

From the President

By David G. Barber

This past spring, I have had a couple of interesting canal adventures. In March my wife and I joined a Road Scholar trip to the Panama Canal with the Canal Society of Indiana and others from several states. I've written up that trip separately. Road Scholar runs this trip several times a year and it was well worth it.

In May, at the urging of Bob Barth, we resumed our explorations of the Delaware Division Canal in Pennsylvania. We had been exploring this canal several years ago, but were interrupted when the flooding from two hurricanes destroyed sections of the towpath. This time, we had to interrupt our hiking because of the bridge over the canal being reconstructed. But, we shall return to that gap in the fall. We did get to lunch at two delightful businesses along the way and view many miles of restored towpath. We also visited with members of the Friends of the Delaware Canal who were replacing a mile marker.

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One of the tunnels under U.S. Route 13, looking north. Photo by David G. Barber

2017 ACS Directors Meeting

The 2017 American Canal Society Directors meeting will be held at the upcoming World Canals Conference in Syracuse, N.Y. It is scheduled for 1:00 p.m. on Sunday, September 24th at the Marriott Syracuse Downtown, Syracuse, N.Y.

Refer to page 5 for more information about the 2017 World Canals Conference.

American Canals

BULLETIN OF THE
AMERICAN CANAL SOCIETY

Managing Editor: Steve Dean

Contributing Editors: David G. Barber,
John Wunderle, Sr.

www.americancanals.org

For memberships, subscriptions, change of address, and other business matters: c/o Charles W. Derr, 117 Main Street, Freemansburg, PA 18017; deruls@aol.com; 610-691-0956.

For CANAL CALENDAR items and news of local, state, and regional canal societies: c/o Steve Dean, PO Box 132, Saint Leonard MD 20685; 301-904-9068; 184.5_miles@comcast.net

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.

An annual subscription to *American Canals* is automatic with ACS membership. Regular Single Membership, \$25; Dual Membership, \$35; Sustaining (no

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Other Publications: *The Best from American Canals*; *American Canal Guides*, William E. Trout III, editor and publisher

DEADLINE: Material for our next issue must be on the editor's desk no later than September 15, 2017. Send to Steve Dean, PO Box 132, Saint Leonard MD 20685, Editor, American Canals; 301-904-9068; 184.5_miles@comcast.net

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

Editorials, articles expressing opinions, and book reviews reflect the opinion of the writer/reviewer and not necessarily those of the editor or ACS board.

Officers:

President: David G. Barber, 16 Ballou Road, Hopedale, MA 01747-1833; 508-478-4918; dgbarber@cs.com; Director; Chairman, American Canal Survey Committee.

Vice President: Robert Sears, 248 Tower Drive, Toronto, ON M1R 3R1, Canada; 416-285-7254; rwsears88@gmail.com.

Recording Secretary: Michael E. Morthorst, 6914 Ohio Ave., Cincinnati, OH, 45236-3506; 513-791-6481; gongoozler@fuse.net; Director.

Membership Secretary/Treasurer: Charles Derr, 117 Main Street, Freemansburg, PA 18017; 610-691-0956; deruls@aol.com; Director; Member Canal Engineering, Operations & Maintenance Committee.

Directors:

Paul Bartczak, 9954 New Oregon Rd, Eden, NY 14057-9711; 716-992-9069; pjbartczak@earthlink.net; Director.

Robert H. Barth, 214 N. Bridge St., Somerville, NJ 08876-1637; 908-722-7428; bbarth321@aol.com; Director.

Steve Dean, PO Box 132, Saint Leonard, MD 20685; 301-904-9068; 184.5_miles@comcast.net; Editor *American Canals*.

Martha Capwell Fox, 2750 Hugh Moore Park Road, Easton, PA 18042; 610-923-3548 ext. 237; archives@delawareandlehigh.org; Director.

George Hume, #513-39 Parliament Street, Toronto, Ontario, Canada M5A 4R2; 416-214-9331, george.hume@rogers.com; Director.

David M. Johnson, 9211 Wadsworth Drive, Bethesda, MD 20817; 301-530-7473; dave9211@verizon.net; Director; Member, Canal Liaison Committee.

John M. Lamb, 1109 Garfield Street, Lockport, IL 60441; 815-838-7316, 815-478-2341 ex. 10; Director; Chair, Canal Engineering, Maintenance & Operations Committee.

Dan McCain, 3198 North 700 West, Delphi, IN 46923; 765-412-4308; dan.mccain@gmail.com; Director.

Michael Riley, 38 Green Street, Port Byron, NY 13140; 315-224-1716; mriley20@twcny.rr.com; Director.

Robert Schmidt, 5908 Chase Creek Court, Fort Wayne, IN 46804; 260-432-0279; indcanal@aol.com; Director; Chairman, Nominating Committee; Member, Canal Engineering, Maintenance & Operations Committee.

Roger Squires, 46 Elephant Lane, Rotherhithe, London SE16 4JD England; 020 7232 0987; roger-squires@btinternet.com; Director for the U.K.

William Trout III, Virginia Canals & Navigations Society, 3806 S. Amherst Hwy, Madison Heights, VA 24572; 252-301-1747; wetrout@mindspring.com; Director.

Larry Turner, 15091 Portage Street, Lot #34, Doylestown, OH 44230; 330-658-8344; towpathturner@aol.com. Director.

Terry K. Woods, 6939 Eastham Circle, Canton OH 44708; 330-832-4621; woodscanal@ssnet.com; Director; Chair, Parks Committee; Member, Canal Archaeology Committee, Canal Boat Committee, Canal Engineering, Maintenance & Operations Committee; woodscanalone@aol.com

Directors Emeritus:

William J. McKelvey, Jr., 103 Dogwood Drive, Berkeley Heights, NJ 07922; wjmckelvey@hotmail.com; 908-464-9335

Lance Metz, 37 N West St, Allentown, PA 18102-4218 lancemetz@icloud.com

Committees:

ACS Sales, Peter Walker, 24 Northview Terrace, Cedar Grove, NJ 07009 ptgwalker@gmail.com 973-744-2380 Chairman ACS Sales Committee

Canal Archaeology, Mark Newell, chair, Georgia Archaeological Institute, PO Box 984, Augusta, GA 30901

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American Canals Indexes Updated

Thanks to some hard work by David Barber, the index for *American Canals* is now updated to reflect the full 45 year history, from 1972 to 2016. Separate indexes allow searching by article, author and photographs. The indexes are available at the following link: www.americancanals.org/AC%20Indexes/AC_Indexes.htm

Additionally, past issues of *American Canals* through 2014 are now available. They can be found at: www.americancanals.org/AC_Issues/American_Canals.htm

Correction to the *American Canals* Spring issue

The Spring 2017 issue was inadvertently identified as the Winter 2017 issue and Vol. XLVI No. 1 on the front cover. It should have been Vol. XLVI No. 2. The editor regrets any confusion this may have caused.

