acres, including a stretch of the old brick road and the old motel complex) in 1972 to “save it” until it could be turned into a park. In 1973 the Jackson Township Trustees required me to raze the buildings. I hired a bulldozer and operator to knock the buildings down and shove them into the northern portion of the ‘pond’ that was dry by then. The southern portion still held a goodly depth of water and contained some gold carp over a foot long.

Stark Parks acquired the property in 1999 with the promise that the area would be turned into a park. The Stark County Engineers took great care in removing the Davenport Truss Bridge and setting it aside for future use in March of 2002. In October 2002, Stark Parks had a parking lot constructed here. A sub-contractor’s work crew pushed the iron truss bridge away from their work site with a bulldozer, effectively destroying it’s immediate reuse. The carcass of this bridge is still where the bulldozer dropped it. Perhaps, with local support, some effort could be taken to preserve or restore it.

American Canals, Fall 2015
A few years ago, Todd Clark, then Education Manager at Stark Parks,\(^1\) listed some of his ideas for this area:\(^2\)

**INTERPRET:**
- River as earliest transportation route
- Canal-era transportation.
- Railroad-era transportation.
- U.S. Highway - originally designated as US Route 21, (1939) decommissioned in early 1950s when new Route 21 was constructed along west side of river.
- Cutler’s Grove rest area ‘wide spot’ along old Erie and old Route 21.
- Pedestrian footbridge connecting towpath with WPA recreational area.

**ACTIONS:**
- Preserve remaining concrete posts, curbing and sub-roadbed of Old Erie.
- Restore wire/chain links between posts.
- Use Davenport Bowstring Truss Bridge as a wayside exhibit.\(^3\)

As I mentioned above, these ideas were transmitted a few years ago. About that time, many of the magnificent trees along Old Erie were cut down and the stumps ground and mulched. Then nothing further was done and the area has gowned up now in high weeds and scrub brush—but there is always hope.

**Notes:**
1. Todd Clark left Stark Parks for a position with Kent State University at the end of October.
2. E-mail, Clark to Woods, February 2, 2012.
3. Bob Fonte, Director of Stark Parks recently told me there is a project “in the works” to refurbish the Davenport Bow-String Truss Bridge.

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**C&O Canal Culverts**

The C&O Canal was originally built with over 185 culverts. Over 150 still exist in one form or another. Many are road culverts, like the lesser known Culvert 140, pictured below. It is located between Four Locks and McCoys Ferry, and provided access to a community in Virginia (now West Virginia). Visit [www.flickr.com/photos/steve-1828/collections/72157639962266376/](http://www.flickr.com/photos/steve-1828/collections/72157639962266376/) to view a collection of the culverts on the C&O Canal.
ATTENTION CANALLERS:
TRIP TO THE PANAMA CANAL PROPOSED

Members of several canal societies across the country have expressed interest in traveling through the Panama Canal, seeing the newly expanded locks, and visiting local sites. Bob Schmidt of the Canal Society of Indiana and Linda Barth of the D&R Canal Watch are investigating a trip with Road Scholar (formerly Elderhostel) that would include transiting the canal, viewing or sailing through the expanded locks, and seeing nearby sites. A description of the trip is given below. If you would like a detailed itinerary, you can email Linda and/or visit the website below.

We are trying to get an idea of how many people might be interested in such a trip in January or February of 2016, the dry season. We would like to know how many people have a definite interest in this tour. This is NOT a reservation. If you are interested, please email either Bob Schmidt (indcanal@aol.com) or Linda Barth (barthlinda123@aol.com) and we will add your name (and those of family and friends) to our list.

GRIT AND GLORY: EXPOSING THE PANAMA CANAL – A ROAD SCHOLAR (FORMERLY ELDERHOSTEL) TOUR

www.roadscholar.org/n/program/pricingOptions.aspx?dID=1-770ZMF

Or visit www.roadscholar.org and in the search field at the top right, type in Program #9901RJ

Prices shown are per person: $1698 double occupancy and $2093 single occupancy.

The Spanish thought about it. The French drew plans for it. In the end though, it took a revolution, technology, money, determination, and grit to complete the Panama Canal. On this unique journey, traverse the canal by boat and learn about the epic struggle to carve a nautical shortcut from one ocean to another. Learn about the canal’s construction and its impact on world history, commerce, and medicine.

Highlights:
• Learn about the history of the Panama Canal during an all-day transit with commentaries and discussions aboard the boat.
• Witness the workings of the busy Miraflorres and Gatun Locks and the Alajuela Dam.
• Board the transcontinental train at Colon for a historic ride alongside the Panama Canal.

Program Notes: Due to the popularity of this program the group size has been limited to 54.

Activity Notes: Walking and standing for up to 90 minutes at a time in hot, humid weather.

Itinerary Summary: Arrival Panama City, 3 nights; Panama Canal transit to Colon, 1 night; train to Panama City, 1 night; departure.
November 7, 10:00 a.m., D&R Canal Walk: Hike 5.8 miles on the D&R Canal towpath from East Millstone to Lock 11 in South Bound Brook (the meeting place) or choose the 2.7-mile walk to Zarephath. Leader: Bob Barth. For additional information contact Bob Barth at 201-401-3121 or bbarth@att.net.

November 28, 10:00 a.m., D&R Canal Walk: Hike 5.3 miles on the D&R Canal towpath from Landing Lane bridge to Lock 11 in South Bound Brook (the meeting place), across from the post office on Canal Road. Leader: Bob Barth. For additional information contact Bob Barth at 201-401-3121 or bbarth@att.net.

March 5, 2016, Canal Society of New York State Annual Winter Symposium: Monroe Community College in Rochester, New York. For further info visit www.newyorkcanals.org/explore_symposium.htm.


BBC Offers TV Series About Great Canal Journeys

Canal enthusiasts may enjoy a new TV series, Great Canal Journeys, from the British Broadcasting Company. Actors Timothy West and Prunella Scales celebrate their 50th wedding anniversary by taking viewers on a series of trips along famous canals. The first season features four canals:

- Kennet and Avon Canal in southern England
- Rochdale Canal in northern England
- Llangollen Canal in Wales
- Canal du Nivernais in France

Tim and Pru (as the series refers to them) are well suited to their role as hosts of the series. They have owned a canal boat during most of the marriage and have been prominent in their support of canal restoration. In 1990 their boat was the first to travel the full length of the newly restored Kennet and Avon. Pru is most famous for her role as Sybil in the 1970s comedy series Fawlty Towers. Tim’s long career includes roles in EastEnders and Edward the King. The couple’s experiences in Great Canal Journeys gain some poignancy from the disclosure that Pru suffers from memory loss.

You can view episodes of the series on YouTube at www.youtube.com/watch?v=8zRI7xwN_mU. I wouldn’t be surprised if the series appeared in WETA-TV’s UK channel at some point in the future. My wife and I learned of the series serendipitously. We were hiking at Hatton Locks in Warwickshire in June 2015 when we saw Tim, Pru, and the film crew working on season two.

— Bill Holdsworth