



# Towpath Topics

Middlesex Canal Association P.O. Box 333 Billerica, MA 01821  
[www.middlesexcanal.org](http://www.middlesexcanal.org)

Volume 56 No. 2

February 2018

Please mark your calendars

**MCA Sponsored Events**  
**2018 Schedule**

**Winter Meeting, 1 P.M. Sunday, February 11**  
**Fred Lawson, "Start of the Association", October, 1961**

**Easter Sunday, April 1, museum closed**

**Bike Tour South, 10:44 A.M., Saturday, April 14**

**Spring Walk, 1:30 P.M., Sunday, April 22**  
**Wilmington Town Park**

**Spring Meeting, 1 P.M., Sunday, May 6**  
**A colloquy on Robert Thorson's Book, *The Boatman***

**16th Annual Bike Tour, 9 A.M., Sunday, September 30**

**Fall Walk, 1:30 P.M., Sunday, October 14**  
**Woburn Cinemas**

**Fall Meeting, 1 P.M., Sunday, October 28**  
**TBA**

**The Visitor/Center Museum is open Saturday and Sunday, noon – 4pm, except on holidays. The Board of Directors meets the 1st Wednesday of each month, 3:30-5:30pm, except July and August.**

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### **Editors' Letter**

Dear Readers,

A new year brings the first issue of 2018 Towpath Topics into your homes by computer or in print. However you are receiving it, may it sustain you through the next batch of foul weather!

In an attempt to allow our readers to plan their entire MCA year at once, we have listed and described all the activities for the year ahead, that we have information about at this time. Items may be added as the year progresses. Mark your calendars now so you don't miss anything.

First up in this issue is a letter from MCA VP, Traci Jansen. She explains some of the activities of MCA volunteers through the holiday season. New volunteers are always welcome to join the rest of the team in 2018.

Next, we are happy to include two articles contributed by Howard Winkler, Treasurer Emeritus of the MCA. The first is a reprint of an article from the Harvard Crimson about the Baldwin Statue in Woburn and the second is a report on the Middlesex Canal through the pen of the US Secretary of the Treasury, Albert Gallatin. Both are very informative.

From Betty Bigwood is a lively accounting of the Fall Meeting and the speaker. And, from the MCA President, J Jeremiah Breen, is a well-researched

article on the Billerica Dam, with detailed construction diagrams.

For a special treat we will be publishing in serial format, *A Social History of the Middlesex Canal* by MCA Honorary Director and Harvard Divinity School Emeritus, Alan Seaburg. Starting in this issue will be the preface, table of contents, and introduction. This major work has so far only been available on-line, and we are thrilled he is making it available for inclusion in Towpath Topics.

Finally, please check out Miscellany, especially the section about contacting the editors. How about future features or letters and comments that can start a continuing dialog with editors and readers?

Thank you for letting us do this!

Deb, Alec, and Robert

### **MCA Sponsored Events and Directions to Museum**

**Winter Meeting:** In October of 1961, at the Annual Meeting of the Billerica Historical Society, Harry Lasher was the keynote speaker. The Middlesex Canal was the topic of his presentation. Fred Lawson, who had received a grade of "A" on a college English paper on the canal was in attendance. At some point during Lasher's talk, Fred suggested "out loud" that Lasher was in error. This prompted a conversation with another member of the audience, Dick Manning. It was this exchange that sowed the seed that eventually give birth to the Middlesex Canal Association.

To learn more of this fascinating story, plan to attend Fred's presentation on Sunday, February 11, 2018 at 1:00 P.M. in the Reardon Room of the Middlesex Canal Museum and Visitors' Center located at 71 Faulkner Street in North Billerica, MA 01862. Come, share your knowledge of the beginning of the MCA, relish the warm camaraderie on a mid-winter's day and enjoy the tasty fare at the conclusion of the meeting. You will not regret it!!!!

**Bicycle Tour South:** On Saturday, April 14, 2018, riders are encouraged to meet at 10:44 A.M. at the Lowell Train Station (the time the 9:30 A.M. train from Boston's North Station arrives at the Gallagher Terminal). For those who arrive early, they may wish to have breakfast at the historic Owl Diner. The route visits the Pawtucket and other Lowell canals, the river walk, the Francis Gate, and the Middlesex Canal remnants in Chelmsford. Lunch at Rte 3A mini-mall in North Billerica is followed by a quick visit to the Canal Museum, then on to Boston. It will be a long day of exploration (35 miles end-to-end) but sunset is late.

Riders can board northbound trains at other stations or catch southbound trains to return to Boston. A complete Lowell Line schedule can be downloaded at <http://www.keoliscs.com>. For changes or updates see [www.middlesexcanal.com](http://www.middlesexcanal.com).

org. Steady rain cancels; **helmets** are required. The leaders of the tour are Bill Kuttner and Dick Bauer.

**Spring Walk:** The Spring Walk will take place on Sunday, April 22, 2018. Participants are encouraged to meet at 1:30 P.M. at the Wilmington Town Park across from 760 Main Street (Rte. 38). The Appalachian Mountain Club and the MCA will host the 8/10 of a mile walk along a section of the historic Middlesex Canal. Points of interest along the route will include the Ox Bow Turn where striations from the tow ropes are imbedded in the ledge along the canal, the signs of spring as the trek continues through the 14-acre tract gifted to the MCA by Stanley Webber and his daughter, Julia Ann Fielding, and finally Patches Pond. MCA member, Robert Winters will lead the walk. Additional information is available at [www.middlesexcanal.org](http://www.middlesexcanal.org).

**Spring Meeting:** The Spring Meeting (Annual Meeting) of the MCA is scheduled for Sunday, May 6, 2018 at 1:00 P.M. in the Reardon Room of the Middlesex Canal Museum and Visitors' Center located at 71 Faulkner Street, North Billerica, MA 01862. A colloquy of Robert Thorsons's book, *The Boatman*, is planned.