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.



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.

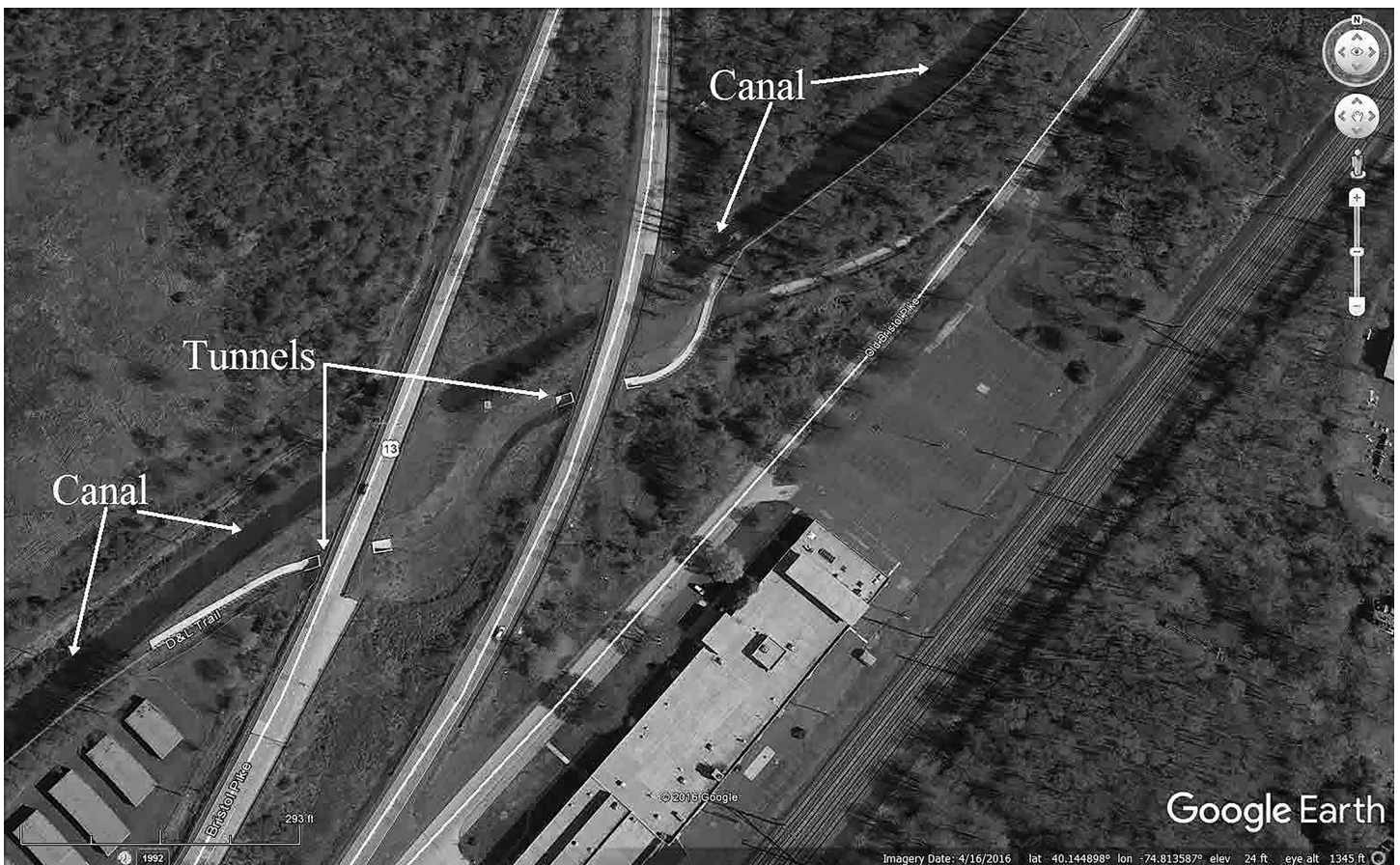
To receive updates, register or submit a presentation proposal, visit wcc2017syracuse.com, @WorldCanals on Facebook, Twitter and Instagram.

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An additional high point of the trip was a car visit to the crossing of US 13, just north of Levittown. When we had hiked this section on wet weather in 2003, we had to run across the dual roadways of US 13 which had been built across the canal at towpath level. The fact that it was a state park, had no effect on the highway designers. But, in 2013, each of the two roadways was closed in turn and pre-cast tunnels installed below. So now one can safely cross below the highway. While this does little for the waterway, it does improve the towpath which is here part of the East Coast Greenway. Just south of this point, the canal had been filled in the 1950s for the Levittown Shopping Center. That shopping center has now been torn down and replaced by new stores. But, instead of a parking lot on top of the canal alignment, there is now grass and a towpath trail. Maybe they can even restore the prism.

A further point on the tunnels is that Susan Taylor, of the Friends of the Delaware Canal, obtained for me the project cost (\$1.39 Million for two tunnels), which I shared with others considering similar tunnels on rail trails in Connecticut and Massachusetts. It is very nice to have real costs of actual work that reinforce what projects actually can be built for.

Also recently, Charlie Derr pointed out to me that the magazine *Early American Life* featured a multi-page cover story titled “Built to Last: American Canals” in their June 2017 issue. Copies are available through their website. More information on the subject is available at www.pinterest.com/ealmagazine/historic-canals.



Aerial view of the tunnels at U.S. Route 13. Image courtesy of Google Earth

Along the Erie Canal With the Municipal Seals of the Cities, Towns and Villages of New York

Compiled by Marvin W. Bubie

Reviewed by David G. Barber

One of the interesting things about canals is their influence beyond the narrow strip of water and towpath. In this book, outside the usual subject matter of canals, Marvin Bubie addresses the subject of the Erie Canal on the municipal seals of the communities and counties along its route. A page is devoted to each seal and its background. In addition, he carries the theme outside of New York to canals on seals around the country.

