

AmericanCanals

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The Second Watered Section of the C&O Canal

The second watered section of the Chesapeake and Ohio Canal spanned three aqueducts over 40 miles and was watered by Dam 3 near Harpers Ferry. An interesting account of the construction and operation of this section of canal by Karen Gray starts on page 12.

Image – Restored canal prism across the Catoctin Aqueduct, C&O Canal – Photo by Steven Dean

Potomac Heritage NST

The Potomac Heritage National Scenic Trail is a treasure in the national trails system that many of us live right next to or travel on every day and don't even realize it. The C&O Canal is a key feature of this system, and it travels through river country in Western Pennsylvania as well. Visit page 8 to discover the treasures that can be found in this vast trail network, and even have a chance to help document the features of this wonder.

Image – C&O Canal prism leading to Paw Paw Tunnel south portal – Photo by Monica Larcom, National Park Service



American Canals

BULLETIN OF THE AMERICAN CANAL SOCIETY

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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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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.

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This issue of *AMERICAN CANALS* includes our annual *CANAL BOAT RIDES IN THE U.S. AND CANADA*. The guide is updated based on information available from the boat vendors.

We recommend that you check ahead with any of the boat operators before undertaking a canal trip. Schedules, pricing and availablity can often change for a number of reasons. Facebook is a very useful tool for obtaining the most up-to-date information. Vendors who are on Facebook are identified in the guide.



Lowell National Historical Park - Courtesy NPS

American Canal Society Sales

The Society has the following items for sale:

Best from American Canals #2	published 1984	\$4
Best from American Canals #5	published 1991	\$4
Best from American Canals #6	published 1993	\$5
Best from American Canals #7	published 1996	\$5
Best from American Canals #8	published 1998	\$6
American Canal Guide #1: West Coast	published 1974	\$1
American Canal Guide #2: South, NC to FL	published 1975	\$2
American Canal Guide #3: Lower MS & Gulf	published 1979	\$3
American Canal Guide #4: WV, KY, Ohio River (Photocopy)	published 1988	\$3
American Canal Guide #5: DE, MD, VA	published 1992	\$3
20 year American Canals Index 1972-1992	published 1992	\$3
Canal Boat Construction Index (12 pages)	published 1992	\$2
Picture-Journey Along the Penn. Main Line Canal	published 1993	\$10
ACS Burgee (blue on white cloth)		\$15
ACS cloth sew on patch (2" x 3" red, white & blue)		\$3

Special Offers – while stocks last

Back issues of American Canals - free to members – enquire for a list of available copies and mailing cost.

An ACS bumper sticker ("Support Your Local Canal" or "Restore Your Local Canal") will be sent **free** with each order

Shipping and handling: Orders can also be sent by mail with a check payable to American Canal Society to 24 Northview Terrace, Cedar Grove, NJ 07009. **Include \$3 postage for first item and \$1 for each additional item** for Media Mail within USA. Enquire for other destinations and expedited delivery. Allow for your order to take up to 4 weeks to dispatch. Email Sales.AmericanCanals@gmail.com for further information.

2017 World Canals Conference Coming to Syracuse Marriott Downtown Syracuse September 24-28, 2017

Mark your calendar for the World Canals Conference (WCC2017), Our Vital Waterways: Agents of Transformation.

WCC2017 is set to take place September 24-28 at the Marriott Downtown in Syracuse. The conference is expected to draw hundreds of international delegates and thousands of local and regional residents to waterfront events, resulting in a more than \$2 million indirect economic impact for the city of Syracuse. The conference will be held as the historic Erie Canal commemorates its bicentennial.



Erie Canal | Syracuse, New York | USA

WCC2017 brings together hundreds of canal enthusiasts, professionals and scholars from around the world to discuss canals and inland waterways as a means to promote tourism, spur economic and community development, improve environmental quality, and exchange best practices on protection strategies for historic sites. WCC2017 will focus on canals as agents of transformation.

Be a guest and a speaker. WCC2017 is seeking presenters for the conference. Do you have experience to share, lessons learned or innovative ideas on the topic of Canals as Agents of Transformation? The call for presentations is now open. We're looking for engaging sessions on innovative development and successes in leveraging historic, cultural and natural assets to drive transformation.

The conference is co-hosted by the New York State Canal Corporation, Erie

Canalway National Heritage Corridor and Visit Syracuse, and sponsored by I Love NY and National Grid, along with many other businesses and foundations.

To receive updates, register or submit a presentation proposal, visit wcc2017syracuse.com, (a) WorldCanals on Facebook, Twitter and Instagram.



Allegheny Portage Railroad National Historic Site

Several C&O Canal Association members took a field trip in November to the Allegheny Portage Railroad National Historic Site in Gallitzin, Pennsylvania. Despite "Railroad" in the name, this is a canal site on the Pennsylvania Mainline Canal. Further information is available at www. nps.gov/alpo/.

The goal of the Pennsylvania Mainline Canal, financed by the state, was to unite Philadelphia and Pittsburgh, creating a viable alternative to the Erie Canal and Chesapeake and Ohio Canal, and bringing prosperity to Pennsylvania. The Alleghenies might have seemed to be an impossible barrier, but not to these canal visionaries. They conquered the mountains by building a series of inclined planes that provided a direct route over the mountain and easy passage for all modes of travel, not just canal boats. The portage opened in 1834 and operated until 1857 when it was bypassed by the New Portage Railroad, using a different route, and ultimately by the Pennsylvania Railroad.



Above – restored engine house; Below – inclined plane dips to the east All photos by Pat White



The series of 10 inclined planes (five on each side) was powered by stationary steam engines that turned endless ropes. Boats, railroad cars, and other conveyances were loaded on flatbed cars that were attached to the cables. The longest canal boats could be divided in half for passage over the mountain and reassembled at the canal on the other side.

The Summit Visitors Center has many pertinent displays and a nice video of canal times and operations. The video included a brief glimpse of a mule-drawn boat in a lock. Guess whose lock, boat and mules? Hint: which canal in the National Park Service system has working locks and mule drawn boat trips? Next to the Visitors Center, a display at a restored engine house explained the operation. Inclined Planes 6 to 10, now grassy, drop down to the east from the engine house. Inclined Planes 1 to 5, in the western end, are apparently not part of the historic site, although to the west the Staple Bend Tunnel, first railroad tunnel in the U.S., is



Above – Culvert 1733 beneath Inclined Plane 10 Below – Culvert 1532 on Inclined Plane 8



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Jill Craig surveys the Skew Arch Bridge, which crosses the inclined plane

part of the site. The tunnel was not investigated – good excuse for another field trip. We set out to investigate the inclined planes on the east.