**16th Annual Bicycle Tour North:** On Sunday, September 30, 2018 riders are encouraged to meet at 9:00 A.M. at the Middlesex Canal plaque, Sullivan Square MBTA Station (1 Cambridge Street, Charlestown, MA 02019). The ride will head north following the canal route for 38 miles to Lowell. There will be a stop for snacks at Kiwanis Park across from the Baldwin Mansion (2 Alfred Street, Woburn, MA 01801 ~12:30 P.M.), stop for a visit at the Canal Museum (71 Falkner Street, North Billerica, MA 01862 ~ 3:00 P.M.) and arrive in Lowell in time for the 5 P.M. train back to Boston. Riders can choose their own time to leave or join the tour by using the Lowell line which parallels the canal. The ride is easy for most cyclists. The route is pretty flat and the tour group will average 5 mph. Steady rain cancels; **helmets** are required. For changes and updates see [www.middlesexcanal.org](http://www.middlesexcanal.org). The leaders of the tour are Bill Kuttner and Dick Bauer.

**Fall Walk:** The Fall Walk will take place on Sunday, October 14, 2018. Participants are encouraged to meet at 1:30 P.M. at the southeast corner of the parking lot behind the Woburn Cinemas. The Appalachian Mountain Club and the MCA will host the three-mile walk along two level sections of the historic Middlesex Canal. MCA member, Robert Winters will lead the walk accompanied by co-leader Marlies Henderson.

**Directions:** From Rte. 128, take Exit 35, Rte. 38S. Proceed 1/10 of a mile and take a left turn off Rte. 38 onto Middlesex Canal Drive past the Crowne Plaza to the meeting place. Additional information is available at [www.middlesexcanal.org](http://www.middlesexcanal.org).

**Fall Meeting:** The Fall Meeting of the MCA is scheduled for Sunday, October 28, 2018 at 1:00 P.M. in the Reardon Room (possibly) of the Middlesex Canal Museum and Visitors' Center Located at 71 Faulkner Street, North Billerica, MA 01862. At the time of the publication a program and lecture are TBA.

### **Directions to Middlesex Canal Museum and Visitors' Center**

#### By Car: From Rte. 128/95

Take Route 3 toward Nashua, to Exit 28 "Treble Cove Road, North Billerica, Carlisle". At the end of the ramp, turn left onto Treble Cove Road in the direction of North Billerica. At about ¾ mile, bear left at the fork. After another ¾ mile, at the traffic light, cross straight over Route 3A (Boston Road). Go about ¼ mile to a 3 way-fork; take the middle road (Talbot Avenue) which will put St Andrew's Church on your left. Go ¼ mile to a stop sign and bear right onto Old Elm Street. Go about ¼ mile to the falls, where Old Elm Street becomes Faulkner Street; the Museum is on your left and you can park across the street on your right, just beyond the falls. Watch out crossing the street!

#### From I-495

Take Exit 37, North Billerica, south roughly 2 plus miles to the stop sign at Mt. Pleasant Street, turn right, then bear right at the Y, go 700' and turn left into the parking lot. The Museum is across the street (Faulkner Street).

#### By Train:

The Lowell Commuter line runs between Lowell and Boston's North Station. From the station side of the tracks at North Billerica, the Museum is a 3-minute walk down Station Street and Faulkner Street on the right side.

### **Vice President's Message**

Friends,

We hope that Winter finds you well and that you are enjoying the New Year. This is a fun and active time for the Middlesex Canal Association as we are busy reaching out to membership, welcoming visitors to our Museum, and making great strides towards our future.

The season starts with organizing our annual appeal. Our annual appeal letter is a product of teamwork. Much thought goes into the composition of the letter, stationery is artfully crafted, addresses and labels are organized, and a group assembles the mailings. Responses receive a follow-up letter and appeals are reported in our Treasurer's report. We track our progress from year to year and we see promise and stability in the future of the MCA.

We decorate the Museum during the holidays and will invite you to join in the fun next season. I look forward to the traditional tree trimming, model train and miniature village detailing, arranging boughs of holly, playing music, and eating pizza! The splendor warms our visitors and makes our meetings feel festive.

This is a time when the Reardon Room hosts holiday parties and there is joy when guests express wonder and awe at our mill space. Weekend visitors come with questions and queries about the amazing Middlesex Canal, tour Museum exhibits, and explore canal landmarks around the Summit Mill Pond. Friendly, knowledgeable, volunteer docents often work in pairs and are always happy to spend time with fellow community members and canal enthusiasts.

And while winter and holidays are happening, our dedicated MCA Board Members continue to attend classes, write grants, research, travel, and report all in the spirit of the Canal. I feel fortunate to be part of this group and I encourage our members to participate!

Warmly,  
Traci Jansen

***Roadwork Threatens Memorial to Revolutionary War Alum***  
contributed by Howard Winkler

*The following story appeared in the Harvard Crimson on Dec 8, 2006.*

Roadwork Threatens Memorial to Revolutionary War Alum

Woburn Town Planning Board member: ‘So much for the thanks of a grateful nation’

Published On Friday, December 8, 2006  
By WILLIAM M. GOLDSMITH  
Contributing Writer

He survived the Battle of Lexington and Concord and crossed the Delaware alongside Washington, but Colonel Loammi Baldwin—who received his master’s degree from Harvard in 1785—now sees his legacy in danger, according to one local official.

A memorial in nearby Woburn commemorating the life of the war hero may be downsized due to road expansion.

“So much for the thanks of a grateful nation,” said David W. Edmonds, member of the Woburn Town Planning Board and the primary force behind the fight for the memorial’s preservation.

Born in Woburn in 1745, Baldwin commanded the town’s militia at the first battle of the Revolution. Among his many other accomplishments, Baldwin was responsible for the development of the Baldwin apple—which was once considered New England’s favorite fruit. He also oversaw the construction of the Middlesex Canal, which originally spanned from Boston Harbor to the Merrimack River in Lowell—a feat that earned him the moniker “Father of American Civil Engineering.”

“He was a pretty extraordinary fellow,” Edmonds said.

The memorial, which consists of a triangle-shaped green, a cannon, and a six-foot tall statue of Baldwin standing atop two rectangular five-ton pedestals, was unveiled on Patriots’ Day in 1918.

Edmonds first became aware of the memorial’s predicament when he learned that Middlesex Superior Court planned to temporarily relocate itself to Woburn while its permanent home, the Edward J. Sullivan Courthouse in East Cambridge, undergoes scheduled renovations.

Cummings Properties, based in Woburn, is managing construction of the temporary courthouse and an office complex near the green. To make way for the increased number of cars, Cummings wants to widen surrounding roads.

The company doesn’t want to burden Woburn residents with congestion as a result of its construction. So “we’re proposing to do the off-site roadway [widening] work to mitigate the traffic impact,” said Dennis A. Clarke ’90, president and CEO of Cummings.