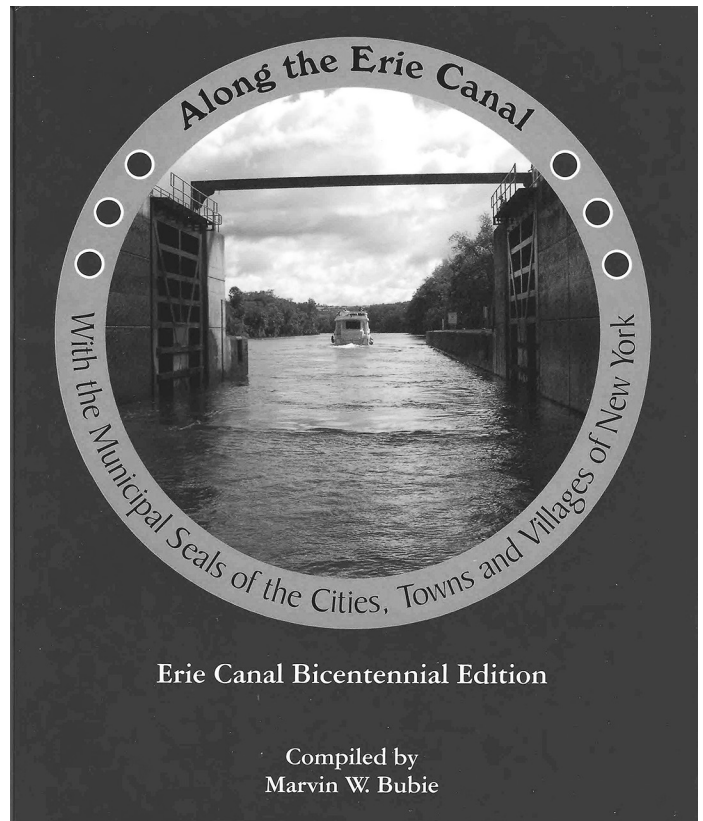
There are also chapters of short biographies on people involved with the Erie Canal, on inventions during canal construction, and canal museums across New York State. This is a very interesting book, divorced from the usual canal history. It is available from sources such as Amazon.

Along the Erie Canal With the Municipal Seals of the Cities, Towns and Villages of New York

Compiled by Marvin W. Bubie

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Friends of the Delaware Canal Volunteers

Complete Restoration of Woody's Camelback Bridge

Friends of the Delaware Canal volunteers applied the finishing touches to the restoration of Woody's Camelback Bridge on May 3. A team of four wielded their brushes and, in 3 hours, coated the recently replaced trusses with their signature barn red stain.

Of the more than 100 bridges that once crossed the 59-mile-long Delaware Canal, only six still retain their authentic camelback structure. (The camelback design was used on the Canal because it has a slight hump in the middle allowing clear passage of canal boats underneath.) The Friends of the Delaware Canal have been on a quest to ensure that these few iconic bridges are preserved. Woody's Camelback Bridge, located in Raubsville, is the fifth of the six to be restored.

Shortly before Christmas, contractor Randy Myer of R-Shell Exteriors in Lancaster, PA began the extensive repair work needed to bring the bridge back to serviceable condition. Working through snow and frigid winds, he met his goal of having the job done by mid-February. The wood was allowed to weather until May when the volunteers arrived to apply the stain.

The restoration of Woody's Bridge was accomplished through a partnership between the Friends of the Delaware Canal and the PA Department of Conservation and Natural Resources. Thanks to generous contributions from thirty-seven supporters, the Friends were able to pay the labor cost of the project, and DCNR paid for the materials.

Through this effort, a historic, picturesque, and useful camelback bridge has been preserved. The Friends will continue on their quest to see that the sixth bridge is preserved and to keep the already-restored bridges in good condition.

The Friends of the Delaware Canal is an independent, non-profit organization working to preserve, restore, and improve the Delaware Canal its surroundings. To find out more about the organization and its many activities, visit www.fodc.org.

– Susan Taylor

For additional information, please contact Susan Taylor at 215-862-2021 or friends@fodc.org



Friends of the Delaware Canal volunteers give Woody's Camelback Bridge its final coat of barn red stain. Photo courtesy of FODC



Woody's Camelback Bridge in its finished glory. Photo by Carole Mebus

Conococheague Aqueduct Restoration Groundbreaking Ceremony

The Chesapeake and Ohio Canal National Historical Park celebrated the start of the restoration of the Conococheague Aqueduct on May 5 in Williamsport, Maryland. A large crowd was present for the event despite early rains that were, at times, heavy. The weather cleared for the event and even allowed time for participants to tour the Williamsport basin area and Lock 44 on four canal excursion boats before the groundbreaking ceremonies.

C&O Canal National Historical Park Superintendent Kevin Brandt led the ceremonies and introduced a number of guest speakers, including U.S. Sen. Chris Van Hollen, National Park Service Acting Director Michael Reynolds, Md. Secretary of Natural Resources Mark J. Belton, Md. Sen. George Edwards, and Md. Delegate Neil Parrott. Both current Williamsport Mayor William Green and past Mayor James McCleaf spoke. Numerous members of the Federal Advisory

Commission and park partners were in attendance. The speakers remarked on the tremendous cooperation and hard work by the National Park Service, the State of Maryland, Washington County and the town of Williamsport to make the project happen.

The restoration of the entire complex is a true federal-state-local partnership, with \$6.24 million coming from a State of Maryland Transportation Alternatives Program Grant, \$722,904 from a State of Maryland Bikeways Grant, and \$1.33 million from the National Park Service Centennial Challenge fund. The Town of Williamsport has been an active, supportive and essential voice in bringing this project to fruition.

The funding currently available will support the restoration of the Conococheague Aqueduct, a new crossing of the canal, a rail trail, and restoration of

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Four C&O Canal excursion boats carried Conococheague Aqueduct groundbreaking participants and other visitors on a trip from the Cushwa Basin to Lock 44 and back before the event. Photo by Steve Dean

the historic coal yard. The additional Williamsport area projects are under design and will proceed to construction in the coming months.

The restored aqueduct will appear as it did late in the canal operating era, when the aqueduct was repaired with a wooden wall after the stone wall gave way in 1920. The aqueduct will be watered and park visitors will be able to ride a boat across it, for the first time in over 90 years.

“The impossible does not happen as a matter of course. The vision of a re-watered aqueduct was embraced by the entire community. The restoration of the

Conococheague Aqueduct represents the best in community partnerships,” Superintendent Kevin Brandt stated. “The Conococheague Aqueduct will be the centerpiece of the restored historic landscape in this area of the park, while also creating a premier visitor attraction in Williamsport, Maryland. I can think of no better way to celebrate the centennial of the National Park Service and prepare us for a second century of stewardship than a project that brings together partners on the federal, state and local level.”

– Steve Dean, with National Park Service content



The Conococheague Aqueduct as it appears before the restoration project. Photo by Steve Dean



Artist's rendition of the appearance of the aqueduct after restoration and re-watering. Image by Peck & Peck Associates, courtesy of the National Park Service



Waterford Flight Locks

The Waterford Flight Locks are one of the many features in the area that World Canal Conference participants can visit before or after the conference. See page 5 for further information about the World Canal Conference or visit:

wcc2017syracuse.com or
@WorldCanals on
Facebook, Twitter and
Instagram.

