

AMERICAN CANALS

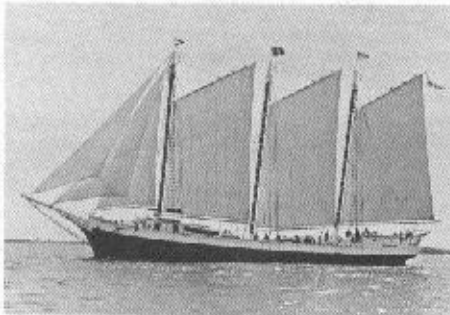
BULLETIN OF
THE AMERICAN CANAL SOCIETY

BULLETIN NUMBER 24

Editorial Address - Box, 310, Shepherdstown, W. VA. 25443

FEBRUARY 1978

Canal Vessel Still Sailing



The Chesapeake Bay Ram or Bald-Headed Schooner "EDWIN and MAUD" was built in 1900 at Bethel, Delaware by John C. Moore. She was 208 gross tons, 126.5' in length, 23.8' at beam and 8.6' depth of hold. This design permitted her to use the old Chesapeake and Delaware Lock Canal which she frequently plied while carrying lumber from the Carolinas to Philadelphia and New York. However, the "EDWIN and MAUD" could not navigate the Delaware and Raritan Canal which had more restrictive dimensions in lock width and depth. Neither could her three Oregon pine masts, which tower 80' above the deck, clear the Pennsylvania Railroad stone arch bridge at New Brunswick, which only had 50' clearance from the water line. Thus, she had to take the outside route around Cape May to New York.

Peculiar features of inland waterway rams are: a flat bottom; wall-sides, and very simple lines; the bald-headed rig (the mainmast is generally offset from the centerline in order to clear the center-board well); and the wooden log anchor-windlass. "EDWIN and MAUD" is built exceptionally heavy and strong of Georgia pine, live oak and select Delaware oak, and is fastened with galvanized iron.

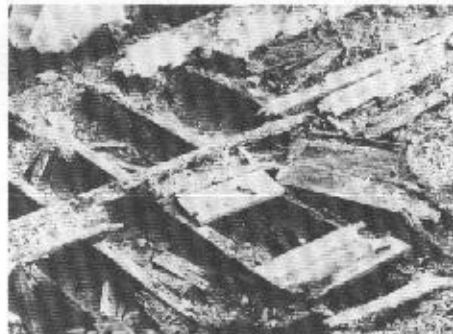
The vessel was mainly operated out of Wilmington, Delaware and later Baltimore, Maryland by C.C. Paul & Co., the owner. By 1935, "EDWIN and MAUD" was renamed "VICTORY CHIMES" and a few years later was acquired by Albert F. Paul. With Baltimore still her home port, she was converted to passenger use and by 1950 was operated by Chesapeake Vacation Cruise, Inc. In June of 1954, Captain Frederick B. Guild sailed her to Maine. He has been master of her ever since, running Maine Coast windjammer vacation cruises each summer. The center board schooner "VICTORY CHIMES" sails weekly from Windjammer Wharf, Rockland, ME 04841 (fare \$285 per person per week, 1977 prices) from June to September.

"VICTORY CHIMES" is the last three-masted schooner in operation on the Atlantic coast and is

CANALS ON THE NATIONAL REGISTER OF HISTORIC PLACES

The ACS lists of canals on the National Register up to February 1977 have been published in "11593," the newsletter of the Office of Archeology and Historic Preservation, National Register Division, National Park Service, US Department of the Interior, Washington D.C. 20240. (The Executive Order establishing the National Register was #11593.) Members involved with preservation or National Register nominations may wish to get on their mailing list. The canal article in the October issue, by archeologist Michele L. Hope, also lists dams and waterworks on the Register.

UNION CANAL BOAT FOUND



The remains of a Union Canal boat have been located by two young canal enthusiasts near Waterworks, Pa. The find is a great opportunity to study a 19th century boat. The boat was under water until 1974 when a storm destroyed the old dam. It is for this reason (being under water) that the boat remained in good shape. The boat has been exposed to the elements for some time and it will not last long. Anyone having any ideas concerning its preservation may contact: Dale Ibberson and Bob Keintz, 4160 Conewago Rd., Dover, PA 17315.

the largest passenger-carrying schooner registered under the American flag. All this and she was a canal-boat too! Author Bill McKelvey will include views of "VICTORY CHIMES" and "EDWIN and MAUD" in his forthcoming "CHAMPLAIN TO CHESAPEAKE," a pictorial, historical journey thru the old Champlain, Delaware & Raritan, and Chesapeake and Delaware Towpath Canals.

Camillus Canal Project



It was purely coincidental that the 1000th member to join ACS recently was Dr. David W. Beebe, a particularly avid canal enthusiast and Chairman of the Town of Camillus Erie Canal Project. Last year his group completed the reproduction of Sim's Canal Store (shown above) and this year is building a dam to raise the water level so as to launch a pontoon boat for history lecture tours. Future plans include the recreation of Dill's Landing, a "Canal Town," and the rebuilding of the Nine-Mile-Creek Aqueduct.

U.S. FILLS CANAL

President Carter revealed today that the Panama Canal has been completely filled in. "We cannot justify our presence in Panama," Carter said, "so we have taken our canal and have gone home." (Submitted by Steve Durn from the *National Lampoon* of August 1977.)