Slightly downhill from the engine house, Inclined Plane 6 crossed a road and the builders did the obvious thing: they built a stone arch bridge over the inclined plane. A trail continues almost 10 miles down the mountain; we drove. About halfway down the mountain, there was a chance to investigate part of the New Portage Railroad route and Inclined Plane 8, which had a beautiful stone culvert. More culverts were found at the base of the mountain on the Foot of Ten Trail, a short circuit trail to the lowest inclined plane. Plane 10 seemed gentle compared to Plane 6 at the top of the mountain.

A return to visit other Pennsylvania Mainline Canal sites, including the tunnel and the New Portage Railroad route, will occur in the future. If you are interested in these field trips, contact hikemaster@candocanal.org.

> Pat White, with Marjorie Richman, Jill Craig, and Alice Johnson

The Mystery Stone of the Monocacy Aqueduct

In 1993, March 12th to be exact, I was a Level Walker volunteer on the C&O Canal and noticed a seemingly disturbing sight – a loose stone under the first arch of the seven arch Monocacy Aqueduct. Sure it was a sign of imminent disaster for the already weakened aqueduct, I rushed home to mail a quick report to the level walker chair, Karen Gray.

The loose stone has a bit of history, and has existed for some time. It is related to a longitudinal crack in the aqueduct, and was documented in *Monocacy Aqueduct on the Chesapeake and Ohio Canal* by Robert J. and Elizabeth Perry Kapsch. During the stabilization of the Monocacy Aqueduct, completed in 2005, the stone was left as it was. It is quite secure in its present state.

I am now the chair of the level walker program. Level Walkers and other volunteers still dutifully report the loose stone to me. I thank them for their diligence and advise that "we'll keep an eye on it."

- Steve Dean



The Potomac Heritage National Scenic Trail Expanding on America's Best Idea By Monica Larcom

Thousands of tired, nerve-shaken, over-civilized people are beginning to find out that going to the mountains is going home; that wildness is a necessity; and that mountain parks and reservations are useful not only as fountains of timber and irrigating rivers, but as fountains of life.

- John Muir, Our National Parks

It's January and a crisp fifteen degrees along the snowy path of the Great Allegheny Passage in Frostburg, Maryland. There is a solid chill in the air and an even denser silence. In summer, on the "GAP" trail, you can't go

more than a couple of minutes before seeing someone buzzing past on their bike headed to Pittsburgh, Pennsylvania or Cumberland, Md., but today there are only a few withered winter berries and clouds floating over the path.

It's not always easy to answer the question "What is the Potomac Heritage National Scenic Trail?" If you've done any amount of hiking, biking, or paddling along the Potomac River there is a high likelihood you have been on part of the Potomac Heritage Trail network (PHT) but didn't know it. The PHT is, after all, over 900 miles of existing or planned PHT "segments." It's a network

connected by agreements, easements and partnerships that represent some of the most popular destinations in Pennsylvania, Maryland, the District of Columbia, and Virginia.

Not all of the PHT partners are located on the banks of the river, however. Some are farther away, like Ohiopyle State Park in western Pennsylvania. All partners are connected by their location in the Potomac and upper Youghiogheny watersheds, and on the nearby fringes of the Chesapeake Bay.

A feasibility study for PHT was completed in 1974, motivated by the National Trails System Act of 1968, an effort



A late summer visitor at Occoquan Bay National Wildlife Refuge in Northern Virginia – All photos by Monica Larcom, National Park Service, except as indicated

to create and preserve places for outdoor recreation. The Potomac Heritage Trail was formally authorized on March 28, 1983 as part of the National Trails System. Since then, National Park Service staff have provided coordination

> and partnerships between representatives of state parks, national parks and monuments, county museums and historical cities, as well as volunteers and nonprofit organizations.

> The Potomac Heritage Trail network fits within a rapidly growing niche in the National Park System that combines outdoor recreation in the form of long-distance nonmotorized travel and conservation efforts. Don Briggs, Superintendent of the PHT since 2001, is an avid outdoorsman himself and a passionate collaborator and advocate for trails, outdoor recreational tourism and land conservation. As Briggs states,

"The PHT is part of the same system, like the Pacific Crest or the Appalachian Trail, but is evolving as a braided network of trails, for nonmotorized travel, between the

> mouth of the Potomac River and the Allegheny Highlands in Western Pennsylvania, with the C&O Canal Towpath as the spine."

> If you follow one of the myriad through-bikers southeast along the GAP through the Big Savage Tunnel (closed from December-April each year) to Cumberland, she will often follow the GAP to mile-marker 184.5 of the C&O Canal, and continue along the Potomac.

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System Act of 1968, an effort Potomac Heritage Trail Network - Courtesy of the NPS

When you reach D.C., there is no lack of biking or hiking trails, many of which are segments of the PHT network. If you take the Mount Vernon Trail and swoop down

to Mount Vernon, you can continue on to Woodlawn Manor, the transplanted Pope-Leighey house of Frank Lloyd Wright's Usonian heritage, and Washington's Gristmill and Distillery, which today offers malts and flour.

Continue southwards on the southern Maryland or Virginia side of the river, and you'll encounter many more routes and trails maintained by more PHT partners, as well as historical sites and landmarks.

As a National Scenic Trail and a "national park" in designation, but not necessarily in location, the PHT is a prime opportunity to foster coordination between and among volunteers, nonprofit organizations, business interests and local, regional, state and federal agencies to conserve and promote outdoor recreation, historic, cultural and scenic resources in a national context.

Routes in Stafford and King George counties including the Dahlgren Railroad Heritage Trail were recently designated as part of the PHT; a reroute of a Laurel Highlands Hiking Trail section was completed by a Student Conservation Association crew; new trailhead signs are being produced along the PHT bicycling route in southern Maryland; and the gap between Grist Mill Park and Mason Neck, south of Mount Vernon, is receiving considerable at-



Four Locks at C&O Canal Mile 108.8 in early fall

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Kayakers on the Potomac River during a Paddle Potomac! event at Edwards Ferry, near C&O Canal Mile 30

tention. The NPS PHT office and others have sponsored numerous projects throughout the PHT network, including an assessment of the C&O Canal Towpath that will be used

in the future to advise repairs and resurfacing efforts.

Recreation and interaction with nature are both important parts of conservation, which also means exposing the younger generations to all that nature holds and can do for us. Recreation, when done in a renewable, considerate way reminds us of the value of the natural resources we possess—and why these forests, rivers, mountains and valleys are worth sustaining.