A Visit to Ashley Planes

By Doug Logan

On April 22 Pennsylvania Canal Society members had a day trip on the Ashley Planes for ambitious canalers. Notifications went out via our email list since there was not much time between the announcement and the trip. A handful of us had a good but rigorous workout getting around the overgrowth and obstacles we encountered. While we were able to immerse ourselves in the inclined planes, it was also a good lesson on what not to try on a day trip.

While you may not think of railroads as canal related, you've probably heard of the Allegheny Portage Railroad, built to cross the mountains of central Pennsylvania where canals weren't practical. The Philadelphia and Columbia Railroad was also built to make canal connections between the Schuylkill and Susquehanna Rivers. Both were completed by 1834 and both used inclined planes and railroads. The builders problem that led to using railroads were areas where there was not enough summer water flow to keep canals full and operating at the summits, so early canal builders were also innovators of railroad technology, not because they wanted to be, but because they had no choice. Railroad technology was in its infancy and when they were first being built, they were considered poor choices for moving heavy loads. The engines were small, light and weak, the iron rails were brittle, and they frequently had problems and accidents as a result. People in general were unfamiliar with them and locomotives seemed loud, fast, and dangerous compared to slow moving and quiet canal boats using motive power they knew well, horses or mules.

The Ashley Planes were built to augment the Lehigh Navigation because it was not possible to build the many locks required

at places where there was insufficient water to operate them. It was only as a last resort that the canal builders took this option but they needed to connect the North Branch Canal in the Susquehanna Valley at Wilkes-Barre with the Lehigh Navigation in the mountains at White Haven, and their experience with coal mining meant they were already familiar with inclined planes, stationary steam engines, and by today's standards, primitive railroading. Other planes mentioned earlier were already in operation and had proven they could work for the Lehigh Coal & Navigation Company. The short railroad LC&N eventually built was called the Lehigh and Susquehanna with the two miles of planes handling the steepest slopes in and out of Wyoming Valley. Eventually floods wiped out much of the upper Lehigh canal system and the railroad was extended further down the river, eventually to Easton by 1868. The Ashley Planes were rebuilt and



This is stonework in the engine house at the top of old Plane 2. The recess at the bottom was likely for 20 foot diameter wooden winding wheels. The depth suggests the tracks at the top of the plane went over the top of the engine house, similar to the Switchback Railroad planes at Jim Thorpe. Later engine houses were three stories and the tracks at the top curved to one side of the house. The two story height of the operator provided a clear view of the plane. Later winding wheels were made of steel and built by Bethlehem Steel. Photo by Doug Logan

a continuous back track with better grades to Ashley was added by 1867. In 1871 the L&S was leased to the Central Railroad of New Jersey by LC&N, including the Ashley Planes.

Over time the planes were improved as methods, engines, and railroading itself became bigger and better but in 1948 even the planes themselves were put out of business by the introduction of diesel pusher engines used on the back track. More on the Ashley Planes can be found in a great 48 page article by Annie Bohlin, including many old pictures, at the Mountain Top Historical Society's webpage www.mtn-top-hs.org/ashley_planes.htm

My first encounter with the planes was in the late 60s when I was in my teens and my sister and her husband bought their first fixer-upper at Solomon Gap. Old concrete structures loomed large off Rt 309 near her house at Solomon Gap and my family always wondered about them.

More recently my brother Rick and I had walked up the planes about 15 years ago and found it very interesting. He agreed to join the group which included PCS vice president Gordon Perry, and while much of it came back to Rick and me, it had been awhile and we were seeing a lot of things like it was the first time. We started at the bottom of Plane 3 near Ashley, the planes being numbered from the top down. Much of it was gone, taken by development and the building of Interstate 81, however at the start of the remains are several old stone wall abutments of an old railroad crossing Solomon Creek and Plane 3. From a review of a railroad map of the

area, I think this had been built around 1900 by the Wilkes-Barre and Hazleton Railway, an electric line. The plane ran along beautiful Solomon Creek which crossed the plane via a culvert that is still functioning today. At the top of Plane 3 there was still has a lot to see. The foundations of the stationary engine room, the power plant (boiler house), and the barney pits were still there and many of the pit cover boards had



Above – Solomon Creek culvert under new Plane 2. Stonework likely dates to 1867-68 when the planes were rebuilt and new Plane 2 replaced old Plane 2, which is left of the picture. Concrete was probably added in 1908-09 when the planes were again rebuilt and concrete was used extensively.

Below – Another culvert, this one on Plane 3, still on Solomon Creek. The stream here zig-zags as it goes through the culvert, essentially following the plane on one side, then along the opposite side. Photos by Doug Logan.



not completely rotted away and some were pretty solid some 70 years after abandonment. Bricks had been removed from a wall of the power plant leaving a long partially collapsed concrete section in a zigzag fashion that looked a bit like modern art.

A barney was a small pusher car attached to and pulled by the main cable. The barney pits ran between the rails at a level section at the bottom of a plane and allowed a barney to pass under the next set of cars to be pushed up, and the pit allowed it to position itself for the next push from the back. While one barney ascended a plane, the other descended. A lighter tail-rope (cable) stretched between the bottom end of each barney via a large pulley near the bottom of a plane and kept the barney on the plane track by keeping it in tension and moving smoothly up and down a plane. It also had outside wheel flanges and could change gauge when it needed to, changing between outside standard gauge tracks and inside pit tracks when entering and exiting the pits.

Near the barney pits at the bottom of new Plane 2 we had lunch near another large working stone culvert. This one was under new Plane 2, a steeper but more direct plane to the bottom of Plane 1. The culvert was next to the intersection of the bottoms of old and new Plane 2. Our hike continued on old Plane 2 which had a less steep slope than new Plane 2, and was built when stationary steam engines were less powerful. It started out as a dirt road but near the top it became more difficult to walk due to many saplings growing on this part of the plane. There was not a well-defined path but we trudged on. Here we tried to figure out how the early plane worked as compared to the later improvements. It looked like cars may have gone over the top of the engine room like they did on the Switchback Railroad in Jim Thorpe (note that the later planes had a curve in the track away from a tall engine room, as the cable went straight into the room through a pit; a barney pushed the cars up to the curve but stopped short of rounding it). From the top of old Plane 2 cars were pulled by horses or mules over a level section to the bottom of Plane 1. All that remain of the top are some stone walls and a few bricks here and there, and some level areas near the engine room. The power plant may have been in what appeared to be a natural depression in the rock next to the engine room as we didn't see any other evidence of one.