Illinois Canal Society

The newly formed Illinois Canal Society had its first meeting last September after which the Corps of Engineers took the group on a tour of Lock No. 1 (Lockport Lock) of the Illinois and Michigan Canal and the adjacent older lock. Several meetings of the society are planned for 1978 as well as the compilation of guides for the Illinois & Michigan and the Hennepin Canals.

American Canals

BULLETIN OF THE AMERICAN CANAL SOCIETY

"DEDICATED TO HISTORIC CANAL
RESEARCH, PRESERVATION
AND PARKS"

AMERICAN CANALS is issued quarterly by the American Canal Society, with headquarters at Box 310, Shepherdstown, W.Va. 25443. Objectives of the Society are to encourage the preservation, restoration, interpretation and use of the historic canals of the Americas; save threatened canals; and to provide an exchange of canal information.

Annual subscription to "AMERICAN CANALS" is automatic with a minimum ACS dues payment of \$6.00. Individual copies may be purchased at \$1.00.

ACS President and Editor-in-Chief - Capt. Thomas F. Hahn, USN (Ret.), Box 310, Shepherdstown, W.Va. 25443.

ACS Vice President, Secretary and Production Editor - William H. Shank, P.E., 809 Rathton Road, York, Pa. 17403.

ACS Vice President, Treasurer, Associate Editor and Chairman, Canal Parks Committee - Dr. William E. Trout III, 1932 Cinco Robles Dr., Duarte, Cal. 91010.

Chairman, Canal Index Committee - ACS Director, Peter H. Stott, Haines Road, Mount Kisco, N.Y. 10549.

Chairman, Canal Boat Committee, ACS Director, Carroll M. Gantz, 7100 Oxford Road, Baltimore, Md. 21212.

Capt. Herb W. Dosey

We regret to inform our members of the death of ACS Member, Herb W. Dosey, whose article "Canal Daze" appeared in the last issue of **American Canals**. Captain Dosey had been associated with ships for most of his life, and had been master of merchant steamers plying the Atlantic Ocean and the Great Lakes. In recent years he has been Chairman of the Museum Committee of the Great Lakes Historical Society.

1978 ACS DUES

We are happy to report that, as of this writing, the large majority of our members have sent in checks for their 1978 dues. However, there are always a few who do not seem to respond to our invoices, which are always mailed with the November issue. In a volunteer organization like ours, with few hands to assist, it is a time-consuming chore to re-invoice those of our members who are slow in getting their checks to us.

If you find a **second** invoice enclosed with your February Bulletin, it means we have not yet received a check from you for your 1978 dues. We will **not** issue a third reminder. If we do not hear from you before the mailing of our May AMERICAN CANALS Bulletin, your name will be dropped from our mailing list.

Walking a Century-Old Plank



Theodore Haxall examines the J. R. & K. Canal Boat skeleton in the old canal bed at Maymont Park, Richmond, Virginia. (Photo by Bill Trout, May 1977).

Canal boat remains are scarce in Virginia so last year when the Richmond section of the **James River & Kanawha Canal** was drained for a few days, Theodore Haxall, Virginia's canalboat expert and ACS member, and Bill Trout, rushed over to take their first walk on an original canalboat, and to make some measurements. The boat is half covered (and probably preserved underground) by the muddy bank of the canal at Maymont Park, and the rest has been preserved by being constantly underwater except for rare occasions when the canal is drained. The boat is probably a freight boat, made to just fit the 100' x 15' locks, and probably sank at its moorings after the canal was abandoned in 1880, so it is more than a century old. This is the boat which was featured in the canal chapter of David Ryan's book, **THE FALLS OF THE JAMES** (William Byrd Press, 1975, \$12).

Mr. Haxall has made an extensive study of the varied craft which used the JR & K Canal and has created a score of amazing scale models of them - everything from double dugout canoes and poled batteaux used in early times, to horse-drawn packet and freight boats. No original canalboat plans are known, so these are based on the few known old prints and photographs, mostly from Civil War times. Someday we hope there will be a professional excavation of the Maymont Park boat, and a follow-up of some of the clues and rumors of other sunken canalboats in Virginia. (ACS Vice President Bill Trout)

"Canal Boat Captain"

William J. McKelvey, Jr., ACS Director, recently became the second member to become a "Canal Boat Captain" through the donation of \$50 to the society. The first was William M. Hoskias, in January of 1977. We hope the action of these two men will cause others to follow their lead in support of the society.

MARTIAN CANAL STORIES WANTED

I am looking for science-fiction stories about Martian canals (and other canal speculation) for a possible collection. These should have intelligent, detailed speculations about canals, not just vague references as (alas) in Edgar Rice Burroughs' stories and so many others. Already known are **Red Planet** by Heinlein, Bradbury's **"The Lost City of Mars."** Wicks' **To Mars via the Moon**, and vonnegut's **Rosewater Interstate Ship Canal** mentioned in **God Bless you, Mr. Rosewater**. Aren't there others with even more detailed speculation about extraterrestrial canal technology? (W.E. Trout, III, Ph.D., 1932 Cinco Robles Drive, Duarte, CA 91010)

ACS DIRECTORS

The following are the current Directors of the American Canal Society:

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Early Canal Boats on the James River and Kanawha Canal

By T. Gibson Hobbs, Jr.