It is precisely this roadway expansion that threatens the small park where Colonel Baldwin’s memorial stands. Over the years, Edmonds explained, the widening of roadways has continually infringed on the park, diminishing its size. “It’s been absolutely truncated by repeated construction of the roadways,” said Edmonds, 57, a retired post office training manager. “All it is now is some bushes, a statue, and a cannon.”

“The additional 4,000 cars a day that will result from the construction

of the courthouse and office space will absolutely overwhelm the intersection [where the memorial is located],” Edmonds said, adding, “In my opinion, this expansion of traffic relegates the monument area to nothingness.”

But Clarke said that “all of the proposed changes are being done within the existing roadway layout.” And his firm’s lawyer, Susan F. Brand, said that the courthouse’s arrival in the town “should be great for all of Woburn.”

The Town Planning Board will vote on the construction plans this Tuesday. Regardless of whether his green is displaced by asphalt, Baldwin’s statue will brave the oncoming traffic. After defeating the Redcoats, he won’t let roadways push him off his pedestal.

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**Albert Gallatin, *Report of the Secretary of the Treasury; on the Subject of Public Roads and Canals* [1808]**

Submitted by Howard Winkler

I.: MERRIMACK.

THE navigation of that river, which rising in the state of New-Hampshire, falls into the sea at Newburyport after a course of 180 miles, is interrupted by several falls. A canal called Blodget’s canal has been opened around Asmoskeag falls. Lower down and about 40 miles from the sea, the Essex canal, 4 miles in length, and admitting boats drawing 3 feet and a half, will open a communication around the Patucket falls, effecting through 3 locks, a descent of 34 feet. From the lower extremity of the canal, the river is navigable to the head of the tide at Haverhill, although the fall be 45 feet within that distance. No particular account has been received of the capital expended; but it is believed that the work will be profitable to the undertakers.

The Middlesex canal, uniting the waters of that river with the harbor of Boston, is however the greatest work of the kind which has been completed in the United States.

That canal, 12 feet wide and 3 1-2 feet deep, draws its supply of water from Sudbury or Concord river, a branch of the Merrimack, and from the summit ground extends six miles with a descent of 28 feet to the Merrimack above the

Patucket falls, and 22 miles with a descent of 107 feet to the tide water of the harbour of Boston. The descent to the Merrimack is effected by three, and that to tide water, by nineteen locks. They are all 90 feet long, 12 feet wide, of solid masonry and excellent workmanship.

In order to open that canal, it was necessary to dig in some places at the depth of 20 feet, to cut through ledges of rocks, to fill some vallies and morasses, and to throw several aqueducts across the intervening rivers. One of these across the river Shawshine is 280 feet long, and 22 feet above the [51] river. All those obstacles have been overcome, and boats of 24 tons, 75 feet long and 11 feet wide, can navigate the canal. Those in most general use are of smaller dimensions, and are drawn by two horses at the rate of three miles an hour. A raft of one mile in length and containing eight hundred tons of timber, has been drawn by two oxen, part of the way at the rate of one mile an hour. Common boats pass from one end of the canal to the other in 12 hours. The capital expended on the work is stated at 478,000 dollars, and the water rights and necessary land cost a farther sum of 58,000 dollars. The total expense has exceeded 550,000 dollars: the tolls have never yet exceeded 17,000 dollars a year, but are encreasing.

Several other canals have been contemplated in the state of Massachusetts, intended to unite the waters of Providence or Patucket river, with those of Charles river, which falls into the harbor of Boston, and of the river Connecticut. The grounds have been surveyed, but no particular description has been obtained, and the works have not yet been commenced.

<http://oll.libertyfund.org/titles/gallatin-report-of-the-secretary-of-the-treasury-on-the-subject-of-public-roads-and-canal>

**Editors’ Note:** This article is an addendum to a two-part series entitled *Communications from Robert Fulton*. Please see Towpath Topics #33-1 (September, 1994) and #38-2 (March, 2000). The 19th century spelling, capitalization, and facts has been preserved in this article.

**“HISTORY IN MODERN SURROUNDINGS”**

Summarized by Betty Bigwood

The Fall Meeting of the Middlesex Canal Association was held on Sunday, October 22, 2017. The speaker, William Kuttner, is a longtime friend of the MCA - leading bike rides along the Canal route, assisting with our West End Museum exhibit where he is on the BOD and numerous helpful acts of kindness.

There is the old adage that you can look at an object and not really see it. Bill enriched our understanding of the way time and need has transformed our infrastructure along the same old routes – these routes dating from the beginning of Boston’s settlement. Just how do you enable a bridge, accustomed to carrying a horse and buggy, to accommodate a heavy 10-wheeler and more?

Bill used his “Sherlock Holmes” detective skills to decipher the changes made to make our roads meet safety standards. Beautiful arched bridges were reinforced with concrete and rebar, rivets were replaced with nuts and bolts. All the detail was captured by Bill’s photographic skills and relayed to us. His curiosity was amazing.

Bill is an energetic speaker – drawing in his audience by bobbing up and down to depict the 10-12 foot tides in the Boston Harbor – spreading his arms out wide to demonstrate the complexity of the problems faced and arching backwards to depict the scene off the screen. He kept us awake!

Bill supplied the audience with individual detailed maps - of the early 1630 Boston and the current area – doubled in size - with spotlights on the old structures. It was very helpful and I will keep mine. It was an enjoyable afternoon!



Bill Kuttner October 22, 2017

## A SOCIAL HISTORY OF THE MIDDLESEX CANAL

ALAN SEABURG

Curator of Manuscripts, Emeritus, Harvard Divinity School Library

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THE ANNE MINIVER PRESS

History of American Transportation Publication

2017

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FOR

Betty and Gerry Bigwood, Bill Gerber, Tom Raphael, Jean Potter, Russ Silva, Howard & Lenore Winkler, Neil Devins, J. Jeremiah Breen, Debra Fox, Robert Winters, Marlies Henderson, Alec Ingraham, Roger Hagopian, Traci Jansen, Shayne Reardon, and other Middlesex Canalers now held sacred in so many good memories

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## INTRODUCTION

These essays, as with those in my *Life on the Middlesex Canal*, focus on social, economic, and business matters, as well as on the lives of individuals involved with building and operating the Canal from day to day. In addition it tells the story of those who have written its historical record, and supported its heritage through the programs and activities of the Middlesex Canal Association and the Middlesex Canal Commission. The result is *A Social History of the Middlesex Canal*.