We hiked the level section between the top of old Plane 2 and the bottom of Plane 1 until we came to a bridge crossing with a 30 foot drop to Solomon Creek but no bridge so we had to hike around it. As we neared the junction with the top of new Plane 2, garbage began to show up all over the place. We were near a gated dirt road off Rt 309 which partially obstructed the remains at the top of new Plane 2 so we wandered back and forth a bit trying to figure out where the level section from old Plane 2 met the bottom of Plane 1 but it seemed that it had been obliterated by construction of new Plane 2. In the shadow of 309 we eventually found the top of new Plane 2 along with some concrete structures along a flat stretch, and just beyond them, the barney pits at the bottom of Plane 1.

The lower part of Plane 1 was a shady lush cut through rock until we came to where 309 crossed it. There we had to cross Solomon Creek again but this time it was much less of a problem. We made a short climb up an embankment to 309 and a road underpass that had been a plane underpass when Plane 1 was still active. Some of the old stone walls for the highway are still evident at the ends but they've been bolstered with more substantial structures for car access today. Above the underpass Plane 1 was now a mere overgrown ditch and we followed a road up to where the plane had once crossed over it. We climbed up to the plane and continued up from there. Here the plane was a huge fill with a steep drop between 309 and the plane and a lesser but substantial drop to Solomon Creek on the opposite side. At the top we reached the old engine room stone cellar and concrete artifacts of the power plant. From there the right of way was now a driveway right up to where the old back track split off. It is still in use today by Norfolk Southern Railroad, a remnant of the CNJ and Lehigh Valley Railroads combined right of way. This track still uses the deep cut in the rock at Solomon Gap made for the original Ashley Planes.

I hope you enjoyed coming along with me on this vicarious journey and in the future I hope we can get more folks out exploring with us. I plan on doing some less strenuous and shorter walks that more of us can enjoy.

PCS Spring Field Trip –Tour of the Middle Section of the Chesapeake & Ohio Canal

By Gordon Perry

On Friday, May 5, 2017, 17 canal enthusiasts met at the Ramada Plaza Hotel in Hagerstown, Maryland, to explore the middle section of the Chesapeake & Ohio Canal from Four Locks at mile 109 downward to the Antietam Creek Aqueduct at mile 69.

The C&O Canal, referred to as the “Great National Project” and the “Gateway to the West” was originally planned to be built in two sections. The eastern section was to extend from Tidewater at Washington, D.C. to Cumberland, Maryland, while the western section was to extend over the Allegheny Mountains to the Ohio River at Pittsburgh. Construction began on the eastern section in 1828, completed to Cumberland, Maryland in 1850 and closed in 1924. Over a length of 184.5 miles and an elevation change of 605 feet, a total of 74 lift locks, 7 guard or inlet locks, 3 river locks, 11 aqueducts, over 240 culverts, 8 dams and a 3,100 foot tunnel had to be built.

For early arrivers on Friday, two optional trips were scheduled. At 10 a.m., there was the opportunity to attend the NPS groundbreaking ceremony for the restoration of the Conococheague Aqueduct at Williamsport, as well as a 1 p.m. trip to the restored 7-arched Monocacy Aqueduct. Following registration and check-in on Friday evening, Dave Johnson, who coordinated the trip, gave a thorough preview presentation on what we would be viewing during the Saturday trip. Since the area had received heavy rainfall over a number of days before our trip, the river and streams were running high and we were quite concerned about the weather for Saturday’s tour.

After partaking of a continental breakfast at the hotel on Saturday morning, our motor coach departed at 8:00 AM for our first stop of the day. It began to rain

again as we left the hotel but the rain stopped by the time we reached our first stop. Our tour began at a site known as Four Locks (mile 109), so called because it was the location of Locks 47 – 50, all located within a distance of ¼ mile. In 1836, work began on a one mile section of canal through Prather’s Neck, named for landowner Samuel Prather, to provide a shortcut and avoid a 4-mile loop that the Potomac River makes around Prather’s Neck. This canal section was completed by the spring of 1839 and included the four locks, built of blue-gray limestone, to accommodate an elevation change of 32 feet, and each having a lift of 8.25 feet. A thriving village of homes, general stores, feed stores, warehouses, a coal yard, and dry-dock facilities for boat repairs developed and a school house was built to service the growing number of village children.

Lock 50 is the site of the last small, white, lock shanty on the upstream berm side of the lock where the locktender could wait in bad weather and a reconstructed barn for overwintering mules is also located here. Lock 49 is the location of the only lock house officially designated for the four locks. The two story



Four Locks – Lock 50 with lock tender's shanty. Photo by Gordon Perry

brick house on a stone foundation was built in 1839 on the berm side just downstream of Lock 49. Although the lock keeper was officially in charge of all four locks, other community members also provided assistance.

Undeterred by the weather, we hiked the two mile trail down to Dam 5 (mile 106.5) where we were met by the motor coach. Along the way, we passed Lock 48 where the foundation of a country store had been built in 1875 over the lock bypass flume. Continuing downward just below Lock 48 is the stone house formerly occupied by Thomas Hassett, a purchasing agent for the C&O Canal Company. Lock 47, located near the house, is the former site of a drydock used for canal boat repairs.

Near mile 108, we were able to view and photograph the stone ruins of Charles Mill, with its 20-foot overshot steel water wheel, located along Camp Springs Run. The combination grain and plaster mill began operations in the late 1790s and remained in operation until the canal was destroyed by the 1924 flood. The mill was powered by water from Camp Springs Run with additional water channeled from the canal. Sacks of flour and cornmeal were loaded on canal boats for transport to markets downstream. Most of the mill and millrace were destroyed in 1972 by Hurricane Agnes.

Two Locks (mile 107) was the next community we were able to observe on our walk toward Dam 5. This was the location of Locks 46 and 45, both served by the same lock tender. At Lock 46, the towpath changed sides from the riverbank of the slackwater pool to the berm side of the canal and the stone abutment remains of the crossover bridge could be found. At Lock 45, canal boats entered the Potomac River at Little Slackwater, a half-mile long pool created behind Dam 5.

At mile 107, we arrived at Dam 5 and Guard Lock where a brick lockhouse is located on the hill above the canal. The Guard Lock has been dammed up and



Lock 44, Williamsport, Md. Photo by Gordon Perry

Dam 5, originally a stone-filled crib type dam built in 1835, was replaced by the current masonry dam in 1860. Dam 5 is one of seven dams built to provide enough water for the 184.5 mile canal. The dam, measuring 20 feet in height and 700 feet in length, provides water for the Potomac Edison Power Plant built in 1918 on the opposite side of the river and which still remains in operation. The river was running very rapidly with many trees having been uprooted along the shoreline and being carried over the dam with other timber and debris. Since it now began to rain, we were happy to find the motor coach waiting for us.