(Part one of two parts)

The Lynchburg Virginian Newspapers on file at the Jones Memorial Library in Lynchburg, Va. list much canal material of interest. Unfortunately the issues for August 1840 through July 1841 are missing. Since the first canal boat arrived at Lynchburg from Richmond on December 3, 1840, according to the company records, the Lynchburg newspaper accounts of these first days are not available. The first issue of the paper on file after 1840 is dated August 2, 1841. A number of advertisements and other notes in this and later issues give much information on the canal boats and their operation at Lynchburg. This paper was a bi-weekly at the time.

The canal between Lynchburg and Buchanan was not completed until 1851, according to company records. Prior to the opening of the canal to Lynchburg, much freight was carried up and down the river on batteaux. These were wide, flat bottomed boats propelled by poles. Until the canal was completed to Buchanan all traffic above Lynchburg was still carried on batteaux. Some batteaux continued to be used on the river between Lynchburg and Richmond and no doubt some made use of at least parts of the canal. Some of the batteaux were quite large, had captains and names just as did the canal boats. It is not clear from the newspaper listing of boats whether these include only canal boats or whether some batteaux are also included.

President Joseph C. Cabell in his 1854 report to the 20th annual Stockholders Meeting stated that the total number of boats operating on the canal was as follows: For transportation, 75 decked boats, 66 open boats, and 54 batteaux, totalling 195 boats, and requiring 423 horses and 867 men. The average value of these boats with their teams was \$1,000, \$500 and \$25 each respectively. This would indicate the batteaux were not horse drawn.

There were six packet boats with an average value of about \$2,270 each, requiring 120 horses valued at \$15,000 and requiring 96 men.

The canal boats consisted mainly of freight boats with lengths up to 90-95 feet, widths up to about 14 feet, drafts of about four feet maximum and capacities of 60 tons or more. The depth of the water in the canal was specified as a minimum of five feet. However, for the first several years after 1840, according to company records, it was not more than four feet deep in places. It is probable that many of the earlier boats were shorter, narrower and with less draft and capacity than the above.

Only a few packet boats were required to handle all the passenger traffic. It is probable that the earlier ones were smaller in size and capacity than later ones.

Asbury Christian in his book "Lynchburg and Its People", states "In February (1841) a line of packet boats was established between here and Richmond. Boyd, Edmunds & Co., agents, announced that on Monday, Wednesday and Friday of each week, at 7:30 A.M., the 'Jos. C. Cabell,' Captain Huntley, and the 'John Marshall,' Captain Hull, would leave alternately for Richmond, fare, eight dollars."

This is verified in the August 2, 1841 issue of the newspaper, by an advertisement which reads as follows:

"The Packet Boats JOS. C. CABELL, Capt. Huntley, and JOHN MARSHALL, Capt. Hull, will leave this place alternately on Mondays,



The James River and Kanawha Canal entering Richmond, circa 1870. The artist who did this old etching set his easel in the Hollywood area. The Capitol may be seen on the center skyline. (Courtesy of "Picturesque America".)

Wednesdays and Fridays, at 7½ o'clock A.M. July 15 (date ad was first placed) Boyd Edmond & Co."

This was a Richmond company with an office in Lynchburg. The ad was continued in subsequent issues for the balance of the year as were other ads mentioned below.

In the report of president Joseph C. Cabell to the stockholders of the James River & Kanawha Co. at their sixth annual meeting in Richmond in December 1840, he mentions canal boats in the start-up of operations earlier in the year as follows:

"Soon after the general introduction of the water, boats began to move upon different parts of the line. On the 4th of October, one of the light and beautiful iron packets belonging to 'Messrs. Boyd & Edmunds' of Richmond, returned with passengers from the town of 'Columbia' to the city of 'Richmond'. (It is likely this was the Joseph C. Cabell and modesty caused him to omit the name.) On the 31st of October, 'The General Harrison', a freight boat of large class belonging to 'Messrs. Dolan, Kinnier & Co.' of Lynchburg, and another boat of similar description, the property of the same company, arrived at Joshua's falls dam, and took on loads of flour, with which they descended the canal. On the 18th of November, a freight boat belonging to 'Messrs. Shepperson & Co.' of Scottsville, arrived in 'Richmond' with a cargo of 300 barrels of flour from the town of 'Scottsville'.

On the 3rd day of December, in consequence of the notification given, the freight boat 'General Harrison', accompanied by a similar boat, both laden with merchandise from the city of 'Richmond', entered the basin at Lynchburg, and were received with cheers and acclamations by the inhabitants of the town, who had assembled to witness their arrival."

In reference to the above, Asbury Christian's book states that a race from Richmond had been arranged between a Whig and a Democratic boat. The Whig boat, the William H. Harrison won the race amid great cheers from the crowd.

