

Built to Last: America's Canals

America would be a different country without its early canals, which moved people, goods, and ideas efficiently between the East Coast and the Old Midwest. Far from gone, the canals and their effect linger on.

BLACK IRON bridge spanning Tinkers Creek, little more scenic than two iron girders trickling a constant stream of water from its many gaps. I was fascinated—it seemed so strange—a bridge carrying water over water.

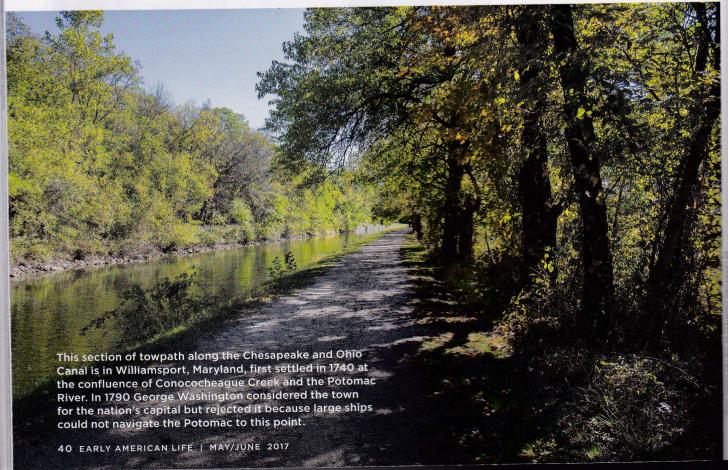
I was also fortunate. I saw one of the few lengths of the Ohio and Erie Canal that remained watered—not as some historic monument but because a steel mill required its calm, constant flow of water to cools its

hell-hot ingots.

Steel mill long gone (along with much of its industry), the aqueduct—for that's what I saw—remains in place, still leaking its burden, thanks to this section of canal being absorbed into the Cuyahoga Valley National Recreation Area. Rather than transportation or cooling, its purpose has changed again to education, showing a modern world how the canal works and what it meant to our growing nation. It does not need to show how America's canals changed the young country, because evidence of that is all around us.

Without the network of canals—three thousand miles dug by hard manual labor in (mostly) the first half of the 19th Century—America would be a far different country. Major cities of the Northeast might be mere shadows of their modern metropolises—New York, Buffalo, Cleveland, Toledo, and even Chicago grew on a diet of trade from the canals.

Grand Lake St. Marys—the largest man-made lake in the world when it was filled and still Ohio's largest lake—was built for the Miami and Erie Canal. Large lakes, locks, dams, and other feeders left over from the





An 1899 watercolor painting by E.L. Henry shows a canal boat entering a lock on the Delaware and Hudson Canal, which transported anthracite coal from Pennsylvania mines owned by Philadelphia dry goods merchants Maurice and William Wurts to the Hudson River at Rondout (Kingston), New York. The 108-mile, 108-lock waterway—constructed along a previously unsettled route in less than three years using only picks, shovels, draft animals, and blasting powder—was the country's first million-dollar private enterprise. It operated from 1828 until 1898.

canal era still dot the countryside.

Canals moved goods and people across the nation, and they carried a more important cargo—ideas. They carried west women's rights and abolitionism, fiery religion and the words of the angel Moroni.

HISTORICAL HIGH TECH

Should you consider the canal age a now-forgotten failure, you're looking at canals from the wrong end. Though we may think of the canal boat as primitive, it was the Dreamliner of its age—technology pushing the limits of practicality and promising the safest, most comfortable, even luxurious, travel.

And while we might view the reign of canals as brief, that's a matter of modern perspective. For example, the Erie Canal, completed in 1825, reached its peak in terms of cargo carried in 1855—that's three decades, the same as the period between the introduction of the IBM PC and the peak sales of personal computers (2011, according to research organization Gartner). After another century, those computers will likely

seem as quaint as canals do today.

Compared to what they replaced, America's canals were a wonder. The long-distance travel alternative in 1825 was a coach sprung without shock absorbers and hitched to the less savory end of a sweaty, manurerich team. The carriage ride turned the smallest rock or rut in the road into a dental-jarring pogo hop.

A trip on the canal was smooth and serene, even opulent, if you chose the right packet boat. The choices ranged from a floating dormitory in which you might have to carry your duck and goat on your lap to a sleek palace as fine as an opulent hotel (and likely with fresher food).