We then proceeded to our second stop at the Antietam Creek Aqueduct (mile 69.4), Lock 38, and the Shepherdstown Outlet Lock (mile 72.5). The Antietam Creek Aqueduct, constructed around 1832-35, is located where the creek flows into the Potomac River. The 3-arched aqueduct measures 108 feet long between abutments. Lock 38, built in 1832-33, had a lift of 5 feet and was the lowest lift of any lock on the canal. An arched culvert is located on the berm side for the bypass flume. The Shepherdstown Outlet Lock was constructed in 1833-35 to allow boats to cross the Potomac River to Shepherdstown, West Virginia. The next stop was at Ferry Hill, a former plantation house on the hill overlooking the Potomac River and Shepherdstown. Currently a visitor center where we were to have our lunch stop, we remained on the motor coach where we consumed our very nicely prepared box lunches.

The first stop of the afternoon was at Big Slackwater (mile 85.6), a 3-mile long pond behind Dam 4. We were able to view Guard Lock 4, located 1.2 miles above the dam. This lock, constructed in 1833-34, had a 10-foot lift and served as both a water intake and a river lock for boats passing into and out of the pool. Dam 4 (mile 84.6), originally built in 1832-34 as a stone filled crib-type dam, was replaced by a masonry dam in 1866. The current masonry dam measures 810 feet in length, 20 feet in height, and was built in front of the original crib dam. Its location is 22 miles downriver from Dam 5. A restored stopgate winch house is located adjacent to the dam and a small Potomac Edison power plant, built in 1915, is still operating on the opposite side of the dam.

The last stop of the day began at Lock and lockhouse 44 (mile 99) in Williamsport, originally built in 1834 with a bypass flume added in 1835 and ended with a walk to the Cushwa Basin (mile 99.6) and Conococheague Aqueduct (mile 99.8). Along the way, we were able to view and photograph the closed Paul Smith Power Station, a coal fired steam-electric plant built in 1922 and owned by Potomac Edison. We were also able to view the Bollman Iron Bridge, designed by Wendell Bollman, built by the Bollman Company of Baltimore in 1879, and known for its distinctive all-iron truss design. Just beyond it was a lift bridge built by the Western Maryland Railway in 1923 to deliver coal to the Paul Smith Power Station. This bridge has a unique asymmetric design to clear both the canal and the towpath and is believed to be the only asymmetric lift bridge still in existence.

We now reached the end of our journey at the Cushwa Basin and warehouse. The Western Maryland Railway ended here and the basin was a major point where coal was transferred from canal boats to rail cars for shipment to Baltimore. The brick warehouse was built between 1790 and 1810, enlarged between 1835 and 1840, and is unique in having engraved stones on the building to mark the heights of various floods that

occurred in the area. The building now serves as the NPS Visitor Center where one is able to purchase books, coffee mugs and other C&O Canal souvenirs. A second brick building in the area was the electricity generating plant for the Hagerstown & Frederick Railway Company that operated a trolley line between Williamsport and Hagerstown from 1896 until 1947. The Conococheague Aqueduct, a 3-arch, 252 foot long aqueduct constructed of blue limestone in 1834, is located just upstream of the basin, and carried the canal over the Conococheague Creek.

After a very fulfilling day, the motor coach returned us to the hotel where we met at 6 p.m. for a well-deserved happy hour followed by a delicious dinner. After dinner, a power point presentation on C&O Culverts was given by Steve Dean, editor of American Canals and member of the C&O Canal Association. We all enjoyed his most informative talk and excellent photos of over 100 culverts still in existence.

This tour of the middle section of the C&O Canal allowed us to view and photograph many unique and historic features of this most important canal and we thank Dave Johnson for his efforts in arranging for such nice hotel accommodations and for coordinating such a memorable trip. Optional tours for Sunday included Harper's Ferry to view Dam 3, Locks 33-36 and other historic sites, or to the Antietam Battlefield to view the site of the bloodiest battle of the Civil War.



Western Maryland Railway lift bridge over C&O Canal. Photo by Gordon Perry

Zoar and the Ohio Canal (Part 2)

Height of Canal Days

By Terry K. Woods

Reportedly, the entire community, men and women and older children, turned out for the canal digging. One can only wonder who tended to the fields and animals. Zoarites using picks and shovels loosened the earth on the high areas and women and older children using wheel barrows, wooden tubs or aprons, carried the spoil away or to lower points. The canal through Zoar lands, about 2 miles of it, was constructed on the right (west) bank of the Tuscarawas River across from the village, itself. The bridge across the canal toward town and Lock No. 10, plus a feeder gate, were constructed by the Zoarites. An abandoned contract for an additional half mile section of canal was taken over by the Zoarites to the south of their initial contracts, but this may not have been on Zoar lands at that time.¹

Though Joseph Bimeler and the Zoarite Community wished to be 'separate' from the rest of the world, with little outside influence, they were happy, even desperate it seems, to earn cash money from these 'outsiders.' Their mill attracted patrons from as far away as Coshocton. And the canal provided markets for them both to the north and south. The canal was opened for navigation from Lock 5 below Massillon through the Zoar area to Dover Oct. 29, 1829. By 1830, a small 10 room hotel was opened by the Zoarites on a bluff on the west side of the river opposite the canal bridge they had built, as part of their contracts with the state. Though formal, through, canal packets did not navigate the Ohio Canal until the latter part of 1837, many early line Boats (Two Deckers) carried passengers as well as freight and the Zoarites stood to make a fair profit from housing these passengers as well as canal boat crews over night.²

The year 1830 was a big year for the Community of Zoar. Their land debt had been paid off and the Rule of Celibacy was abolished. With the canal just across the river, the Zoarites set out to use that artery of communication to enrich their holdings. An agreement was entered into with the State to alter the feeder gate the Zoarites had built, into a guard lock that would allow craft to enter and cross the Tuscarawas River. At

the same time, the Zoarites built a Guard Lock at the head of their mill race to allow boats, once they were on the Zoar side of the river, to enter the race and pick up and off-load products. The date this guard lock was constructed, 1830, could be seen for many years on the southwest gate wall. The Zoarites prospered with the proximity of the Ohio Canal. They acquired additional land and, by 1835, their holdings totaled more than 7,500 acres. These new lands included a mile or two more of the Ohio Canal to the north including lock Nos. 9, 8 and 7. During canal days, these locks were referred to by boatmen as the "Bolivar Locks" though they were on Zoar land.