In preparing this collection I was again struck by the amazing fact that the lives and major accomplishments of James Sullivan and Loammi Baldwin have never been fully and thoughtfully examined by a modern historian of the American Republic, or for that matter, by scholars who specialize in the important story of Boston or New England history. Both deserve such attention for their overall role in the story of this region, which also came to positively impact the entire development of the country's growing canal system, and its evolving civil engineering discipline. At the present time the best first biographical resource to consult on both gentlemen is the Dictionary of American Biography, which was published in 1999. Each entry's bibliography shows what further material is available, and except for Thomas C. Amory's two-volume life of Sullivan that appeared in 1859, and Frederick K. Abbott's 1952 Columbia University dissertation on Baldwin and his son, the dearth of scholarly recent biographies is clearly apparent.

Here it should be pointed out also to those who might desire to write about Sullivan and Baldwin that significant manuscript collections for both individuals, a basic need for such studies, are available at Harvard University, the Massachusetts History Society, the Peabody Essex Museum, the Winterthur Library, and the University of Michigan. Perhaps too as the Middlesex Canal Association's endowment fund increases to a level, which would allow it to modestly fund Canal projects, it could award to academically talented scholars a stipend to assist them in undertaking such studies.

It is time now to acknowledge some of the special individuals who helped make the research side of these essays easier and lots of fun. First I must thank the Middlesex Canal Association, and its president J. Jeremiah Breen, for allowing me to republish "America's First Major Canal," which under a different title and now revised, first appeared in their publication Towpath Topics.

Next, as so often before in my listing of those who have always been helpful to me in my various writing projects, I thank with much pleasure Gloria Korsman, Research Librarian, at the Andover-Harvard Theological Library of Harvard Divinity School. Whenever I ask her for assistance in finding a reference

source or article I need to examine, she promptly does just that. And in this regard I want to thank too the aid given me by the hard working, and friendly staffs, of two other Massachusetts libraries: the folks at the Concord Free Public Library, and those at the Billerica Public Library, especially Sandra Woodbury who was in charge of interlibrary loans when I was preparing these essays, and Kathy Meagher who is their Local History Librarian. The text was further improved by the information and insights generously provided by several friends: Howard B. Winkler, the Canal Association's long time Treasurer for suggesting the title of the collection; Harley Holden, for many years the Archivist of Harvard University; Alec Ingraham, Towpath Topics Co-copy Editor, Neil P. Devins, Membership Secretary, Middlesex Canal Association, Robert Light for reading and improving the text, and serving with Lizzie Seaburg and Sarah Thomas, as web editors of the Anne Miniver Press.

Finally, as so many times before in my friendship with Tom Dahill, I thank him for the wonderful Canal murals, which he has permitted me to reproduce in this volume.

Amicitiaenostreae memoriam spero sempiternam fore – Cicero. ["I hope that the memory of our friendship will be everlasting."]

Alan Seaburg

## AMERICA'S FIRST MAJOR CANAL

In 2004 John Steel Gordon published *An Empire of Wealth, The Epic History Of American Economic Power*.<sup>1</sup> Gordon, the author of many volumes dealing with economics, earned his B.A. in history from Vanderbilt University and now specializes in business and financial history. In Heather Bourbeau's New York Times review of this book she says in part: "From the founding of successful East Coast colonies by British joint stock companies to the attacks of Sept. 11, he ably traces the birth of the American economy."<sup>2</sup>

If his treatment of the Middlesex Canal is brief, and it is, he does make two points concerning the establishment and over all economic importance of the canal, matters which have often been debated, and probably will continue to be discussed by those involved in understanding both its history and significance. Here then are his two points.

One: By 1796, Gordon declared, "no fewer than thirty canal companies had

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1 John Steele Gordon, *An Empire of Wealth: The Epic History of American Economic Power* (New York: HarperCollins, 2004).

2 Heather Bourbeau, "An Empire of Wealth: Greed Is Good," New York Times Sunday Book Review, November 28, 2004.

been charted in eight of the thirteen states.”<sup>3</sup> The Middlesex canal was one of these. He next points out “most of these never got beyond the planning stage.”<sup>4</sup> The Middlesex Canal obvious got beyond the planning stage. But the question has regularly been what was its historical place in these first thirty canals.

Arthur L. Eno, Jr., for example, in his “Introduction” to Mary Stetson Clarke’s history of the Canal terms it as “if not the oldest, certainly one of the most important of the early major transportation canals in the United States.” Betty Bigwood in “Facts Everyone Should Know About the Middlesex Canal” calls it “one of the first major engineering projects in the United States” and “the oldest regional traction canal.” The “Preface” to Lewis M. Lawrence’s volume *The Middlesex Canal* refers to it as “One of the important enterprises of Massachusetts during the first half of the nineteenth century.”

Bill Gerber in his 2005 *Middlesex Canal Facts* declares the Canal as “one of the nation’s earliest stock companies” which “helped to inspire the construction of canals in other parts of the United States, particularly the Erie Canal.” It further, he says, “served as a school of practical experience for early engineers.” And the Middlesex Canal Commission finds it to be “the first canal built for commercial use in the United States,” while the Middlesex Canal Association says on the video case of its “A Journey Along the Middlesex Canal” the following: “The American canals of the early nineteenth century linked the coastal river cities to the resources of the interior. The first of these, the Middlesex, - - -” The important key is calling the Canal “the first.”

Finally, in this brief historical assessment on this matter, Christopher Roberts, who can be labeled with a bit of whimsy as the true “fore-father and fore-mother” of those doing serious research history on the Middlesex Canal, in his ground breaking 1938 study *The Middlesex Canal*, simply referred to the Middlesex as “this early Canal.” As such, however, it garnered for Massachusetts he went on to say “the primacy, shared only with South Carolina, in the initiation of internal improvements in America.”

And now what is John Steele Gordon’s contribution to this question? In his judgment the Middlesex Canal was “the first major canal project to reach the construction stage,”<sup>5</sup> in other words it was the first major canal to have been built in the United States. Interestingly, Thomas C. Proctor in his 1984 University of Massachusetts, Boston thesis on the Middlesex expresses the identical conclusion reached by Gordon: “The first major canal built in the United

3 John Steele Gordon, *An Empire of Wealth*, 102.

4 Ibid.

5 Ibid.

States was the Middlesex Canal.”<sup>6</sup>

Second: The second matter Gordon deals with relates to the Canal’s economic value. Of course it had some, even if it went belly-up in the end, but how wide spread was its economic worth to the American economy of its and later time? To place this matter into perspective let us once again summarize some of the previous answers to this question.