But they offered more. "There were traveling libraries, museums, waxworks, and bookstores on the canals, and on the Wabash and Erie Canal the Spalding and Rodgers Circus Company ran a circus boat, a 'Floating Palace,' up and down the canal," noted E. Shaw in his 1990 book, Canals for a Nation: The Canal Era in the United States, 1790-1860.

Unless you dealt in glass or nitroglycerine, the smooth ride of a canal boat wouldn't matter to your freight, but cost did. Promoters claimed canals cost one-tenth as much as the alternative wagon ride. For example, the cost of shipping one ton of freight each mile in its journey from Buffalo to New York City fell from 19 cents in 1817 to 2 to 3 cents during the 1830s after the Erie Canal opened.

Even trains felt the canals' impact. Into the 1850s, when railroads had become serious competition, one canal boat carried as much coal as ten rail cars at half the cost. Speed may have given the iron track its winning edge, but even today some sources say canal shipping is half as costly as rail travel for bulk freight.

WORDS OVER WATER

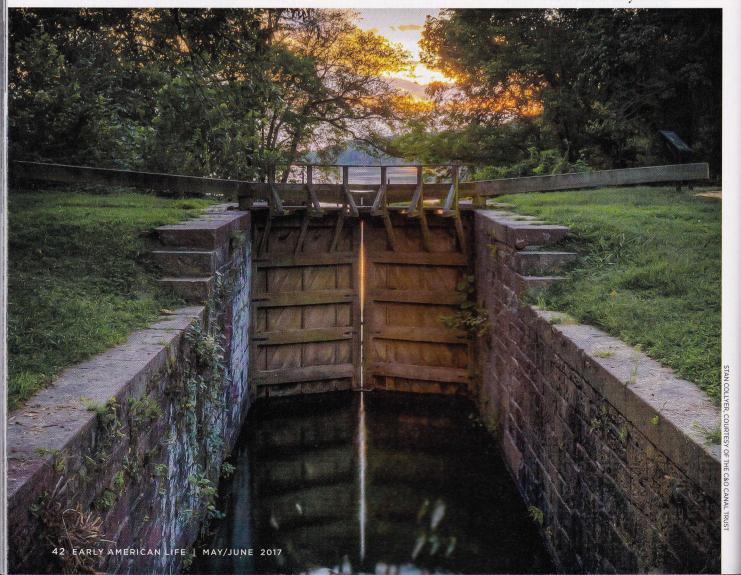
Although a quick horse might carry news faster than a canal boat, the level waters spread the sentiments, movements, and politics of the new nation. The Second Great Awakening burned though New York, mostly on canal boats, leading Charles Grandison Finney to term the western end of the state opened by the canal the "burned-over district."



Enterprising artisans capitalized on the success of the Erie Canal, producing commemorative merchandise such as this metal token, which bears the inscription "Union of the Erie with Atlantic." Duncan Phyfe crafted the box from wood taken from the Seneca Chief, the steamboat on which Governor DeWitt Clinton toured the canal when it opened in October 1825.

Most locks lifted and lowered boats from one water level to another to bypass waterfalls, rapids, dams, and other obstacles to navigation. Others, called guard or inlet locks, helped regulate water coming into a canal. Violette's Lock, built from local red Seneca sandstone on the Chesapeake and Ohio Canal, is an example of the latter. At just over 88 feet long, it was too small for a standard 92-foot C&O canal boat to pass through.

"Other things went along with the revival movement including the women's rights movement and the abolitionist movement," noted Ann Marie Linnabery of the Niagara County Historical Society. "The Erie Canal was the major conduit to move people and ideas east to west across the state." God may have sent the angel Moroni to Joseph Smith, but the Mormon leader traveled by canal from his



hon

spre like 1966 of the that duri the I in 18 the V Roche 31, 18 passe erating

one u disea port p Store notes book, the ca burni comm day in smoke

DIGG

Schen fortur as the noted ideas f slice o ber 26 rode w place v for to 1 Sea to mile ar flowin River a by Mile Cod Ca It has n

As surveyed lachian of the 1 canals of tial weat The Brithis dreat on the I once An

liament Wa home in the canal town of Palmyra.