Lock No. 7 (in section #74) had been built by the contracting firm of Hanson Sweet and Horace Wood of Paynesville, Ohio for a total cost to the State of \$6,720.35. Section #75, which contained Lock Nos. 8 and 9, was constructed by the firm of Horace Spenser, George Norton, & Nathaniel Leonard. These latter contractors also initially had won the bid for section 80, but it was later abandoned and added to the Zoarite's contract.³

Taking advantage of the availability of coal and iron ore on these new lands, the Zoarites established an iron furnace and a foundry in 1834, to the west of the canal, just below Lock No. 8. A short side-cut canal of less than half a mile connected this industry to the main waterway. The facility included a warehouse, horse barn, manager's office, a pattern shop, a blacksmith shop and a saw mill. A number of small houses were built in the vicinity and rented to those workers who had families. The total investment in this new industry amounted to more than \$20,000, most of which was paid out-of available funds!⁴

That next year, 1835, Bimeler (the Zoar Community) paid another \$20,000 for 1,716 acres to the south and east of the original holdings in Sandy and Fairfield Townships. The 'plum' of the acquisition was the old Tuscarawas Steam Furnace that Michael Laird had constructed on the bank of the Tuscarawas River, some 6 miles south of Zoar and near the river's

confluence with One Leg (Connoton) Creek sometime after 1823. There were a number of buildings associated with this industry, as well. Included were a warehouse, worker's housing, a Company Store and a post office. The settlement was originally known as Steam Furnace. Advertisements of the sale of iron implements in the local papers by 1838, however, noted the area was then known as Fairfield Furnace. With the extra iron working expertise and capacity they had purchased, the Zoarites were soon shipping "pig" iron, castings, and finished implements by canal with final destinations as far away as Detroit, Pittsburgh, Buffalo and New York, though there is evidence that soon most, if not all, of the finished iron products came from the foundry at the ZoarFurnace.⁵

Oddly enough, though evidence of the plan to allow canal boats to enter the village of Zoar, itself, is evident, no 'paper trail', no documents, have been discovered that prove boats actually traversed the guard locks and were poled across the river. Obviously, the river crossing did not appeal to many canal boat Captains. Crossing the river by canal boat became a moot point when a new, magnificent Zoar mill was begun astride the canal in 1837 between the Zoar Lock and Canal Bridge. It was an immense structure built entirely of Hickory timbers and sheeting on a solid stone foundation. It had a 'footprint' of approximately 50 feet by 60 feet and it's highest points were six stories tall. The first floor over the canal was open to allow canal boats to run under the structure to be loaded. The grinding floor was laid out at ground level on the east (towpath) side of the canal. In this portion of the structure, grain was ground into flour and meal. Power for the grinding stones was provided by a water wheel and the 'fall' through a race from the Zoar Lock. The storage and entry floors were on the west side, adjacent to the public road to take advantage of gravity for running the grain through the mill from one department to the other. The mill was completed in 1839 and the first miller, a New Yorker named Henry Usher, was hired at \$400.00 per year, plus a line of credit at the community store, "to produce a quality of flour suitable for eastern markets." This structure was also used as a storage warehouse by the Zoarites and it has to be assumed that little, if any, canal boat traffic used the guard locks and river crossing after this structure was operational.⁶

The Commune of Zoar had their own fleet of canal boats, owning at least three such Craft, but only running two at one time. The ECONOMY appears to have been the Society's first canal boat and dates from the early 1830s. It was a "scow built" craft and reportedly, used primarily for heavy, short hauling to and from the two iron furnaces, warehouses and foundry. The INDUSTRY was a new boat. Its first year of operation was probably 1837.⁷ It was a two-decker capable of carrying 60 tons of cargo or a combination of cargo and passengers. Normally, when the Zoarites took on a new enterprise, be it an iron furnace or a canal boat, 'outsiders' were first hired to set up and run the operation. Soon, however, Zoar residents took over many of the particular duties. The exceptions to this appear to be at the two iron furnaces, where the large majority of workers and supervisors were 'outsiders.' The Zoarites also apparently hired out completely the tasks of digging and supplying coal and iron ore for the furnaces.⁸

Another exception appears to have been that of the first captain of the INDUSTRY who, in 1837, was 18 year old Zoarite, Johannes Petermann.⁹ The next year 1838, the captain of the INDUSTRY was an outsider from Pennsylvania, James Rudder. In 1841, Rudder (still listed as "from Pennsylvania:") was listed as captain of the Zoar canal boat, FRIENDSHIP.¹⁰

There is no record of a new canal boat being constructed for the Zoar Community around this time, nor any record of the INDUSTRY being sold, so it may be inferred that the 1841 FRIENDSHIP was the INDUSTRY with a name change. Whatever the circumstances, by 1844, James Rudder again signed a contract to be captain of Zoar's canal boat, FRIENDSHIP. This time the contract listed his place of residence as Tuscarawas County.¹¹

During the late 1840s, Johannes Peterman, now some 10 years older, was captain of the FRIENDSHIP. He and his wife Christina made that 85 mile trip to Cleveland often. It seems odd that Peterman was named captain of a Zoar canal boat when he was also their doctor, but he was a member of the Zoar Community and the Trustees picked the tasks each member of the community was to perform. The trips to Cleveland, the big city, were enjoyed by the Peterman's except that their two little girls were sometimes not allowed to go along, but were instead placed in the girls dormitory until their

parents returned.¹² Few names of the Zoarites who were connected actively with canal boating out of the village are available. John Sturm, at the age of 74 in 1911, remembered that he and Mathias Disinger drove the horses that pulled the canal boats for one summer. Though many canal boatmen used mules at that time, Zoar boats always used horses. It also appears that most of the Zoar canal boat trips were to Cleveland and back. Sturm also remembered that he had no say in what job he was assigned.¹³

It isn't entirely clear the exact time period this fleet was operating out of Zoar. The Zoarite's distrust of government officials and regulations apparently extended to the registration of their canal boats. Only the ECONOMY and two FRIENDSHIPS can be found in the official registers, and they were both registered rather late in their careers.. The Earliest Zoar Canal Boat listing is the ECONOMY, registered at the Massillon Toll collector's Office May 21, 1847, with J.M. Bimeler of Zoar, Ohio listed as owner. The Canal Boat FRIENDSHIP was sold by J. M. Bimeler of Zoar April 05, 1849, and registered at Cleveland as the BOLIVAR out of that place. A new canal boat, again named the FRIENDSHIP, was built in Peninsula, Ohio in 1849 at a cost of \$1,100. A note in the Akron Toll collector's Office for April 05, 1849, transcribes the name of the canal boat FRIENDSHIP of Zoar as belonging to J. M. Bimiler, We can assume that the old FRIENDSHIP was sold when the new FRIENDSHIP was about to come off the 'ways' at Peninsula. The canal boat named FRIENDSHIP again appears in the canal boat register, this time at Akron Aug. 8, 1855, when it was sold to I. J. Wolf at Rochester, Ohio (now part of Navarre) and became the FALCON. We can state, then, that the Zoarites actively operated canal boats from the early 1830s into 1855, though that latter date may have to be extended a bit if additional data is discovered.¹⁴

Joseph Bimeler believed in reinvesting the community's earned money back into the community. Over the years a number of industries sprang up, some within the village, itself and many along the mill race. At least one industry, the saw mill, was erected directly over the east abutment to the river dam. Though most of the sawn lumber produced here was used locally, some was available for export and sale by canal.