When hiking a trail, whether it be to your favorite fishing spot or a national scenic trail, it's likely we are more preoccupied by where we'll place our foot next than we are with the question "Who maintains this trail?" or "What do I need to do to keep this trail?" We don't ask ourselves, "What would I do if this view were obstructed by a power plant, or a shopping center?" With the increase of

urbanization in the tri-state area, if you aren't asking these questions, now is a good time to start.

The National Park Service and partners are repurposing places like the Civil War Defenses of Washington into a green beltway of recreation, history, and cultural and societal revivification. Efforts like those in Piscataway Park and in the Mason Neck region have preserved the same views that George Washington enjoyed in his days at Mount Ver-

> non, illustrating ways that this trifecta of history, recreation, and conservation can become the norm.

> Recently the NPS and partners have been increasing attention to the many scenic resources along the PHT. Through an objective process of inventories and site visits, we're attempting to highlight the "scenic" aspect of the Potomac Heritage National Scenic Trail. Partners, other stakeholders, and many volunteers are helping to highlight local scenic views along the trail.

> This grassroots approach to conservation is helpful in a lot of ways: It helps to inform and engage, and it helps to get people outside. This is why we are asking for your help. If you go over to the NPS Potomac Heritage Trail website at nps.gov/pohe/learn/enjoy-the-view.htm, you can

take a look at the list of scenic views identified to date. You'll notice that this list is nowhere near complete, and there may be a few obvious (at least to you!) views that are absent.

Next time you are at a PHT-related place (you can check out all the sites under our Get Involved; "Partners" page), whether it be on the Northern Neck of Virginia or in western Pennsylvania, keep an eye out for a scenic view that you want to see preserved. Snap a picture, and send us the location, picture, and directional orientation of the view, and compare it to our list.

You can email us directly at pohesocialmedia@ nps.gov, or mail your information and photo to:

Potomac Heritage NST Office P. O. Box B Harpers Ferry, WV 25425

Happy trails!

Layout design of this article and all photographs, except as indicated, by Monica Larcom, National Park Service.



Meadow Mountain north trailhead in Garrett County, Md.

Monica Larcom is a writer and photographer who graduated from the University of Arizona. She recently moved to Maryland to become the SCA Digital Media Coordinator Intern for the Potomac Heritage National Scenic Trail and the C&O Canal National Historical Park. Contact her at mklarcom@gmail.com or view a sampling of her work at monicalarcom.journoportfolio.



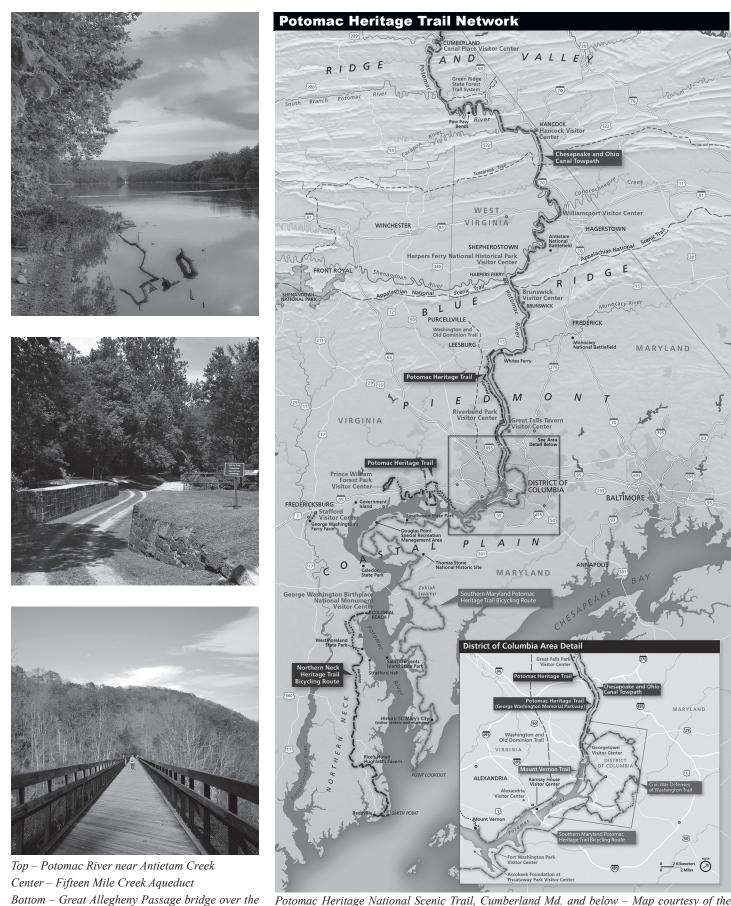
Potomac Heritage National Scenic Trail, Cumberland Md. and above – Map courtesy of the National Park Service



Above - Bikers on part of the Potomac Heritage NST – Photo by Don Briggs, National Park Service Below - View from C&O Canal of Amtrak train crossing the Cacapon River – Photo by Steve Dean



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Potomac Heritage National Scenic Trail, Cumberland Md. and below – Map courtesy of the National Park Service

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Youghiogheny River

Accompanied by the Past by Karen Gray

History is the witness that testifies to the passing of time; it illumines reality, vitalizes memory, provides guidance in daily life, and brings us tidings of antiquity. Marcus Tullius Cicero (106– 43 BCE), Pro Publio Sestio

The Second Watered Section of the C&O Canal: Miles 22.12 to 62.27

By 1832, the shallow-draft boats and rafts navigating the often rocky Upper Potomac (i.e., above tidewater) were able to use the first section of the C&O Canal to open to navigation. Entering by Dam 2's inlet channel and lock that waters the 22 miles to Rock Creek, the boats could finally bypass, on a calm waterway, three major falls: the Seneca, Big and Little Falls—as well as some of the major rapids on the river. In many ways those lower 22 miles constituted one of the most challenging sections of the canal to construct, as it must climb from tidewater up onto the Piedmont Plain, which required an average of one lock per mile (i.e., Locks 1 thru 22, with the first 20 built in the first 14.3 miles).

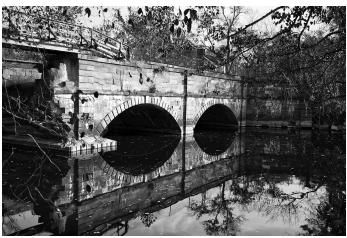
Lock 23 (now known as Violettes Lock), like Locks 24 through 34 above it, was not watered until the canal from Dam 3's inlet and all the structures downstream to the first watered section, were ready in the 1834 boating season. The 13 miles between the Monocacy Aqueduct and Brunswick are part of the second section of the canal to open to navigation that encompassed Mi. 22.12 to 52.27.