But canals were indiscriminate, spreading the bad with the good—like disease. Ronald E. Shaw in his 1966 book, Erie Water West: A History of the Erie Canal 1792-1854, noted that cholera spread along canals during the great epidemics—along the Erie and Chesapeake and Ohio in 1832 and the Erie again in 1849, the Wabash and Erie in 1854. The Rochester Republican reported on July 31, 1832, that those riding a crowded passenger packet "hardly fail of generating Cholera."

The problem was, of course, no one understood the germ nature of disease. "Farmers refused to transport produce to cities and towns. Stores closed and food was scarce," notes Ralph K. Adrist in his 2016 book, *The Erie Canal*. "The air along the canal became murky from the burning of barrels of tar, which many communities kept going night and day in the belief that the heavy black smoke rid the air of cholera."

DIGGING IN

Schemers and daydreamers imagined fortunes from digging canals even as they arrived here. Samuel Sewall noted in his diary one of the earliest ideas for canals in America, one to slice off Cape Cod, writing on October 26, 1676, "After this Mr. Smith rode with me and shewed me the place which some had thought to cut, for to make a passage from the South Sea to the North: said 'twas about a mile and a half between the utmost flowing of the two Seas in Herring River and Scusset." (First conceived by Miles Standish in 1623, the Cape Cod Canal was only finished in 1916. It has never been a financial success.)

As young George Washington surveyed lands west in the Appalachians and beyond in the middle of the 18th Century, he envisioned canals carrying the land's vast potential wealth to markets in the east. The British Parliament dampened his dreams, discouraging settlement on the Indian lands of the West, but once Americans dispensed with Parliament's meddling, they rushed west.

Washington—who had vast



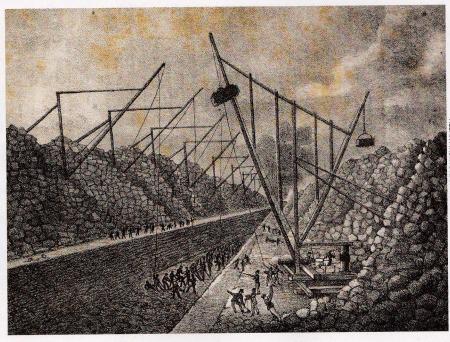
Of his 1852 watercolor drawing depicting the canal at Little Falls, New York, artist William Rickerby Miller noted, "The passage of the Canal, under the lofty bluff which, springs at this place from the edge of the Mohawk, is one of the most beautiful of the many beautiful features disclosed to the voyager on this great outlet of the West. No traveler sees a greater variety of fine objects within the same distance than the follower of the Canal from Schenectady to Buffalo; and certainly none sees them with more ease and comfort to himself."

holdings in western Virginia—was among the most enthusiastic advocates of extending water routes westward. "Inland Navigation of this Commonwealth where it may be useful & practicable," he wrote David

Stuart on November 30, 1785, "will not only be of amazing convenience & advantage to its Citizens, but sources of immense wealth to the Country."

That year Washington would become president of the Patomack

Process of Excavation, Lockport, shows canal workers using a stump-puller, which enabled 6 men and a team of horses to remove 30-40 stumps a day. Here they were digging the Deep Cut, a stone corridor extending from the top of the Lockport locks near Buffalo 7 miles southwest to Pendleton, New York.



TORY & ART LIBRARY, SPC, 386.48. COL

with an anchymous New Englander about his first-hand englander about his first-hand englander about his first-hand englander account to him."

For the boatman, the world goes by in slow motion, two miles per hour, and life itself takes a similar pace.

The second stretch long—starting with daybreak and pushing hours beyond nightfall—but only the mules for thinking, the second second pranks, and scheming to acquire the second second pranks.

Ecatmen were the long-distance truckers of their time—individual, isolated, and fiercely independent, a though the job and attitudes varied with where you worked and who you worked for. Owning your own canal coat was tops for flexibility and earnings.

*By owning the boat he could come and go as he pleased, get a better price for carrying the coal and when there was a change he would take in a cargo for any point along the canal," noted our man on the C&O canal. But when the railroad bought that canal, they instituted railroad practices, and the company owned coal boats. Care was not the utmost concern—boats suffered and, often, mules did too.