Iron Ore was among the first commodities shipped from Zoar by canal. Of course, a great deal of pig

iron was shipped from the two Zoar furnaces and the foundry at the Zoar Furnace found a ready market for iron implements, all shipped by canal, though not necessarily all on Zoar canal boats. Zoar iron stoves were known far and wide for their efficiency and craftsmanship. A foundry was erected near the southern end of the mill race after the two furnaces were closed and continued to supply iron implements for export. Tanned hides were a big export item for many years and the various mills in and around Zoar provided grain and flour for export. A pottery was tried, but was short-lived, as was silk manufacturing. Aside from iron ore, grain and iron implements, the most famous Zoar exported product was beer, known universally for its quality, taste and potency.¹⁵

Though a strong case can be made for the statement that the Ohio Canal 'saved' or 'made' the Zoar community, it also can be said to have caused it a lot of heartache and death, at least indirectly. One day during the summer of 1834, a man was taken off a canal boat, too sick to continue. He was taken to the Zoar Canal Hotel on the hill by the bridge where he was tended to as best as possible. He died shortly afterward and he, along with his clothing and belongings, were buried in the Zoar cemetery. Sometime later a woman came to the area, claiming to be the unknown man's wife, and asked for papers and money that were in her husband's possession when he had embarked on the canal boat. The Zoarite Trustees informed the lady that everything had been buried with her husband. They could not disturb the grave, so she hired men to disinter him, presumably found the valuables, and went away.

That night, Cholera broke out in Zoar. From Aug. 5 until Sept. 23. 56 of the Separatists died, nearly 1/sixth of the community's total population at that time. Healthy persons would come home from their work in the evening, and by the next morning would be in their graves. The cabinet makers of the village worked night and day preparing coffins for the victims, but they couldn't make them quickly enough. Many bodies had to be just wrapped in sheets and buried as quickly as possible. The graves of the victims of the Cholera epidemic are not marked individually in the cemetery, but the area where they are buried has always been revered.¹⁶

Continued on p. 20

CANALENDER

September 9 and 23; October 14 and 28: Waterloo Canal Days, Waterloo Village, Stanhope, NJ. These special days feature musical entertainment, tours of village buildings, boat rides, and merchandise sales, from 10 a.m. to 4 p.m. Canal Society volunteers will be on hand to talk about the area's history and offer hands-on activities. sites.google.com/site/morriscanalworkinggroup/events

September 24, 2017: American Canal Society Annual Directors Meeting, Syracuse, New York: 1:00 p.m. Marriott Syracuse Downtown, Syracuse, N.Y.

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

October 6–8, 2017: Canal Society of Ohio 2017 Fall Tour, Piqua Area. Johnston Farm Historical Area. Tour headquarters will be the Comfort Inn in Piqua Mall near I-75. Visit www.canalsocietyohio.org/calendar.html for further information.

April 13-14, 2018: Canal Society of Indiana 2018 Spring Tour, Huntington, Indiana. Details will be published in a later issue of *AmericanCanals*. Visit www.indcanal.org/ for further information.

September 10-12, 2018: **World Canals Conference 2018, Athlone, Ireland.** Journey to Athlone Co. Westmeath in the heart of Ireland and at the heart of the Irish Inland Waterways network. www.wccireland2018.com/

Zoar and the Ohio Canal – continued from p.19

NOTES:

1. Original Contracts in Ohio Historical Center – researched, June 1995.
2. THE ZOAR SOCIETY, Edgar B. Nixon (PhD. Dissertation) The Ohio State University, 1933, Pg. 146. The various Canal Boat Lines paid the Zoarites from \$800.00 to \$1,000.00 during the 1838 boating season to 'put up' passengers.
3. Original Canal Contracts for Tuscarawas County.
4. THE EARLY IRON INDUSTRY IN THE TUSCARAWAS VALLEY, New Philadelphia TIMES REPORTER, Dec. 25, 2009, Jon Baker. Actually, Bimeler purchased the area from Hazlett, Christmas and Co of Canton. These gentleman had purchased it from Mathew Laird in 1831 for \$15,000. Though the Zoar contract called for yearly payments of \$4,000, the final deed transfer didn't take place until May 7, 1845, Nixon's 1933 PhD Dissertation, Pgs. 137 – 138.
5. THE ZOAR SOCIETY. Nixon states that the Fairfield Foundry was not reopened after Bimeler's purchase, but the 1838 newspaper advertisement indicates that it remained open for a few years, at least. Most finished iron products were produced at the Society's foundry on the village mill race, though there is evidence that some direct casting was made at the Zoar Furnace.
6. Ibid. Nixon states that power for the mill was supplied by a turbine, though he also says all the milling equipment was obsolete when

installed. We believe, therefore, that the power was by a water wheel of some design.

7. Fernadeous' article in Peg Bobel's book. PB

8. Ibid. Pg. 128.

9. Ibid.

10. This seems to indicate that the name of the INDUSTRY was changed to FRIENDSHIP sometime prior to the writing of this last contract.

11. Contracts between James Rudder and Joseph Bimeler, 1839, 1841, 1842, Library of the Ohio Historical Society, Columbus, Ohio

12. THE ZOAR STORY, Pgs. 26 & 27.

13. Ibid. Pg. 33

14. BOATS OF THE OHIO CANAL, 1839-1855. January, 2006, David A Meyer, Pgs. 109, 134, 137, 191 registrations of Canal Boats ECONOMY and FRIENDSHIP. The second FRIENDSHIP was sold in 1855. A note from a Zoar official to a business in Cleveland, dated April 17, 1855 states that the FRIENDSHIP "will not be running "this spring" as " there is no produce to ship and the aqueduct 4 miles north of this place is being repaired and will not be operational until the 27th of the month."

15. THE ZOAR STORY, Pgs. 60, 61, 63-65, THE EARLY IRON INDUSTRY IN THE TUSCARAWAS VALLEY.

16. Ibid (THE ZOAR STORY). Pg. 75.