Although the 40 miles between Dams 2 and 3 required only a dozen locks (Nos. 23 through 34), it required three aqueducts, two river locks (the latter at Edwards Ferry and Harpers Ferry), and culverts originally numbered from 70 through 95 (although not all can be documented today). This section did not, however, require building the dam that creates the pool tapped by the inlet structures at its upper end. Dam 3 (as it was known to the canal company), was the Government or Armory Dam that provided water on the then-Virginia side of the river to the Harpers Ferry Armory canal. It was never the property of the C&O Canal Company. The Dam 2–3 section also includes the four narrow areas that led to the dramatic legal battle with the B&O Railroad lasting from June of 1828 to January of 1832.

The contract for the Monocacy Aqueduct, let in August of 1828, appears to be the canal company's first construction contract. The expedient issuance of that contract reflected everyone's recognition that it was a work of unique size and importance at the time when a tunnel was not yet seen as a necessity in the mountainous region east of Cumberland. Comparing the three aqueducts on the section of the canal between inlets 2 and 3 is illuminating:

Aqueduct	Length & Arches	Construction Years	Cost	
Seneca	116 ft. between abutments; 3 arches	October 1828 – Early spring, 1832	\$24,340.25	
Monocacy	438 ft. between abutments; 7 arches	Aug. 20, 1828 – May 1833	\$128,859.23	
Catoctin	92 ft. between abutments, 3 arches	Feb. 25, 1832 – Feb. 1834	\$33,325.92	

A rarely-recognized fact about the Seneca Aqueduct: It's waterway is only 15 feet wide due to the fact that it is connected to Lock 24 at its downstream end. On the other hand, the Monocacy and Catoctin had waterways that were 25 ft. wide.



The first and second arches of the Seneca Aqueduct. The third arch was washed out by Hurricane Agnes in 1972. Photograph by Steve Dean

The construction of the Monocacy involved two remarkable men. The first is Charles Ellet, Jr. of Bucks County, Pennsylvania, who was hired as one of the original assistant engineers on the canal when construction began in late 1828. Only 18 years of age at the time, he had little formal education and probably no substantive engineering experience when he applied for work on the C&O. However, he arrived with a letter of recommendation from his work assisting surveyors on Pennsylvania's new canal to be built along the North Susquehanna, and almost certainly that alone got him that entry-level engineering job.¹

Ellet appears to have been a brilliant mathematician with a mind naturally gifted for the dramatic engineering

challenges he took on with remarkable self-confidence in his later career. On the C&O, at the beginning of his professional life, he found himself, for much of the time the sole engineer on the fifth Residency of the canal when his Resident Engineer, Herman Böye, became ill and was confined in Georgetown. That fifth residency included the great Monocacy Aqueduct with all its early troubles, and it appears that none of the other assistant engineers faced anything comparable to the challenges Ellet confronted.

When Ellet left the C&O in early February 1830, it was to travel widely in France, studying bridges as well as railroad and canal structures. That Ellet was an autodidact (self-educator) of the first order is demonstrated by the fact that he rapidly became America's foremost wire-cable suspension bridge engineer. Ultimately, Ellet designed suspension bridges that cross the Schuylkill in Philadelphia, the Ohio at Wheeling, and Niagara Falls (a pedestrian bridge). His fame extended to his Civil War ram ship design and proposals for using reservoirs to lessen the devastating floods on the Midwestern rivers. He might well have received the Brooklyn Bridge contract had he not died of gangrene after being injured while aboard one of his ram ships in the Battle of Memphis in June 1862.

The other significant individual was Michael Byrne, who, with William Byrne and a Mr. LeBaron, became the third contractor on the Monocacy, taking over the troubled project on Aug. 7, 1830 and completing it in the winter of 1833-34. While nothing is known of LeBaron, and William Byrne's name soon disappeared from the company's C&O contracts, Michael became one of the most successful contractors on the canal and a prominent citizen of Frederick, Maryland, where he made his home with his wife and mother.²

Michael Byrne—who was born in Ballynascreen, Derry, Ireland in 1792—is the C&O's best example of an Irish immigrant who made good. His initial appearance in this country's records is in 1825 with William Byrne and another man named Provest, when the three had a contract for quarrying and masonry on Pennsylvania's Schuylkill and Susquehanna Canal (begun in 1792 and, after a hiatus, finished as the Union Canal in 1828). He was clearly a skilled rather than unskilled immigrant unlike most of his compatriots on the canal.

Although the original diagrams have been lost, the design of the Monocacy is that of the C&O Canal's first Chief Engineer, the great Benjamin Wright, who gained experience and fame as senior engineer on the middle section of the Erie Canal (the first version of which was finished in 1825), and became known as the father of American engineering. In the Ellet correspondence collection at

the University of Michigan is an invaluable and detailed letter from Wright to Ellet concerning the construction of the Monocacy.

Today the Monocacy Aqueduct is likely best known for the efforts of Confederates in September 1862-first under the command of Major General D. H. Hill and later under Major General John G. Walker-to do major damage to canal structures just downstream of the aqueduct and then to the aqueduct itself. This is a story well told in the waysides near the aqueduct and elsewhere.³ Of interest also with regard to the Monocacy is the often found but largely incorrect information that its stone came from a quarry on Sugarloaf Mountain, a monadnock that dominates the surroundings. As discovered by National Park Service historian Robert Kapsch in his research on the aqueduct, the Sugarloaf stone proved to be unsatisfactory and ultimately stone from two nearer quarries was used.⁴ Thus the historic sign on nearby Rt. 28 is incorrect as concerns the source of the Monocacy's stone.



The seven arches of the Monocacy aqueduct in 2017. Photograph by Steve Dean

Between Point of Rocks and the Monocacy, walkers will want to watch for the outcropping of the "calico rocks" at Mi. 46.8, one of the locations in the state where one can find what is also known as Potomac Marble or Potomac Breccia. This multicolored conglomerate of Triassic age is attractive in appearance but was never widely used as a building stone because of the inconsistent hardness of the pebbles and matrix of which it is composed.

Although little remains to indicate where the shortlived mid-1830s Tuscarora Feeder connected with the C&O Canal at Mi. 45.10, it was said by some historians to have been intended for use in watering the section of canal below it to the Dam 2 inlet at Mi. 22.12 in the face of possible delays in building above Point of Rocks due to the legal battle with the B&O RR. However, the feeder was constructed between February and November, 1833—a full year after that legal contest was settled in the canal company's favor. More likely therefore, it was built in anticipation of problems with maintaining water levels in this more than 40-mile-long section that otherwise relied only on the inlet and feeder canal at Dam 3 for water.