The boat was a self-contained home and business—a stable built in the bow for a couple of mostly mule teams (sometimes oxen or workhorses), a cabin in the stern with beds and a cook stove, and one vast hold amidships for whatever cargo needed to be somewhere else not particularly soon. The boat, a source of pride, would always wear fresh paint and the best repair, and mules were part of the extended family, kept "sleek fat, and gentle as a lady's driving pony."

At best, it was a cramped life, but only at night. On the C&O, boats were about 92 feet long and 14 feet wide, as big as would fit the locks with inches to spare. The stern cabin—which served as galley, stateroom, living room, and den—might measure only 12 by 12 feet. On a family boat, a hired hand would sleep with the mules in the hay. A chamber pot served when Nature called.

A family could run a boat—at most, a boat had a crew of four: steersman, driver (of the mules), cook, and groom (for the mules). Absent children, a hired man might round things out. Neither age nor sex governed one's duties—the wife or child might take the tiller, drive the team, cook, or curry. Variety helped keep boredom away.

During the day, each did his or her duties in a separate space with more than enough room for private thoughts and even loneliness.

"One of the great pleasures of canal boat travel is [that] you never feel hurried. If you want to stop and fish, hunt, sketch, botanize or geologize, all you have to do is to step ashore and stop as long as you wish and a brisk walk will bring you to the boat again probably at the next lock," noted our anonymous New Englander.

It's a short walk between a laissez-faire life and just plain lazy. Canalers did not have the best of reputations for industriousness—or honesty. Our New England boatman remembers that there were a few "whose perception of the right of property was very dim," he wrote. "It is a common saying that certain persons would not steal anything they could not carry off, but this did not hold good with the canal boatmen for they would steal anything they could hitch a mule to."

There were even canal pirates, noted Ronald E. Shaw in his 1966 book, *Erie Water West: A History of the Erie Canal 1792-1854*. "In 1854, a captain of a freighter escaped from an overtaking piratical scow by throwing oats on the towpath, which the pursuers' horses stopped to eat."

Certainly canals passed through their share of tough neighborhoods—that was their job. They were the feeders and breeders of industry, like today's interstates. And like interstates, they ran vast distances across bucolic countryside—towns, farms, and wilderness. Riding a canal boat let you sample all of America at two miles an hour.

Today you can sample America the same way at a number of still-watered canal sections on boats operated both privately and by historical societies—everything from an hour in a horse-drawn replica packet to a week-long bare-boat charter on the Erie Canal.



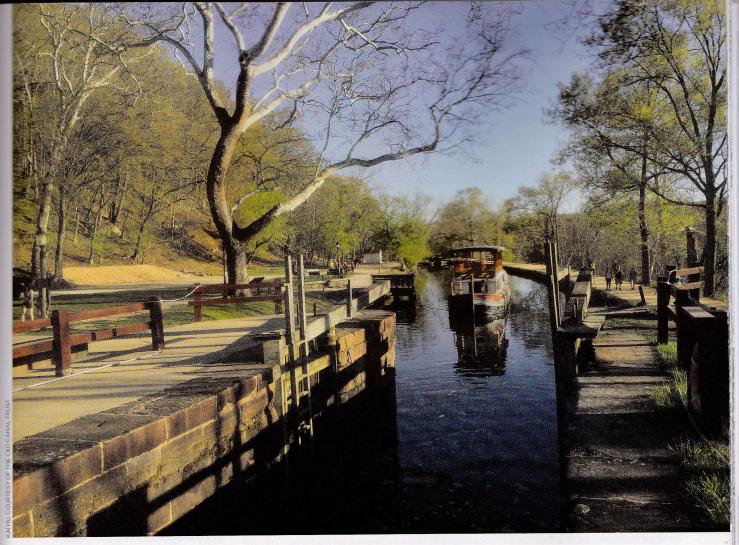
This engraving of an original line boat on the Erie Canal appeared in *America Illustrated*, by J. David Williams, published in 1883 in Boston.

Today Great

Comping the Ol that riv Key to canals-rapids a channe

project before skirting disappo levels of years th showed and only would w would ta

card. Alt



Today visitors can enjoy a mule-drawn ride aboard the packet boat *Charles F. Mercer,* shown entering the lock near Great Falls Tavern in Potomac, Maryland, part of the Chesapeake and Ohio Canal.