The Middlesex Canal Commission finds that “the canal played an important role in the early industrialization of America and in the history of the nine town and cities through which it ran.” In her book on the Canal Mary Stetson Clarke says that the “primary purpose in building the canal was to open up the hitherto inaccessible timber and farm lands in northern Massachusetts and New Hampshire in order to enlarge the trade of Boston.” She then expands her statement by pointing out that “in Boston the inland products could be loaded on vessels and shipped to foreign and domestic ports. And if the goods brought in from those distant ports could be distributed among the interior communities, foreign trade would flourish. The new markets could revitalize the economic life of Boston and return her to leadership.” One of the keys here, a view shared by others, concerns the idea that the Canal could - perhaps did - return Boston to its status as the country’s leading commercial center, a position it had held up to the 1740s.<sup>7</sup>

As far as I can tell Lewis Lawrence, Thomas Proctor, Betty Bigwood, Bill Gerber, in their publications previously mentioned, do not give an overall assessment concerning the Canal’s economic advantage either to New England or the country, although all clearly imply that it had a positive effect, and two indicate that it directed the inner communities goods and products to the Port of Boston rather than to Marblehead, thereby enhancing the commercial status of the former.

Thomas Proctor, however, does indicate by quoting a line from George Rogers Taylor’s volume *The Transportation Revolution, 1815-1860* that the impact of the Middlesex Canal was not as significant as some believe. That quotation is: that the Middlesex Canal was “a relatively unimportant waterway.”<sup>8</sup> This, to give but one other example, was also the conclusion in 1922 of Norman Gras

6 Thomas C. Proctor, “*The Middlesex Canal, Republican Ideology, and the Process of Emulation: A Study of the Impact of Beliefs and Models on Technological Development in Late Eighteenth-Century Massachusetts*”, M. A. thesis University of Massachusetts, Boston, 1984.

7 For more background data consult Edwin J. Perkins, *The Economy of Colonial America*, 2nd ed., (NY: Columbia, 1988).

8 George Rogers Taylor, *The Transportation Revolution, 1815- 1860* (NY: Holt, Rinehart and Winston, 1951) 405.

in his *An Introduction to Economic History*. There he bluntly declares, “The Middlesex Canal did something to bring trade to Boston, but not very much, as events proved.”<sup>9</sup> Given this data it is no surprise to learn that the Middlesex Canal is not mentioned once in such a standard economic survey as that written by Gary M. Walton and Hugh Rockoff, *History of the American Economy*.<sup>10</sup>

Now what is John Steele Gordon’s contribution to this question? His judgment is this: “once in operation the canal greatly helped the economy of Boston and the area served by it.”<sup>11</sup> The key is “Boston” and “the area served by it.” But beyond that he does not go.

From this brief examination of the two points raised by Gordon is there anything we can, for now at least, conclude on these questions. Well it seems certain that the Middlesex, while it has a number of other claims that are unique to its story, can definitely be called the first major canal built and operated in the United States. This is clearly the starting statement for facts that everyone should know about the Middlesex Canal.

On the second matter herein discussed there seems to be confusion. In other words, for many it has played a rather large role in the country’s economic history, and for others its contribution has been much more limited. That it helped Boston is not in dispute, for that key city existed unfortunately in a geographical area where important rivers that could and did bring interior goods to the country’s east coast journeyed to the sea and not to Boston. For examples, the Merrimack did that and so did the Connecticut. The Middlesex Canal by allowing produce and timber to come down the Merrimack, and also by encouraging Vermont commercial products to reach via wagons and carts its terminus in Lowell, permitted commercial interchange between Boston and some of the interior towns and cities of New England.

Now while that was important for Boston in reality it did really little to help the city to regain the position it had held up to the 1740s as the Republic’s leading trade center. For that status had been heavily damaged as a result of the American Revolution. Boston, at the start of the Revolution in 1775, had a population of about 15,000 but by the war’s end only about 3,000 of that number of people remained. But even more significant than the loss of inhabitants was the fact that the British government through embargos and its Navy

<sup>9</sup> Norman Scott Brien Gras, *An Introduction to Economic History* (NY: Harper, 1922) 226.

<sup>10</sup> Gary M. Walton and Hugh Rockoff, *History of the American Economy, 10th ed.* (Mason, Ohio: Thomson/South-Western, 2005).

<sup>11</sup> John Steele Gordon, *An Empire of Wealth The Epic History of American Economic Power*, 103.

had just about completely destroyed its mercantile marine trade business. To grow again, the populace, especially its business and civic leaders, had to reinvent itself, which by the 1790s it successfully had done.

Thus when the year 1803 opened, and the Canal became operational, Boston’s population was 25,000, and its wharfs, shipyards, and trading houses were again extremely busy, all without the aid of the Middlesex Canal. And while there is no doubt that the Middlesex Canal did contribute to its further commercial development, the goods it transported from the small towns it traveled through really had limited trade value when compared with the many other goods traded by Boston merchants. For example, Frederic Tudor, who was popularly called the Ice King, made his money from selling ice from ponds around Boston to the West Indies, the southern ports like Charleston and New Orleans, and eventually to India. And Colonel Thomas Handasyd Perkins made most of his from the China Trade. Indeed, the goods that especially enriched him included slavery, sugar and opium, and these were not items transported by Middlesex Canal boats.

All of this in the end, however, was not enough to restore Boston to its early glory for once the Erie Canal started to operate, with interior resources so much more fruitful than the Middlesex Canal could ever tap, it meant that eventually New York City became the Republic’s leading commercial center.

To sum up this research, I think it is fair, honest, and correct to claim that the Middlesex Canal was our country’s first major canal; however, the extent of its wider significance to the growth and development of our country is still unclear. That point would seem to make an inviting, challenging, and useful honors thesis, or even better a dissertation topic of real value for a promising Ph.D. candidate to explore in depth. If Roberts’ focus was on the story of the canal, the next thesis should illuminate, based on serious research, its place and significance in the story of America’s economic history. Until that day comes, however, the next essay sketches in brief the answer concerning is economic influence on Boston, New England, and the emerging United States.<sup>12</sup>

Part 2 will appear in the next issue of *Towpath Topics*.