Also of note is the Kanawha spring at Mi. 47.57. On the night of March 25, 1954, Supreme Court Associate Justice William O. Douglas and his fellow hikers were accommodated at the nearby Camp Kanawha. A mere quarter of a mile upstream, at Mi. 47.79, is the junction of the B&O RR mainline from Baltimore and its Metropolitan Branch down to Washington that was opened in 1873. At the split is the classic station designed by the B&O's famous architect E. Francis Baldwin, which was completed in 1876. It is regarded as one of the most painted and photographed railroad stations in the country.

A short distance up the canal in Point of Rocks at Mi. 48.2 is the so-called pivot bridge (that only briefly actually pivoted on its pier in the canal prism). Just beyond it at Mi. 48.4 is the beginning of the narrows that so challenged the B&O and C&O and ultimately resulted in the two railroad tunnels and the current half-width canal prism in those sections. The latter results from the fact that in 1938, when the C&O Canal Company assets (including its land) were sold by court-appointed receivers, the B&O was allowed to purchase strips of canal land at the narrows and in Georgetown for \$100,000. Those strips allowed the railroad to widen the space for the tracks on the outside of the tunnels and to fill in a significant amount of canal prism.

Locks 28 (Mi. 48.93), 29 (Mi. 50.89 at Lander), and 30 (Mi. 55 at Brunswick) are included in a stretch of the canal that is just over six miles. But the major structure in this part of the canal is the three-arch Catoctin Aqueduct. It was known as the "crooked aqueduct" by the boatmen due to the significant curves in the line of the canal at both ends that confronted them with a navigational challenge due to the some-200 ft.-long towline between the mules and the boat.

The Catoctin Aqueduct, having lost its two upstream arches in a local flood the end of October 1973, likely would never have been rebuilt but for the initiative and organizational skills of Lander area resident and retired Army colonel George Lewis, who was joined early in the project by Point of Rocks historian Pepper Scotto and—as he began fundraising in 2006—the Community Foundation. In the end, the \$4.5 million project was a remarkable example of public-private funding that began with small donations from caring individuals, matching grants and corporate donors.

The reconstructed aqueduct was dedicated Oct. 15, 2011, and although it appears to be a reconstruction of the

original masonry structure and uses some of the original stones on parts of the exterior, it now has (among other changes designed to protect it during major floods), a frame of concrete, fiber and steel. As much as possible of the downstream arch (which did not collapse in 1973) was saved.

Upstream from the Catoctin Aqueduct that spans the Catoctin Creek is the heavily damaged remains of Culvert 82. Its 16-ft. span puts it among the canal's largest culverts and its generous size was required by the substantial waters of the Little Catoctin Creek that passes through it. Currently most of the culvert is exposed and a bridge carries the towpath across the creek.

Of course the route between Point of Rocks and Brunswick not only takes travelers along the river side of those two historic Potomac towns, but also through two of the four narrow passages at the center of the famous legal battle for right of way. Because it was settled just days after the New Year's 1832 and before construction of the canal below Point of Rocks was completed, work on the canal never ceased during the legal battle. However, with the ruling in favor of the canal, the railroad's situation was less sanguine, as it continued to be blocked at Point of Rocks until the latter part of 1833.

A compromise agreement, finalized in early May by both companies, in the face of the Maryland legislature's threat to withhold any future financial assistance, resulted in the engineers finding a solution that involved the blasting of stone from the end of the offending ridges and using some of it for the line of the two works. The two tunnels (located at miles 48.40–48.55 below Lock 28 and 49.99– 50.11 above it), were constructed after the Civil War and opened in 1868 to provide double tracks.

The two narrows directly above Point of Rocks were known as the Lower and Upper Narrows and each was 1.5 Mi. long. The other two were up the canal at South Mountain and Harpers Ferry and were treated as a single, 2-mile long stretch by the compromise. Those walking between Brunswick and Point of Rocks will walk through the two lower narrows.

Notes:

^{1.} See Gray, Karen M. "Charles Ellet Jr. on the C&O Canal", Pp. 41–68, *Canal History and Technology Proceedings*, Vol. XXX (2011, Canal History and Technology Press, 2011)

^{2.} See the September 2012 *Along the Towpath* for Karen Gray's "Accompanied by the Past" column on Michael Byrne.

^{3.} See especially Snyder, Timothy R. *Trembling in the Balance: The Chesapeake and Ohio Canal during the Civil War*. (Blue Mustang Press, 2011)

^{4.} Kapsch, Robert J. and Elizabeth Perry Kapsch. P. 26 ff. *Monocacy Aqueduct on the Chesapeake and Ohio Canal*,. (Medley Press, 2005).

The International Conference On Historic Canals

Personal reminiscences of the early years of the World Canals Conference

by Dave Johnson, Director, American Canal Society

When the thirtieth World Canals Conference convenes next September in Syracuse, New York, it will be the first time in seven years that the event has been held in North America. In the eighteen years since 1998, only six conferences—three in Canada, two in New York, and one in Pennsylvania—have been held on this side of the Atlantic Ocean; (eleven have been in Europe and one in China). The fact that three out of four of the U.S. conferences will have been on the Erie Canal further illustrates how this event has evolved from a small annual gathering of North American canal nuts. Terry Woods has invited me to summarize my personal memories of the early predecessors of the hightech, high-budget expositions that the recent conferences have become.

It all began in 1988, when the superintendent of the newly established Illinois & Michigan Canal National Heritage Corridor (I&M NHC) invited managers from national, state and municipal canal parks to come to Morris, Illinois, to attend the National Conference on Historic Canals (NCHC). The keynote address at the opening session was delivered by Dick Stanton, superintendent of the Chesapeake & Ohio Canal National Historical Park. He was joined by speakers, mostly from the National Park Service, on topics related to canal maintenance, historic architecture, and structure rehabilitation. The next day, the delegates toured the I. & M. Canal. The conference wrapped up the third morning with discussions on recreation, interpretation and tourism at historic canal sites.

The park managers and rangers who attended that first conference were enthusiastic and felt that another meeting should be held the following year. Steve Humphrey, executive director of the National Canal Museum in Easton, Pennsylvania, volunteered to host it in 1989. Word of the event had spread through the non-profit state and local canal societies, and when the professionals convened in Easton for the second NCHC there were many amateur canal buffs, representing the American, Pennsylvania, New Jersey, and Virginia Canal Societies, the Chesapeake & Ohio Canal Association, Shenango Valley Conservancy, Friends of the Delaware Canal, Delaware & Raritan Canal Watch, and Cascades Locks Parks Association in attendance with them.