Company, which had the goal of making the Potomac River navigable to the Ohio River Valley, linking it to that river and thus the Mississippi. Key to the project were five "skirting" canals—where riverboats bypassed rapids and rough water in a man-made channel—to smooth the way.

Washington would not see the project completed—he died two years before the company finished the final skirting canal. He would have been disappointed. The variable water levels of the Potomac in the drought years that immediately followed showed that the river was unreliable and only a true, full-length canal would work. In 1828, a new company would take on building that canal, called the Chesapeake and Ohio.

Washington had another canal card. Although the Potomac flowed past his home, it also shared a border

with Maryland. Washington was a true son of Virginia and schemed for a canal that would solely benefit his home state. The same year he joined the Patomack Company he also put in with the James River and Kanawha Company to build what many regard as the nation's first transportation canal, one aimed at connecting the James with the Kanawha—and thus the Ohio and Mississippi Rivers. It got as far as Buchanan, Virginia, not even halfway.

Both companies faced three dire problems that doomed their attempts to connect with the Mississippi—geography, cash, and technology. Both the Patomack and James River projects relied on overland routes for the final link because water doesn't like to flow uphill. In the way of a level canal route stood the Appalachian Mountains, an unbroken and unyielding barrier that

runs from Florida to Maine.

Only New York had the blessing of the Mohawk River Valley, which squeezed between the Catskill and Adirondack Mountains to give a close-to-flat route from the Hudson River to Lake Erie—a rise of seven hundred feet from sea to lake versus the thousands of feet needed to climb the Appalachians.

But financing was a problem for New York and other prospective canal builders. Ambition exceeded the cash available from private investors. The new federal government was skeptical the canal could be built. Strict constructionists believed the Constitution didn't give the federal government the authority to enter into such a project. "Charged with overseeing all states, the federal government was reluctant to fund projects that promised to benefit just one," noted Linnabery. In 1817 Congress finally approved a bill to fund the Erie Canal, only to have it remed by President James Minuse. Instead New York issued stack in the canal company and sold bunds to pay the \$7-million cost of its construction, promising to pay it back with money collected by tolls.

And it did. In its first year, the
Erie Canal collected tolls about equal
to its cost (not counting interest and
expenses, which stretched the payback
to a decade). It was not only profitable
but raised the fortunes of everyone
along the way and made New York
City into America's busiest seaport.

LEARNING PROCESS

Although to modern eyes canals look primitive, simple ditches filled with water, in the early 19th Century they proved a great technical challenge.

"There were no engineers, no school of engineering at that time, and there were no experts at building a canal," noted Linnabery.

Even one of the nation's foremost architects was skeptical—noted New York Governor DeWitt Clinton in 1822 about an encounter between the President of the United States and Joshua Foreman: "When this work [the canal] was first proposed to President Jefferson, in 1809, he pronounced it impracticable at the present time, and declared that it was a century too soon to make the attempt."

Indeed, the project was filled with challenges. Surveyors had to determine the best possible course, one that ran nearly level for miles. Construction teams had to figure out how to dig trenches without the walls collapsing on them. Engineers had to find ways to cross creeks and rivers in their path. They had to build reservoirs to keep the canals constantly and consistently filled.

Builders also had to move boats through changes in elevation along the channel. Their solution was the lock (or series of locks)—a water elevator that step-wise accommodated changes in the height of the terrain. A canal boat entered a lock chamber and was then sealed in by a gate.

Using valves, the lock keeper would raise or lower the water level inside the chamber—and with it, the boat—to match the next level. Then

he would open the gate to let the boat out—and, he hoped, let another boat in going in the opposite direction. The size of the locks set the limit for the largest boats that could use the canal.

America had no canal engineers. A few men studied, but for canals designers learned on the job. Work initially began slowly with local workers, primarily farmers hired to dig through their own fields—which they could do only when not farming and when the ground hadn't frozen—so they made little progress. To speed things up, the canal company hired immigrants, mostly Irish, for the job.

The success of the Erie Canal made other projects seem feasible. The states of the old Northwest began digging with the benefit of now-skilled engineers and workmen who had finished the New York project—the longest (mostly) grew in Indiana, where the Wabash and Lake Erie connected the Great Lakes to the Mississippi (actually a combination of four separate canal projects starting in Ohio).