<sup>12</sup> For more background data see Jacqueline Barbara Carr, *After the Siege: a Social History of Boston 1775-1880* (Boston: Northeastern University Press, 2005).

## “The Billerica Falls Dam”

by J. Jeremiah Breen

### The Osgood Dam

The town meeting of Billerica in 1708 granted land to Christopher Osgood on the condition that he build a grist mill within two years. The town meeting voted on March 27, 1710 to defend Osgood from any charge in flooding Dr. Toothacre’s meadow.<sup>1</sup> As soon as the dam was built, complaining began. The complaining river meadow owners in 1860 convinced the legislature to order the dam built by the Middlesex Canal Company reduced by 33 inches.<sup>2</sup>

The 1708 grant stated the grist mill was to be built at the falls against Samuel Rogers house lot. If ever known as Rogers Falls, the name for the location did not last. Henry Thoreau, who knew the river well, referred to the location as the Billerica Falls.<sup>3</sup>

### Richardson, or Zig-Zag, Dam

The Middlesex Canal Co. was incorporated in 1793 and bought the then existing replacement for the Osgood dam from Thomas Richardson on March 25, 1794.<sup>4, 5</sup> William Weston, the English engineer, whom the canal company paid to come from Philadelphia to advise them, made his report on August 2, 1794. Significantly, Weston wrote “I have fixed the surface of the water on the summit level of the canal, one foot higher than the dam at Richardson’s mill, this being as much as could be done with safety to the range of Meadows which extend for miles on each side of the Concord.”<sup>6</sup> A smoking gun for meadow owners complaining of flooding if the summit level is more than one foot higher than the Richardson Dam.

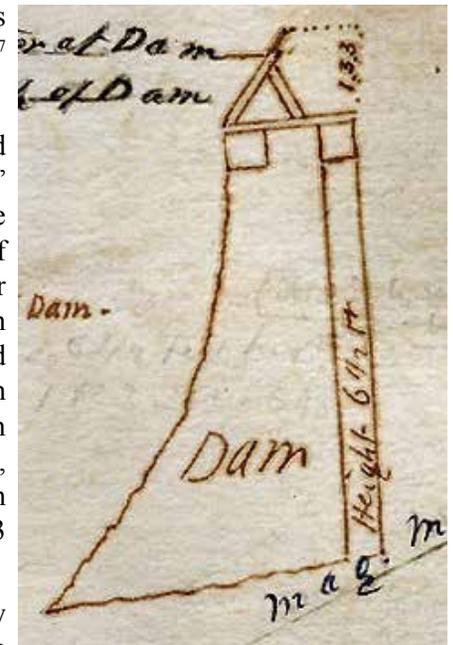
The Richardson Dam was described as being in three sections, zig-zagging from rock to rock. On the east bank, it began up river of the 1798 dam, and on

the west, ended at the 1798 dam. It was removed when the 1798 dam was built.<sup>7</sup>

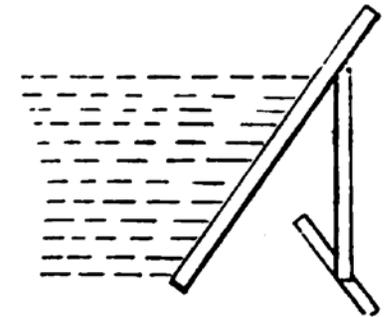
### 1798 Dam

Loammi Baldwin, superintendent and builder of the canal, pinned a 7 or 8” flashboard to the zig-zag dam but the dam could not provide the quantity of water required at the canal design water elevation. He built a higher, tighter dam in 1798.<sup>8</sup> When his son, also named Loammi, here with a 2 to distinguish him from the father, was hired as an expert in an 1811 complaint of flooding, he sketched a section of the dam with “Height 6½ ft” to the capsill with a 1.3.3 (1’+3.3”) flashboard.<sup>9</sup>

Theophilus Manning in his testimony before a joint special committee of the Massachusetts legislature in 1959 described a figure-4 flashboard, “a foot, or more” high.<sup>10</sup> Daniel Wilson testified it was 30” in 1819 and was replaced by a flashboard on split solid timber, 12 or 14” square, in 1820 or ‘21.<sup>11</sup> In Figure 7, at the base of the flashboard on the old dam is the triangle of the split timber above the square capsill with the planking between.



1811, 15.3”, Loammi 2



Before 1819, Theophilus Manning

1 Report of the joint special committee upon the subject of the flowage of meadows on Concord and Sudbury Rivers, January 28, 1860. Boston: William White, printer to the State, 1860. Page 407-517pdf. Page 407 as numbered in the 517 page PDF downloadable at Google Books, “<http://tinyurl.com/Jan1860report>”.

2 Mass. Acts of 1860, Chapter 211.

3 Henry Thoreau, *A Week on the Concord and Merrimack*. Boston: James Munroe and Co., 1849. Page 66 of 413 (<http://tinyurl.com/BillericaFalls>).

4 Op. cit., Joint Report, 449-517pdf.

5 The history of the different dams at Billerica Falls from Osgood to Richardson to 1995 is in *A Short History of the Milldam at North Billerica 1653-1995* by Alec Ingraham. The Billerica Historical Society, 1995. <<https://tinyurl.com/IngrahamHistory>>

6 Mary Stetson Clarke, *The Old Middlesex Canal*. Melrose MA: Hilltop Press, 1974, 2nd printing, 1987. Appendix 2, pp. 152-157, “*Report of William Weston to the Directors of the Middlesex Canal, August 2, 1794*”. Clarke citation: Manuscripts Division, Baker Library, Harvard Business School, Baldwin Papers, Vol. 4.

7 Jonathan, born 12/31/1774, and Theophilus Manning, born 06/28/1777, described the dam in their 1859 testimony. Op. cit., Joint Report, 95-103-517pdf and 188ff-517pdf, respectively.

8 Ibid. Flashboard, 191-517pdf.

9 The Loammi 2 sketch is <http://tinyurl.com/ScrollMapLoammi> at the Concord MA public library. Brother George Baldwin testified it was the work of Loammi 2. Joint Report, 311-517pdf.