The program organized by Steve Humphrey and Lance Metz, the museum's renowned historian, featured many of the speakers that have been recognized over the years. Among the featured speakers were Mark Newell, Brian Morrell, Emory Kemp, Abba Lichtenstein, and Rory Robinson.

The second day of the conference was planned as an all-day tour of the four canals that converged in the area. Easton, at the junction of the Lehigh and Delaware Rivers, was the point at which boats bringing anthracite down the Lehigh could move into either the Delaware Canal to Philadelphia or the Morris Canal in New Jersey. The tour was planned to visit all of them, plus the Delaware & Raritan Canal. However, a major storm overnight had raised the rivers, flooding parts of the Delaware Canal, and forced some changes in the itinerary, which Steve and Lance quickly organized. Late in the afternoon, the delegates themselves amended the program again, repeating an event from the 1988 conference. During what was planned to be a brief rest stop in Lambertville, New Jersey, the I. & M. veterans led most of the delegates into a nearby public house for an unscheduled happy hour, threatening to throw the already jury-rigged tour completely off-track. Finally, after the bar ran out of chicken wings, the refreshed delegates climbed back into their coaches and proceeded to the scheduled dinner stop.

The opportunity for canal society members from around the country to gather and meet with park professionals, development agencies and planning commissions on issues of common interest was a major step in establishing the conference as a permanent fixture. Several of the groups represented were just beginning to preserve and restore canal sites in their areas. This interaction made the Easton conference a landmark event and firmly established the basis for subsequent conferences. However, it was to be the last <u>National</u> Conference, for the following year's meeting was across the northern border.

The First International Conference on Historic Canals (ICHC) was held in September 1990 at Chaffey's Lock, Ontario, hosted by the Canadian Parks Service and the Friends of the Rideau Canal. John Bonser, superintendent of the Rideau Canal, and Dave Ballinger, manager of the northern district, led a well-planned program at one of the finest venues of all the sites where the conference has ever been held, the Opinicon Hotel, a rambling nineteenth-century summer inn next to the canal and on the shore of its namesake lake. With only about sixty participants, it allowed the delegates to engage closely in the discussions and field trips. The most lasting memory of that confer-

ence, however, came from an unplanned incident that resulted in a tradition that was sustained for some twenty years. When a slide projector jammed during the presentation by a young lady from Parks Canada, NPS Ranger Rory Robinson, from the Cuyahoga Valley National Recreation Area, sprang to her rescue. Proclaiming his expertise in AV equipment, he quickly flipped the carousel over to free-up the troublesome mechanism. Unfortunately, he failed to ensure that the retaining ring was fully locked on. It was not, and 120 Kodachrome slides scattered across the carpet. During the closing session, Bonser and Ballinger presented Rory with a gold-painted Kodak carousel mounted on a polished wooden base. The trophy was named (for reasons probably best understood by Canadians and too complex to try to explain here) the Dink Award and its recipient the "Dink of the Conference." Rory ensured that it would be passed on to future "dinks" by announcing that Cuyahoga Valley would host the next conference.

The 1991 conference met at the Quaker Square Hilton in Akron, Ohio, and featured the northern part of the Ohio and Erie Canal. It was organized and led by NPS Rangers Rory Robinson and Paul Labovitz, and backed by a coalition of state and local organizations, both public and non-profit, including the Canal Society of Ohio and the Cascade Locks Park Association. The theme was "The Future Echoes the Past: Innovative Uses of Historic Canals." Tours for the 80 delegates in attendance covered the 65-mile corridor from Cleveland to Zoar, with major visits to Canal Fulton and Roscoe Village.

In those days there was no formal process for choosing sites and hosts for the conference; it was believed that an unofficial "committee" gathered in the bar late at night and chose where the next meeting would be. That's how it was when the delegates sat down the final morning for the closing session. There were two of us from the C & O Canal Association: John Frye, a member of our board and a seasonal park ranger on the canal; and myself, in my first vear as the association's president. We were sitting with our wives in the first row, thinking about the long drives home that we would soon be starting, while Rory passed the Dink trophy on to ACS president Bill Trout, the new "winner." He then announced the next year's conference site by smiling at John and me and saying, "The committee met last night and we think you guys ought to host it." Recovering from shock, we replied that we would see how the superintendent of the park felt about it, and let them know.

Tom Hobbs, the new superintendent of the C & O Canal NHP (Dick Stanton had retired in 1989) enthusiastically accepted the proposal, and quickly assigned Gordon Gay, the chief of interpretation, to work with us on the planning committee. Hal Larsen, C&OCA vice-president (and five-

term past-president) also joined the committee. The four of us met regularly over the next year. We chose Harpers Ferry as the best place to hold the conference, because it was a good base for tours to all sections of the 185-mile long canal and an important historic location in its own right. The hotel we selected had easy access, and provided adequate lodging and meeting facilities for the anticipated attendance. The most enjoyable part of our work was planning and checking out our field trips. We scoped out three afternoon tours that allowed us to show off the major attractions of almost the entire canal, from Cumberland to Great Falls. The hardest part was deciding on a theme for the conference program, and recruiting potential guest speakers.

We had also discussed how we might make the conference truly international. Could we attract delegates from beyond North America? In the spring, we received an exciting surprise from British Waterways. A letter came from Tom Brock, a canal manager in Warwickshire who had been awarded a fellowship to come to North America and study U. S. and Canadian canal parks. He was making advance contacts with parks and organizations that he hoped to visit. He would be in America during the time we had scheduled the conference. It took us about thirty seconds to decide to invite him to fit the conference into his itinerary.

Another letter from England followed soon after. A group from the British Inland Waterways Association (IWA) was planning their own tour of North American canals in June, and was also seeking contacts with societies that could help guide them. Hal Larsen and I met them when they reached Washington and spent two days showing them sections of the C & O in D. C. and suburban Maryland, and George Washington's Pawtowmack Canal in Virginia. A couple of weeks later, as their tour neared its end, a oneday symposium and dinner was held in Buffalo, New York, with officers and members of both the American and Canadian Canal Societies joining with the IWA group. Although none of our IWA visitors were able to return in the fall for our ICHC, it established new international contacts, and several of them, including Roger Squires and Ron Oakley, became regular participants at later World Canal Conferences on both sides of the ocean.

The 1992 ICHC at Harpers Ferry drew about eighty attendees. With a registration fee of \$125, we had a budget of about \$10,000 to work with. This proved to be just about the right total. It covered lunches and dinners for three days, two chartered coaches each day for the field trips, and all of our expenses for copying, postage, coffee breaks, and plenty of beer in the hospitality room. The three afternoon field trips took the delegates to all of the most prominent sites on the canal from Cumberland to Great Falls. Rory presented the Dink Award to Bob Schmidt, president of the Canal Society of Indiana. At the closing dinner, hosted by Superintendent Hobbs at a country inn near Great Falls, Tom Brock presented a fine slide program on British canals. This was not the last we were to see of him.