A second ad in the August 2nd newspaper concerning freight boats reads as follows:

NOTICE

The subscribers on the 1st day of March, 1841, formed a co-partnership under the firm and style of

BOYD, EDMOND & CO.,

for the purpose of carrying freight on the James River and Kanawha Canal, where we now have running SIX FREIGHT BOATS of the first class. We will also attend to the

Receiving and Forwarding of MERCHANDISE and to the buying and selling of the same at the customary rates. Our Warehouse being situated on the banks of the Canal, will save to customers the additional expense of drayage. Our Mr. Boyd and Mr. Montgomerie will reside in Lynchburg.

We beg leave to refer to the following gentlemen: (References in New York, Richmond, Lynchburg, Abingdon and Wytheville)

JAMES M. BOYD
ROBERT EDMOND
HUGH MONTGOMERIE
ISAAC DAVENPORT, JR.
B., E. M. & D.

A third ad in the same paper listing the names of two freight boats is as follows:

A CARD
DOLAN, KINNIER & CO.,

Return their sincere thanks to their friends and the public generally, for the very liberal encouragement they have received since they started their line of

BOATS on the CANAL,

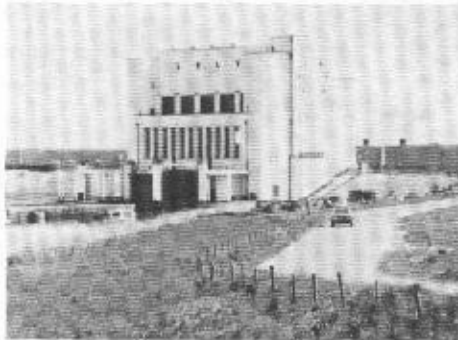
And beg leave to state that they have now established a Receiving and Forwarding House in

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CANAL SIGHTS IN NORTH HOLLAND

By Wallace Venable

A cruise on the canals of North Holland reminds the boatman of the tradition of water management in the Netherlands. Unlike many canal owners elsewhere, the Dutch expect to receive much more than cheap transportation and recreational boating from their investment. This is particularly true in polder areas such as the region bordering the former Zuider Zee to the north of Amsterdam.



While many canal systems must deal with water shortages, in Holland they must deal with a surplus. This is one of the electrically powered pumping stations which pumps fresh water from land below sea level up into the IJsselmeer. These have replaced steam pumping stations which, in turn, caused the retirement of windmill pumps.



The canals serve as irrigation supply channels as well as providing drainage. This tractor is one of many to be seen lifting water from the navigable channel to ditches or sprinklers in the fields.



The quieter canals are home to commercial as well as sport fishing. This man is one of several observed tending fyke nets (sort of an oversized minnow trap made from hoops and netting) set between poles pushed into the bottom. In addition to serving as a fish habitat, the canals support large numbers of waterfowl.



Self propelled barge of a type common throughout Europe. Most are family operated, some by husband and wife, some by two couples. While underway, deck space is often given over to laundry or to children's play. Cabin windows are decorated with lace curtains and flower-boxes. When fully loaded, as in the picture, there is little freeboard, and a walk down the side deck can result in wet feet if another boat passes.



The author's crew taking the cruiser through a lock. Lifts encountered on a summer 1977 cruise ranged from about 4 meters (13 feet) down to about 15 cm (6 inches). Most of the locks and drawbridges are electrically powered. All are professionally manned, usually by retired ships captains. Because of Holland's flat landscape, most of the bridges are low, so drawbridges, rather than locks often govern rate of travel. In some areas locks and bridges are closed on Sunday! (The boat shown is one of a number of English rental boats in Holland available through Bargain Boating.) Many people in Holland use the canals for pleasure boating and swimming.

To visualize the canals of Holland as a transportation system is to miss a critical feature of the Dutch way of life. Even in the unlikely event that all shipping was diverted to road and rail, the canals would remain as vital arteries of the Netherlands.

(The author, Wallace Venable, is associated with "Bargain Boating" of Morgantown, WV.)

A Newsletter is now available on the Rideau Canal in Canada. Its name is "Of Steam and Stone" or "de la Vapeur et de la Pierre", if you prefer the French-language edition. To obtain copies write Jill Robinson, Editor, care of The Superintendent, Rideau Canal Office, 12 Maple Avenue N., Smiths Falls, Ontario K7A 1Z5 Canada.

CANAL CALENDAR

April 21-23, 1978 - Spring Tour of the Canal Society of Ohio along the Walhonding Canal, Contact: Nancy Lonsinger, Roscoe Village Foundation, Coshocton, Ohio 43812.

May 19-21, 1978 - Spring Tour of the Pennsylvania Canal Society along the east end of the Delaware and Hudson Canal near Kingston, New York. Contact: Grace Elliott, 300 Ohioville Road, New Paltz, New York 12561.