10 Flashboard, “a foot, or more”, Theophilus Manning. Joint Report, 189-517pdf.

11 “I never knew of any difference in the height of the water.” Joint Report, 285- 517pdf. Daniel Wilson became an employee of the canal company at the Billerica Falls at age 19 in 1819 and replaced the figure-4 flashboard on joists with a flashboard on split solid timber in 1821 or 22. Idem, 284ff-517pdf. Daniel Wilson, born 1/24/1790 in Tyngsborough MA. Vital Records of Tyngsborough MA.

The top of the flashboard in 1819 was 30" above the planking on the 1798 dam. The top of the planking is at el. 106.31' (=108.81' iron bolt - 30/12). William Weston, the English engineer who advised Loammi 1, wrote that the pre-1798 dam should not be raised more than one foot to avoid damage to the meadows up river. With the 1798 dam built with a permanent top at el. 106.31', the pre-1798 dam, the Richardson zig-zag, at one foot lower was 105.3' (NAVD88).  
 Note and dimensions, J. Breen, Jan 3, 2018.

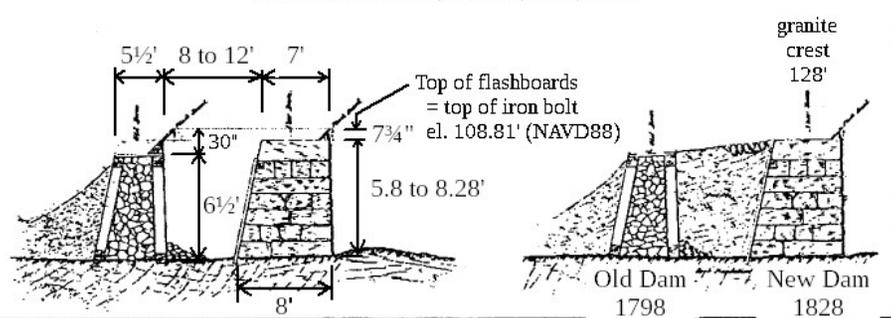


Figure 7. "Sections showing the relative situations of the Old and New Dams at Billerica Mills." (Bill. Hist. Soc.)

/A Short History of the Milldam at North Billerica, 1653-1995/  
 by Alec Ingraham, p. 9 (14-25djvu)  
<https://archive.org/details/TheMilldamAtNorthBillerica>

Not on the above section of the old dam is the bridge built on it in 1798.<sup>12</sup> Who drew Figure 7 is unknown. Wilson had the knowledge of the old dam of 1798 having worked on it as a carpenter until it was submerged by the 1828 dam which was built under Wilson's direction.<sup>13</sup>

### 1828 Dam

The proprietors in 1825 were determined to replace the wooden dam with a permanent stone one.<sup>14</sup> While "manufacturing cotton upon the Merrimack, was started at Amoskeag Falls, in 1809",<sup>15</sup> the golden years of the canal company began with the union of inexpensive water transportation and the water-powered loom in 1823<sup>16</sup> at the future Lowell, followed by water-powered looms in 1824 at Nashua and later Manchester. The company now had the revenue to re-build in stone.

"Early in the summer of 1828 a new stone dam was completed at a cost of

12 Bridge on dam. Jonathan Manning helped build the dam. Joint Report, 97-517pdf.

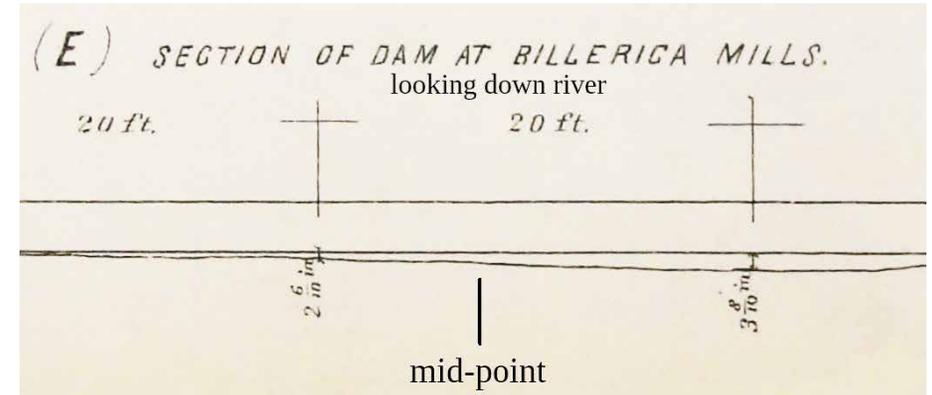
13 "The [1828] dam was built under my direction." Daniel Wilson, Joint Report, 285- 517pdf.

14 Charles Francis Adams, "A Paper on the Middlesex Canal", Boston 1829, a contemporaneous explanation of the proprietors' reasoning, copied in *Towpath Topics*, Vol. 11, No. 2 (Sep 1973), "<https://tinyurl.com/AdamsPaper>". Adams' father, John Quincy Adams, in 1829 president of the United States, was a proprietor at the beginning, 1793.

15 C. E. Potter, *History of Manchester*, 1856, p. 544 (657-950pdf), "<https://archive.org/details/historyofmanches00pott>".

16 Robert C. Winthrop, *Memoir of the Hon. Nathan Appleton*. Boston: John Wilson and Son, 1861. Page 26 (38-96pdf). Merrimack Manufacturing Co formed Dec. 1821.

\$3341.37. It was erected 8 to 12 feet in advance of the old wooden dam, and was built in the form of a crescent. The wall was 8 feet thick at the bottom, 7 feet thick at the top, and the upper course of stone or coping was all headers 'cut and laid in a manner to correspond with the arch,' or curve of the dam. On top of the dam was a flash board 10 inches high above the stone coping.<sup>17</sup> George Baldwin measured the height of the granite crest at 8.28'.<sup>18</sup> The Haestadt survey in 2000 indicates a minimum height of 5.8', located at the east (Faulkner) abutment.<sup>19</sup>



Flashboard, 7 3/4" high. Gaps in figure, 2.6 and 3.8".

In 1859, the gap between the bottom of the measured 7 3/4" flashboard and the granite crest ranged from 0 to 3.8".<sup>20</sup> In other words, the height of the flashboard above the granite crest was between 7 3/4" and 11.85" depending on where measured. The elevation of the top of the flashboard did not vary, matched by Daniel Wilson to the elevation of the iron bolt.<sup>21</sup>

### Conclusion

The top of the 1828 flashboard was 42" above the Richardson Dam (108.81

17 Lewis Morse Lawrence, *The Middlesex Canal*, Boston 1942, p. 118. A typescript in the Baker Library, Harvard University, and a book for sale by the Middlesex Canal Association. Lawrence cited Caleb Eddy, *Historical Sketch of the Middlesex Canal*, Boston 1843, and Middlesex Canal Records at Middlesex County Courthouse, available at Internet Archive, "<http://tinyurl.com/EddySketch>", and the Umass Center for Lowell History, Lowell MA, respectively.