The next three conferences followed the same formats. In 1993, the conference was held at Dartmouth and Halifax, Nova Scotia, sponsored by the Shubenacadie Canal Commission. The following year, we were back with Parks Canada at Peterborough, Ontario, on the Trent-Severn, visiting its great hydraulic lifts and the Big Chute incline. Then it was down to Augusta, Georgia, in '95, where Jeanie Allen introduced us to southern hospitality, barbeque, low-country boil, fried chicken, and music by Savannah's Emma Kelly, the "Lady of Six Thousand Songs." Tours included South Carolina's Old Santee Canal State Park and the Augusta Canal's three-arch Ray's Creek "akeydux," just a mile downstream from Amen Corner. Other memorable highlights included the release of a very large rattlesnake on the floor during a lecture on fall-line ecology, demonstrating who you might meet along the Augusta Canal towpath.

Tom Brock, our friend from British Waterways, returned for the conferences at Peterborough and Augusta. In 1996, he organized and chaired the first World Canals Conference, which was held at the International Convention Center in Birmingham, England, under the sponsorship of British Waterways and the IWA. The conference was attended by more than 260 people. They were mostly British, Irish, Canadian and American, but there were also a few French, Dutch, German, Belgian and Swedish delegates, indicating the possibility that the conferences could expand beyond the English-speaking countries. The theme was "Regeneration" and many of the presentations emphasized efforts to restore and revitalize waterways for commerce and economic development in addition to history and recreation, a new concept for American canallers. This conference became the prototype for the big conferences that would come in with the new century.

Following the Easton conference in 1989, the sponsors for the next gathering had been chosen by an informal committee (usually—probably—Robinson, Ballenger and Dave MacDougall of the Trent-Severn, but also, perhaps, others), After the Birmingham conference, it became apparent that a more formal process should be established. The 1997 conference was held at Pawtucket, Rhode Island, hosted by the Blackstone Valley Tourism Council and the Blackstone Canal National Heritage Corridor. During a train trip to Worcester, Mass., representatives of the sponsoring organizations of all of the previous conferences met in the club car and created a permanent steering committee to select future hosts and sites. The committee, consisting of the past-conference chairs, chose Rory Robinson as chairman and met at each subsequent conference for the next ten years. It established standards and procedures for potential conference hosts to submit proposals, and made the selections.

The last conference of the original style was held in 1998 at Joliet, Illinois, on the I. & M. NHC, to celebrate the tenth anniversary of the first National Conference. Highlights of the conference, which was attended by about 130 delegates, including some from the U. K., Ireland and France, included walking, bicycling and motor tours of the I. & M. and Hennepin Canals and a boat tour on the Illinois Waterway. Conference delegates also took part in site planning exercises at historic points along the corridor, including an old hotel, a grain elevator, and a hydro-electric plant. Each of the three groups focused on the potential use of one of the sites for historic interpretation, educational programs, community outreach, and adaptive re-use.

In 1999, the conference was shared by two countries: it began in Lille, France, and then moved to the Canal du Centre at LaLovière, Belgium, where we toured the nearly completed Strépy-Thieu lift. It confirmed the scale of the event set at Birmingham and established the format for all of the WCCs that have followed. (It is remembered, also, for the extravagant feasts, as our Walloon hosts attempted to outdo the French in the elaborate spreads that were laid out for us.)

At the 2008 conference on the Rideau Canal at Kingston, Ontario, the Steering Committee agreed to merge the Conferences into Inland Waterways International (IWI), which then took over the selection process. The World Canals Conferences of today are a lot of fun and provide an opportunity to visit modern, operational waterways, but one still misses the 'easy-going' good times at those earlier conferences on historic canals. Boy, wasn't the beer cold!

Dave Johnson has been a member of the board of directors of the American Canal Society since 1992, and a director of the Pennsylvania Canal Society since about that same time. He recently retired after three decades on the board of directors of the C & O Canal Association, during which he served three terms as president (1991-1994). He was chairman of the planning committee for the 1992 ICHC, a member of the WCC Steering Committee from 1997 to 2008, and attended every conference but one from 1989 to 2011. He was also an active NPS volunteer at the C&O Canal National Historical Park for twenty-five years. He lives in Bethesda, Maryland.

Squeaky Wheel By Terry K. Woods

"A squeaky wheel gets the grease" – the old saying goes – meaning, what attracts attention, gets attention. Furnace Run, a small stream in present Summit County, about ten miles north of Akron got a lot of attention after the Ohio Canal was constructed through and over it. Prior to the coming of the Ohio Canal, Furnace Run ran free and easy west to east and emptied into the Cuyahoga River 27 miles south of Cleveland. Well, it probably didn't run all that free and easy, but before the coming of the canal, who noticed?

When the Ohio Canal was first constructed through this area, Section 41, that contained Furnace Run, was contracted for on June 13, 1825 by Stephen Snyder of Lyons New York. This contract, though, was for the canal channel only. The month before, on May 26, 1825, William Van Slyke, an experienced canal builder fresh off the Erie, contracted to build a slackwater crossing of the run which included a dam, waste weir and towpath bridge.

Apparently the canal was traversing Furnace Run through the slackwater crossing early in 1828, when a severe spring freshet on the run plugged the canal with sand and gravel, stopping all traffic going in either direction. This stoppage lasted over a week. When all provisions gave out except for the corn bread delicacy known as Journey Cake, or Johnny Cake, and all subsisted on that for the duration, the next lock north of the Furnace Run crossing, No. 27, became known for all time as "Johnny Cake" Lock. Lock No. 26 may have picked up the 'moniker' of "Pancake Lock" during the same incident.

Sometime after that event, and to keep it from happening again, the slackwater crossing was replaced by a cut stone culvert. Still, during nearly every spring and fall freshet, the rapid and increasing quantity of water rushing down that steam over a gravel and sandy bottom would build up deposits of sand and gravel in the culvert and the stream channel below, blocking the flow and causing damage to the culvert, some portion of the canal, or flooding adjacent farm lands.