The Illinois and Mississippi Canal ran from Chicago on Lake Michigan to the Mississippi along the Illinois River and kick-started the Windy City as a transportation hub. Ohio, unwilling to favor one side of the state over the other, built two systems to Lake Erie and to the Ohio River (the Miami

Artist James Eights' Aqueduct Bridge at Little Falls depicts the arched granite bridge that carried the Erie Canal across the Mohawk River at Little Falls. The bridge, regarded as one of the engineering marvels of the 19th Century, spanned a series of cascades and rapids that proved to be some of the most formidable barriers in the canal's construction.



This i

JEAN-PAUL RODRIGUE, DEPARTMENT OF GLOBAL STUDIES & GEOGRAPHY, AT HOFSTRA UNIVERSITY

and E

Coast Cana nia's r tan C New ' Delaw with F

Came of Chesa which Patom on an a canal a the rive coal fie the ma more to canal for c

Un dent Jol its poter he boar er boar ion. The r the canal gineers nals Work al red to -which arming ozeno speed hired he job. nal le. The ın diglled d fine lonnere ected Di epa-10). Canal gan is City

will-

ver

ke Iiami



This map shows the locations of canals in North America—east to west from Boston to Chicago and north to south from Montreal to Richmond. Several are still operating.

and Erie and the Ohio and Erie).

Other canals linked the East Coast. The Delaware and Hudson Canal carried coal from Pennsylvania's mines. The Delaware and Raritan Canal linked Philadelphia and New York, and the Chesapeake and Delaware Canal linked Baltimore with Philadelphia.

George Washington's dream came closest to fruition with the Chesapeake and Ohio Company, which in 1828 succeeded the Patomack Company and embarked on an ambitious program to build a canal along the river instead of using the river. Its promoters eyed the rich coal fields in western Virginia and the market in the East—from Baltimore to Norfolk—and planned the canal for bulk freight.

Unlike skeptical Jefferson, President John Quincy Adams believed in its potential and dug the first shovelful

of earth that July Fourth. The Baltimore and Ohio Railroad began building on the same day on a parallel track to the canal—but the money was on the safe (and proven) bet, the canal.

But times and technology had changed. The railroads held the cards: they were faster to build—canal diggers inched along at about one-tenth mile per day; when pressed on the Transcontinental Railroad, workers laid almost ten miles of track a day. Trains were faster—twenty versus two miles an hour. Building a railroad was far cheaper. And railroads didn't freeze up in the winter.

Six months later, Adams was out of office, and soon the C&O was out of luck. The trains won, and the B&O Railroad bought the canal.

In 1855, the Erie Canal—enlarged in 1837—carried its peak cargo. By that time, train tracks stretched ten times farther across the country than

canals. But the canals did not go away. The Ohio and Erie continued operating through 1913, when flooding damaged it beyond repair. The C&O continued through 1928.

Nor has the canal era ended. Many early canals remain in operation, although altered and upgraded. For example, the oldest—the Dismal Swamp Canal opened in 1805—now serves as a link in the Intracoastal Waterway.

The Illinois and Michigan closed in 1900 but its purpose in linking Lake Michigan with the Mississippi continued to be fulfilled by the Chicago Sanitary and Ship Canal, which is still in operation along with the new Illinois Waterway.

And the Erie Canal—now the New York State Canal System—still carries people from Albany to Buffalo, although mostly with tourist rather than cargo traffic. *

LIVE BACK IN TIME

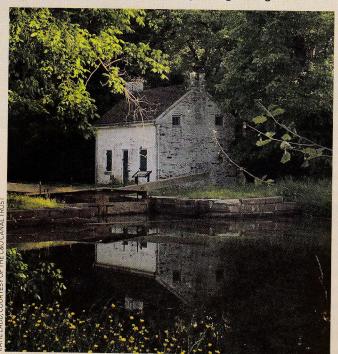
"Sleeping on rope beds and being a part of living history, bathing in the Potomac, having no electricity, listening to rushing streams or night-animal sounds at bedtime—it all added up to quality family time."

-Heidi Spurling, an overnight guest at Lockhouses 22 & 28

You can experience the same sense of luxury and serenity that well-dressed ladies and dapper gentlemen enjoyed in the 1800s—sipping lemonade or playing cards on the top deck while enjoyed the scenic countryside at a leisurely pace aboard a canal boat.