THE HENNEPIN CANAL (Part Five)

By Mary M. Yeater

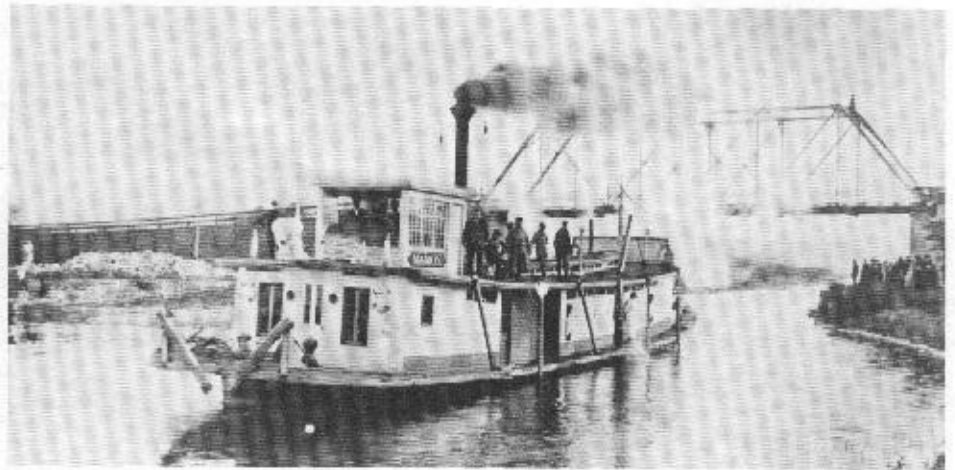
(This article is the fifth of a series on the Hennepin Canal, formerly the Illinois-Mississippi Canal. Part Five is the beginning of "Forty-Four Years as a Commercial Waterway." Mary Yeater is an Historical Researcher.)

The Hennepin Canal was operated by the United States Army Corps of Engineers as a navigable waterway from October 24, 1907, until July 1, 1951. Unfortunately, as a commercial waterway the Hennepin Canal was a "white elephant" from the very beginning. It was a disappointment, a source of frustration and ultimately a failure. Never in the entire forty-four years did the Hennepin Canal realize its potential as an important link in the inland waterway system. Although it did complete a direct, all-water, commercial route from the Great Lakes to the Upper Mississippi Valley which was 419 miles shorter than the river routes available, the Hennepin Canal was used very little.

It had taken fifty years to approve the canal's construction and seventeen years to build it, but when it was finished on October 21, 1907, the Corps of Engineers could not wait until Spring to pass the first boat. The steamer **S.S. Marion**, under the command of Captain Rambo and loaded with government officials, was the first boat to travel the full seventy-five miles of the main-line. (Traffic had been open on the westernmost five miles of the canal since April 17, 1895.) The **Marion** left the Illinois River at Bureau, Illinois, on November 8, 1907, and arrived at the Mississippi River near Rock Island, Illinois, on November 15.

Water from the Rock River at Sterling-Rock Falls, Illinois, had been turned into the feeder canal in October 24, 1907. The canal prism, some of which had been completed but unwatered for thirteen years, settled and filled only slowly to the seven foot operational depth. Moreover, the fact that ninety-one continuous miles were filled from one set of feed gates slowed the process even further. (These ninety-one miles included all the feeder and all of the main-line except the five miles filled in 1895 and the eight miles which flow in the Rock River.)

First the 29.3 miles of the feeder had to fill. Then the eleven mile summit level pool had to fill to a point where water would descend from both



S.S. Marion was the first boat to travel the full seventy-five miles of the main line of the Hennepin Canal. She left the Illinois River on November 8, 1907, and arrived at the Mississippi River on November 15. (Photo courtesy of Ruth Jones (Mrs. Verle), Wyanet, Illinois, who was a passenger on a portion of that first run.)

its eastern and western ends simultaneously. Finally, both the eighteen miles to the Illinois River and the thirty-three miles to the Rock River channel had to fill to a seven foot depth. Of course, this process was not complete by the time the **Marion** began her voyage. Only one level at a time contained enough water for the passage of the boat. This water was locked through from stage to stage; in effect, the **Marion** had to carry her own water with her. Because the Corps could not wait until Spring, the **Marion** was equipped with iron guards to break the already formed ice. When the steamer arrived at Lock 28, she had to use the iron guards to push open the gates. The upper gates could not be operated manually because of a tangled mass of ice and weeds brought down by the flooding of the canal.

Even after the **Marion** reached the last five miles of her journey (the stretch of canal that had been open to traffic for twelve years), there were still problems with the amount of water in the canal. Instead of too little water, there was too much water. Inadvertently the water had been raised a foot above the established level and the **Marion** could not get under the Rock Island Bridge. Captain Rambo remedied this difficulty by offering the first 200 people he could gather

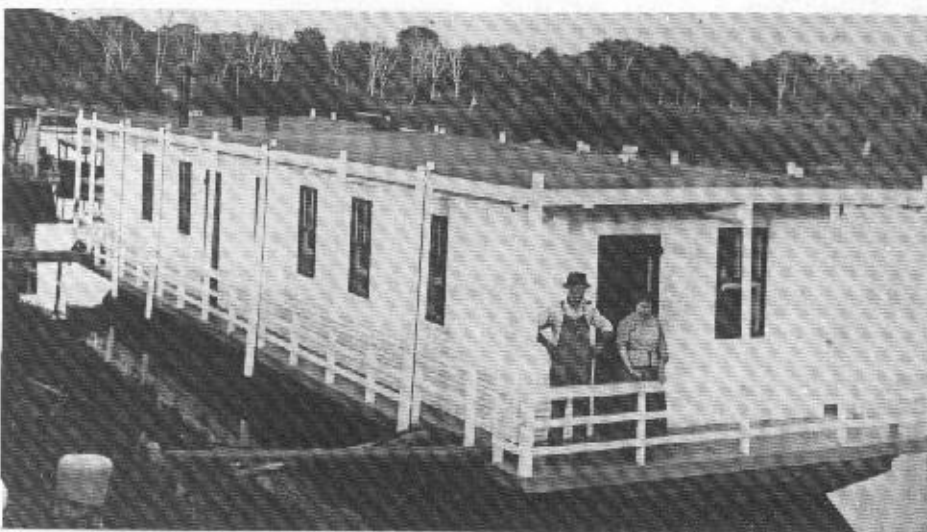
along the bank a free ride so that the extra weight would lower the boat until it passed under the bridge. Charles S. Dennen, Governor of Illinois, and a large crowd were waiting just west of the bridge to welcome the first boat to pass through the Hennepin Canal and officially open it to navigation. The **Marion** was the last boat to travel the Hennepin Canal until Spring.