Then, in July of 1858, a twenty foot section of the culvert collapsed. It was "temporarily" repaired so navigation could continue for the rest of the season. However, during the off season, the engineers ruled that, considering the history of the stream for years of building up obstructions in and around the culvert, it was considered impractical to build a new one and instead recommended that it be replaced with a 40 foot single span aqueduct. The Board of Public Works Report issued in December, 1859 stated,

"Among the new structures – particular attention is called to a wrought iron aqueduct built during the last winter, on Mosley's patent. The culvert having failed entirely, it was thought advisable to substitute in its place an aqueduct which would pass at all times sufficient water for the stream.. The commissioner in charge entered into a contract with Moseley & Co., of Cincinnati, to put up one of these patent wrought iron aqueducts of forty feet span, with twenty-one feet water way, four feet in depth, to be placed upon stone abutments, furnished by the State. The aqueduct was completed in April last, at an expense of twenty five hundred and twenty three dollars and sixty-one cents. It is believed to be the most perfect and the best adapted to the purpose of any thing yet resorted to. In point of economy and durability it presents advantages which commend it. The aqueduct rests upon abutments and towers of heavy stone masonry, and is as durable as stone and iron can make it. There was used in the abutments over two hundred and fifty perches of masonry, of a superior quality, which cost, together with removing the old culvert and other labor required in the work, about two thousand dollars, exclusive of the iron trunk."

A series of heavy rain-storms in 1866 caused serious flooding along the length of the canal. There were numerous breaches in its banks. Navigation was suspended during several of those occasions by the formation of bars in the canal's channel. On April first, a flood swept down Furnace Run, razing the north abutment of the aqueduct down to its foundation. Several rows of heavy piling were driven prior to erecting a foundation to provide a stable base for the new abutment. Navigation in this section of the Ohio Canal was suspended for twenty days while the work was completed.

Much of the masonry support of the Furnace Run Aqueduct was rebuilt during the season of 1877 while navigation was suspended until the work was finished.

During 1882 the iron trunk of the Furnace Run Aqueduct was repaired and refurbished. It was reported that the "substantial character of the iron structure after more than twenty years of use, demonstrated that if the State intended to maintain its works with true economy, it must provide iron aqueducts." It spite of the good words spoken for iron aqueducts, extensive rains in 1883, severely damaged many of the aqueducts in the Akron to Cleveland section of the Ohio Canal, and the Furnace Run. Aqueduct was actually carried away and one abutment washed out. A new abutment was constructed on a pile foundation. The old one had been constructed on mud sills so this new structure was considered to be of a "permanent" nature.

The 1883 "fixes" to the Furnace Ruin Aqueduct appeared to have been good ones as the aqueduct wasn't mentioned in the engineering reports again until 1892 when that structure had "repairs" and painting done to its wooden and iron components. Apparently, the stone abutments were still in good condition. A new towpath bridge was constructed the following year. And then, in 1895, the entire structure across Furnace Run was rebuilt! Four years later (1899) flood waters lifted the aqueduct off its supports and it had to be repositioned.

The State Canal Engineers must have finally gotten the Furnace Runn Crossing right as, all during the five year (1905 through 1909) rebuild attempt, where everything was rebuilt, upgraded and improved, that crossing was mentioned in official documents only once, in 1906, when "rods were replaced in the Furnace Run Aqueduct." In 1912, three years after all efforts to rehabilitate the Ohio Canal had been given up, we read in the Northern Division's State report for that year, "Furnace Run Aqueduct was wrecked when its north abutment was undermined. A new abutment was built on a piling foundation; and the south abutment was also repaired. The truss was replaced. The trunk was resheeted, and new retaining walls were constructed."

Four months after this report was issued, Ohio suffered the devastating Flood of March 1913. The State Canal report for that year contains the following excerpt. "The Ohio Canal from Akron north to Brecksville, a distance of 16 miles, was destroyed. From Brecksville to Cleveland, a distance of 17 miles, has a good feed of water and supplies several important industrial establishments."

Note:

Other than the original contract for it, no documentation has been discovered that proves the original crossing of Furnace Run was via a slackwater dam, though the closing of the canal in this area during the spring of 1828, lends a certain amount of credence to this supposition.

Canal Spillway

This spillway is located on the C&O Canal near mile marker 113. It is 121 feet in length and features an elaborate design. It was used to regulate the height of the Big Pool section of the canal. Mules walked through water at this point, while pedestrians walked on planks placed on piers in the spillway. During the winter months the back side of this spillway can be observed with a short trip off the towpath. Photo – Steve Dean



CANALENDER

May 5-7, 2017: Pennsylvania Canal Society tour of the middle section of the C&O Canal NHP: Visit C&O Canal NHP sites between Fort Frederick State Park and the Monocacy Aqueduct. The trip will be based in Hagerstown, Maryland. For updates, visit www.pacanalsociety.org/index.htm

May 19-21, 2017: Canal Society of New York State 2017 Spring Field Trip: Celebrate the 200th Anniversary of the Erie Canal's Ground Breaking. Utica, New York. For further information about the event, visit www.newyorkcanals.org/explore_events.htm

June 24, 2017: Waterloo Canal Day Festival: 10 a.m. – 4 p.m, Rain date: Sunday, June 25th visit www. canalsocietynj.org/

July 1-2, 2017: Canal Days Festival: Wabash & Erie Canal Park, Delphi, IN www.wabashanderiecanal.org. Facebook @wabashanderiecanal

July 9-16, 2017: Cycle the Erie Canal: Join cyclists from across the country and around the world for Parks & Trails New York's 19th annual Cycle the Erie Canal bike tour. Registration opens January 3, 2017. www.eriecanalway.org/explore/events

September 24, 2017: American Canal Society Annual Directors Meeting, Syracuse, New York: 9:00 to 11:00 a.m. Location TBD.

September 24–28, 2017: World Canals Conference 2017, Syracuse, New York. Celebrating the bicentennial of groundbreaking for the Erie Canal and the centennial of its still operating successor – the New York State Barge Canal System. See program schedule below. Co-hosted by the New York State Canal Corporation, Erie Canalway National Heritage Corridor, and Visit Syracuse. wcc2017syracuse.com, @ World-Canals on Facebook

World Canals Conference 2017, Syracuse, NY

Program Schedule at a Glance

Sept 22-		Sunday,	Monday,	Tuesday,	Wednesday,	Thursday, September	Sept 29-
23		September 24	September 25	September 26	September 27	28	30
s - Champla Canals	Morning		Plenary Welcome & Presentations	Break-Out Sessions		Plenary Presentations, Summaries & Invitations to future WCCs	Post-Conference T Buffalo
Tour 1 Erie	Mid-Day	Public Events	Lunch	Lunch	Lunch	Lunch	
erence ⁻ Eastern	Afternoon	Public Events & IWI AGM	Tour	Tour		Activities, Events & Optional Tours	Tours - l lo &c.
Pre-Confei & E	Evening	Delegates' Reception	Welcome Dinner Farm-to-Table Tasting	Dinner on your own	Upstate Cook-Out		Lockport,