Sections of canals that still flow offer mule- or horsepulled rides on canal boats—some for a short hour, a twilight dinner, or an overnight excursion. You can board canal boats at Sault Ste. Marie in Michigan, through Indiana, Illinois, and Ohio into Pennsylvania. North to south you can travel along waterways from Vermont to Virginia. At some sites, you can rent a boat for a week and navigate it yourself.

On the vast New York State Canal System, which stretches 524 miles from Buffalo to Albany, you'll find pleasure boats, tour boats, and cruise ships, with plenty of places to stop off for lunch, sightseeing, or spending the night.

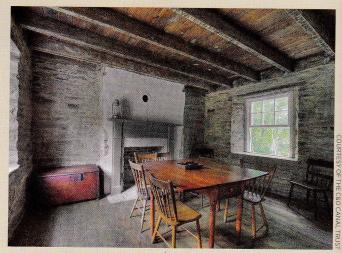


Lockhouse 22, contracted for in 1828, stands on the south side of the C&O Canal near Potomac, Maryland.

Along the Chesapeake and Ohio Canal, the brainchild of George Washington, you can take a step further back in time. Imagine sharing sleeping quarters with the whole family—and maybe a hired man—in two tiny attic rooms, always alert for a boat horn summoning you to open the lock gates so the boat can pass through.

Tens of thousands of visitors have enjoyed living like a lockkeeper since 2009, when the C&O Canal Trust opened six original lockhouses from Georgetown in Washington, D.C., to Williamsport, Maryland, for overnight stays.

The Chesapeake and Ohio Canal National Historical Park developed the Canal Quarters Program in partnership with the Trust to help preserve these small homes—26



The earliest 30-by-18-foot stone cottages built for lockkeepers had walls 22 inches thick on the ground floor, as in Lockhouse 22.

remain of the 57 that originally ran the length of the 184.5-mile waterway. Each interprets a different time period in the canal's history, from the 1830s through the 1950s.

You'll find beds enough to sleep eight upstairs and seating for eight in the two downstairs rooms, but little else. The simple furnishings—found mostly at antiques shops, auctions, and estate sales—are supplemented with period books, maps, and photos that tell parts of the canal's story. For instance, Lockhouse 22 educates visitors about the engineering marvels that enabled boats to navigate elevation changes along the canal—aqueducts, lift bridges, incline planes, tunnels, and lift locks.

Volunteers who act as quartermasters tend to guests' needs and do basic maintenance at the lockhouses. Rents go to the C&O Canal Trust, which re-invests the money into the program. The ultimate goal is to open enough lockhouses that bikers, hikers, and other visitors can find a night's lodging every 20 or 30 miles along the canal route.



C&O Trust volunteer Robert Mertz photographed trundle beds at George Washington's Mount Vernon and had them reproduced for the upstairs rooms at Lockhouse 28.

AL TRUST

Be social with Early American Life!

Have you liked us on Facebook?

Followed us on Twitter?

Found us on Pinterest?

Visit us online

to see updates, extras and more! We would love to chat about the latest issue with you, share some of our favorite things, and show you what goes on behind-the-scenes.

Share with us

Have you made any of our projects or recipes? Post your photos and tag us using:

@ealmagazine on Twitter

@EarlyAmericanLifeMagazine on Facebook

We love to hear from our readers, and we want to post about you, too! Share your thoughts, questions, favorite articles, and what inspires you about the past.

For this issue Check out our Pinterest board "Canal Sites to Visit." Inspired by the canal article in this issue, we put together a board with links to many of the places you can visit and learn about historic canals. We hope it inspires you to explore the many places that have preserved these historic waterways. Send us pictures of your canal adventures by using #canaltrips and tagging us on Facebook and Twitter! www.pinterest.com/ealmagazine/historic-canals

How to find us

These web addresses will take you directly to our social media pages, where you can find free extras from us:

Facebook: www.facebook.com/EarlyAmericanLifeMagazine

Twitter: www.twitter.com/ealmagazine

Pinterest: www.pinterest.com/ealmagazine

Or visit our website at www.EarlyAmericanLife.com and click on the social media icons in the bottom left corner.









me. 5 22 8 28

34.5-

rith tors