Once the entire waterway was completed and opened to navigation, the labor force had to be reduced from the high level required by construction. After 1907, the Corps employed at least fifty men, and often more, fulltime, year-round to operate and maintain the Hennepin Canal as a commercial waterway. This labor force, although comprised entirely of civilians, was under the direct supervision of the Rock Island District Office of the U.S. Army Corps of Engineers.

For purposes of administration, the Corps divided the canal into sub-sections, each in the charge of an overseer. These sections varied from four to twelve miles in length. Each overseer had under him lockmen or patrolmen, or both. All the overseers, lockmen and patrolmen were full-time, year-round employees, and houses adjacent to the canal were provided for all of them. Rent for the residences which full-time employees were required to live in was deducted from their salaries. Of the fourteen overseer houses spaced along the canal (one per section), only one was purchased by the Corps of Engineers; the Corps built the other thirteen specifically for the project. Seven of these were of common design; two-storied frame houses containing eight rooms.

The status of the overseers was reflected not only in the size of their houses but also in the niceties provided - all were equipped with indoor plumbing. Six other overseer houses were individually designed. It is probable that the overseers who occupied these houses had even more status than the average. These houses were always located in sections of the canal where warehouses or other facilities indicated a centralization of some particular maintenance operation. The larger and more ornate or luxurious houses probably reflected the increased authority or responsibility that fell to the overseers of these sections. All the overseer residences were surrounded with concrete walks, concrete clothes lines, concrete flower pots, etc. The novelty of concrete did not wear off. This was, after all, the first American canal made entirely of concrete (without stone facings).

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The lockman at Lock 1 at the Illinois River lived in a seven room houseboat on the Hennepin Canal. A house could not be built at the lock because of the fluctuations of the Illinois River. (Photo courtesy of Mr. Clarence Sapp, Wyanet, Illinois, who was the lockman at Lock 1.)

"WATERSLOPE" SYSTEM 165 YEARS OLD

by Ernest H. Schell

The French, who have developed a lockless "waterslope" system on the side canal of the Garonne River, employing two locomotives to push a steel plate that forces a wedge of water uphill (*American Canals*, Nov. 1977), were not the first to light upon this ingenious scheme. It was envisioned as long ago as 1813 by Oliver Evans (1755-1819), a brilliant American engineer and inventor who developed the world's first high pressure steam engine in the 1790s as well as the first completely automated production plant at his flour mill on the Red Clay Creek near Newport, Delaware, in 1785.

Evans was not primarily concerned with canal development. His own experiments with steam engines were connected with steam propelled land and river craft, leading in 1805 to the successful operation of the first amphibious vehicle. Though he did not invent the steamboat, he was the originator of the high pressure steam engine as a source of power for such vessels.

In 1806 he built a foundry and a steam engine factory in Philadelphia known as the Mars Works, and it was the necessity of obtaining plentiful supplies of anthracite coal for the foundry that prompted an interest in canals. Plans to improve the navigation of the Schuylkill River by means of a canal to reach the coal fields at Pottsville inspired Evans to come up with a system for raising canal boats from one level to another without using a series of locks. He described the procedure as follows:

"Make a regular inclined canal of wood or stone of equal width and of depth sufficient when full to float the loaded boats. Make a piston to fit this canal so exactly that but little water can pass it not more than 1/64 or 1/32 part thicker of sheet under the bottom and at each side. The bottom of [the] piston may be so formed as to let the water under it at the upper side to press it up, [and] the bottom may be of such thickness regulated so that the water will buoy it up from the bottom of the canal as soon as it rises high enough to float the boat.

"The piston being at the lower end of the inclined plane and a boat brought in before it [...] draw the piston up the inclined plane either by steam engine in or out of the boat or water wheel and it will push the water and boat floated before it up into the canal above, no more water will be expended by this operation than what is suffered to pass by the piston, which is supplied by letting that small quantity descend the plane from the canal above. If the boats be made to fit the bottom and sides of the canal they will operate as a piston, the water will rise on the sides of the boat just high enough to float her off the bottom. She rides on the water without friction, and has no current to stem. Thus, I have discovered the means of ascending an inclined plane with a loaded boat of Burden, in a Stream of water half an inch deep of the width of the boat. Invented April 19, 1813." (Spelling modernized.)

Evans estimated that a boat 70 ft. x 10 ft. x 2 ft. would require a 6 h.p. engine to draw 390 tons up an ascent with a 2 ft. rise in each 70 ft. It is likely that Evans built a model of the system to satisfy himself of its feasibility, but no one at the time expressed any interest in adopting the scheme. Once again, the man who foresaw the railroad two decades before it was successfully developed was a dreamer far in advance of his times.