18 Height of 8.28'. Joint Report, 330-517pdf.

19 Minimum height of 5.8'. Report of Roald Haestadt, Inc., to the Federal Emergency Management Agency, Oct 25, 2000; re: Talbot Mill Dam, Contrat EMB-1999-CO-0564. Copy of Field Book, page 59, in the Reardon Room library of the Middlesex Canal Association.

20 Flashboard, 7 3/4" high. Joint Report, John Avery, Jr., 1859 survey, Plate 4, Sec. E (398-517pdf). Figure is a photo of Plate 4, Sec. E, Mass State Library, Special Collections. Plate 4, Sec. E, and other images are at middlesexcanal.org, <https://tinyurl.com/dam-images>.

21 Daniel Wilson, Joint Report, 284ff-517pdf. See also, J. Jeremiah Breen, "The 1825 Iron Bolt", *Towpath Topics*, Vol. 52, No. 1 (Sep 2013), "<https://tinyurl.com/y8qxbggq>".

- 105.3'), well above the one foot warning of the engineer William Weston in 1794. Though Weston's report with its warning was not part of the evidence considered by the joint special committee, the committee did recommend to the legislature that the 1828 dam be reduced to the level of the Osgood Dam.<sup>22</sup>



## MISCELLANY

**Middlesex Canal Commission** - Len Harmon was elected Interim Chair at the December 2017 meeting.

**Back Issues** - More than 50 years of back issues of Towpath Topics, together with an index to the content of all issues, are also available from our website <http://middlesexcanal.org/towpath>. These are an excellent resource for anyone who wishes to learn more about the canal and should be particularly useful for historic researchers.

**Back Page** - Excerpt from an August, 1818, drawing (artist unknown) of the Steam Towboat *Merrimack* crossing the original (pre-1829) Medford Aqueduct, probably on its way to service on the Merrimack River.

**Estate Planning** - To those of you who are making your final arrangements, please remember the Middlesex Canal Association. Your help is vital to our future. Thank you for considering us.

<sup>22</sup> Reduction of the 1828 Dam. Joint Report, 74-517pdf. Reduction of 33" repealed April 25, 1862, after the 1861 engineers' report concluded reduction was not significant. Mass. Acts of 1862, Chapter 140, and engineers' report, "<http://tinyurl.com/1861shedd>", pp. 29-30.

**Museum & Reardon Room Rental** - The facility is available at very reasonable rates for private affairs, and for non-profit organizations to hold meetings. The conference room holds up to 60 people and includes access to a kitchen and restrooms. For details and additional information please contact the museum at 978-670-2740.

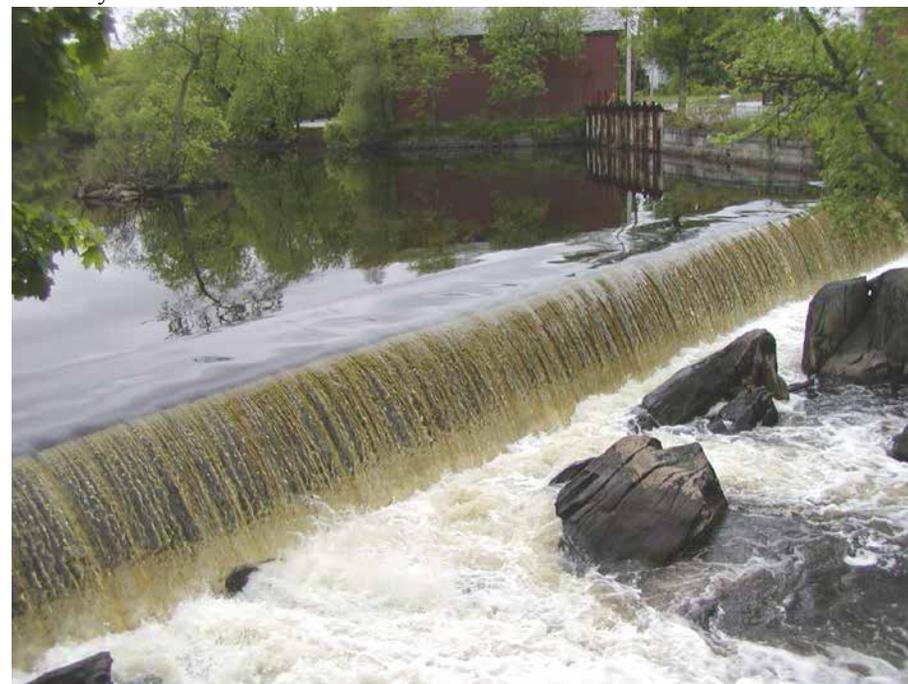
**Museum Shop** - Looking for that perfect gift for a Middlesex Canal aficionado? Don't forget to check out the inventory of canal related books, maps, and other items of general interest available at the museum shop. The store is open weekends from noon to 4:00pm except during holidays.

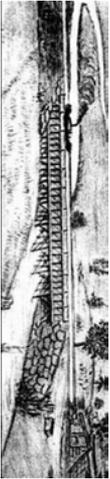
**Nameplate** - Excerpt from an acrylic reproduction of a watercolor painted by Jabez Ward Barton, ca. 1825, entitled "View from William Rogers House". Shown, looking west, may be the packet boat *George Washington* being towed across the Concord River from the Floating Towpath at North Billerica.

**Web Site** - The URL for the Middlesex Canal Association's web site is [www.middlesexcanal.org](http://www.middlesexcanal.org). Our webmaster, Robert Winters, keeps the site up to date. Events, articles and other information will sometimes appear there before it can get to you through Towpath Topics. Please check the site from time to time for new entries.

The **first issue** of the Middlesex Canal Association newsletter was published in October, 1963. Originally named "Canal News", the first issue featured a contest to name the newsletter. A year later, the newsletter was renamed "Towpath Topics."

*Towpath Topics* is edited and published by **Debra Fox**, **Alec Ingraham**, and **Robert Winters**. Corrections, contributions and ideas for future issues are always welcome.





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