Hennepin Canal (Concluded from Page Five)

The Corps provided thirty-eight houses for lockmen and patrolmen. As with the overseer houses, these houses were generally of common design and amply supplemented with concrete accessories. Thirty lockman/patrolman houses were identical two-storied frame houses with gambrel roofs; they were smaller than the overseer houses, having only seven rooms. They also lacked the amenities: indoor plumbing was never provided and many were never wired for electricity even when it became available in rural locations. One other house was identical to this first thirty except that it was of concrete. The other seven lockman/patrolman houses were built to individual specifications or acquired already built and then modified for canal use. Unlike the overseer houses, these differently designed houses reflected no greater status. In fact, the opposite was often the case. Many were built of scrap material and adaptations were not very elaborate. Economy seems to have been the key to lockman/patrolman houses. The lockman at Lock 1 on the Illinois River was not provided with a house. Instead, he rented a seven-room houseboat which could respond to the rise and fall of the Illinois River and be moved out of the way during the winter months.

In addition to the houses, the Corps of Engineers constructed barns and equipment sheds adjacent to the residences. The overseers, lockmen (with the exception of Lock 1) and patrolmen were encouraged to keep stock. Nearly every family had three cows and their offspring (the technical limit - although many employees exceeded it, keeping standing dairy and/or beef herds of twenty-five to thirty). The cattle were allowed to graze free of charge on the canal right-of-way. Many employees also raised pigs and chickens. In the early years, a select few had teams of horses which they rented to the Corps of Engineers for mowing grass, etc. The horses, too, grazed free of charge. Each residence was also provided with a large garden plot and some with orchards as well. In addition to these income supplements, lockmen and patrolmen were granted exclusive trapping rights to an area of canal adjacent to their homes. The primary catch was mink and muskrat.

The Corps also built general purpose warehouses and workshops along the right-of-way. Some buildings, such as the post house, were specifically designed for special functions. All of the Hennepin Canal right-of-way was bounded by five strand wire fence strung on 165 pound concrete fence posts specially constructed by the Corps of Engineers' staff at the post house. A telephone communications system was constructed along the entire length of the Hennepin Canal so that lockmen could be advised in advance when a boat was coming through the lockage. This system involved the setting of specially made 750-pound concrete telephone poles along the entire 104-mile waterway. These poles were, also made at the post house. The Corps of Engineers also constructed service facilities for the traffic on the canal such as boat yards and boat "ways".

In addition to responsibility for these structures and supervision of the lockmen and patrolmen, the overseers on the Hennepin Canal were in charge of a hired hourly labor force through the summer season. The canal was open to navigation whenever weather permitted, that is, unless closed by ice. The part-time and full-time help raised the Hennepin Canal labor force to well over one hundred men each summer season. The overseers were also responsible for the equipment used in maintenance and operation. Besides the standard items and machinery, each overseer was provided with a motor launch and some had the responsibility for various Corps low-boats, barges and dredges. In later years a fleet of trucks also came under the overseers' charge.

Maintenance work during the years of operation included patrolling the banks, operating the locks, strengthening banks, repairing breaks, repairing and maintaining structures, revetting, repairing boats and barges, servicing the telephone system, remedying seepage conditions, maintaining a constant channel depth, and keeping drainage pipes, culverts and intersecting waterways flowing freely. Miscellaneous maintenance and improvement, such as trimming and burning weeds, grass, trees, and brush along the right-of-way or graveling the towpath and bridge approaches, were also necessary.

The operation and maintenance of the canal was expensive only when one considers that it was never part of an operable water way system. The total cost for operation and care from 1908 through 1951 was \$6,900,653, or an average of \$160,480 per year. Costs were particularly high in the first six years of operation not only because there were major breaks in the banks of the canal for three successive years, but also because the constructed but not-yet-watered canal had drained much swamp land adjacent to the right-of-way. Farmers along the banks had begun reclaiming and cultivating the very fertile land. When water was turned into the canal, however, under-draining ceased and the land reverted to swamp. Reluctant to forego profits they had been collecting for as long as thirteen years, many landowners blamed the wet conditions on canal seepage and demanded that the Corps of Engineers construct drainage systems. Despite the lack of validity of the farmers' contention that the canal was seeping, the Corps built the drainage ditches at the cost of about half a million dollars.

For the next thirty years of operation, operational and maintenance costs were exceptionally high only after four major breaks in the canal banks: 1928, 1932, 1938 and 1940. The 1943 break in the canal, which took out not only a lock but an aqueduct, marks the beginning of the final nine year sequence of extremely high operational cost.

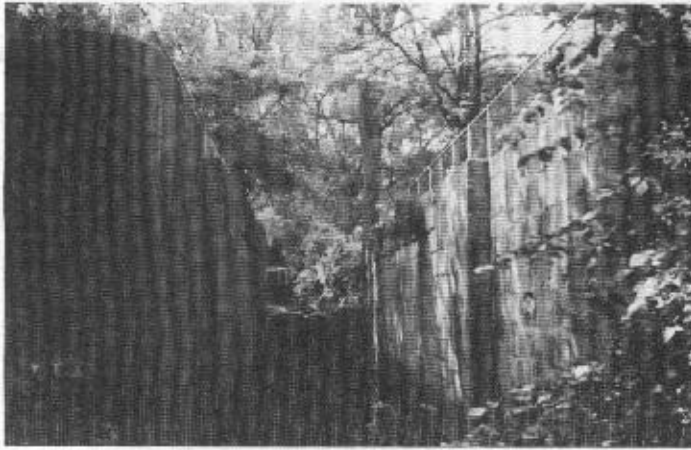
Unfortunately, these operational expenses were not offset by national economic advantages as the promoters of the Hennepin Canal had alleged they would be. The canal did not become a major through-water transportation route. It did not open a direct commercial link between the Upper Mississippi Valley and the Atlantic seaboard. It did not offer improved east-west transportation and, therefore, it did not enable residents of the Illinois and Mississippi Valleys to compete in eastern markets, where agricultural prices were set, instead of New Orleans. It did not significantly reduce freight rates on manufactured goods imported from the east. (To be continued)

CANAL BOATS - J. R. & K. (Concluded from Page Three)

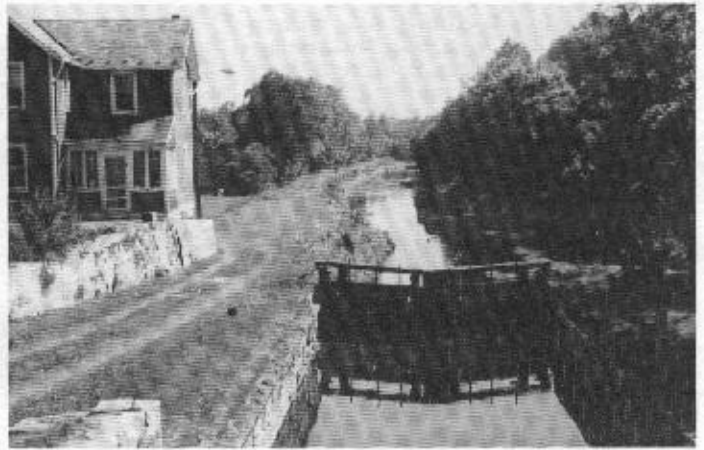
Richmond, on the north side of the Basin, a little above the Toll House, under the same style and firm, to operate in connection with their line of boats and their House in Lynchburg - and any Goods or Produce consigned to their care, will receive their strict attention, and will be forwarded with the utmost despatch. Any produce shipped by their line of Boats, consigned to other Houses, will be carried through, with equal expedition, to any other line of Boats on the Canal. They have just started two more splendid Boats, the DAVY CROCKETT and JOHN RANDOLPH, and, will, in a few weeks, have finished and under way, two more, making their line consist of six superior BOATS. Their facilities being thus complete, and intending to devote their whole attention to the business, they respectfully solicit a share of the public patronage.

(A listing of canal boats entitled "Canal Register" follows in the next issue of *American Canals*. T. Gibson Hobbs is an authority on the James River and Kanawha Canal.)

British Canaller's Impressions of Canals in USA



Ruins of one of the old Miami and Erie Canal Locks in the side cut park at Toledo, Ohio. Masonry in excellent condition.



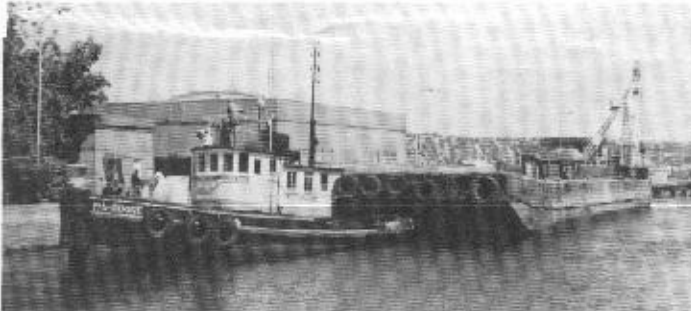
Guard Lock on the restored Lehigh Canal, about three miles west of Easton, Pa. Lockkeeper's House to the left.

Last Spring, Peter Currell, one of our avid canal enthusiasts in the United Kingdom, who has piloted his own narrow canal boat through most of the canals in England, wrote Bill Shank that he was planning to spend twenty days touring the canals of the United States from the west to the east coast. During these twenty days he undoubtedly saw more of the canals of northern USA, and even parts of Canada, than most of us canal buffs are able to see in years!

Peter flew into Vancouver, B.C., and from there worked his way east by train, via Seattle, to Chicago. Here he hired a car and drove through various parts of Eastern USA, returning home via

the fabulous "CONCORD" flight out of Dulles Airport in Washington. He has sent us the accompanying pictorial record (he is an expert photographer) of just a few of the current and historic navigation canals which he visited - including such widely separated ones as the Lake Washington Ship Canal, the Illinois and Michigan Canal, the Miami and Erie Canal, the Chesapeake and Ohio Canal, the Susquehanna and Tidewater Canal, the Union Canal, the Lehigh and Delaware Canals, the Delaware and Hudson Canal, and the Erie Barge Canal - just to name a few! Bill Shank was able to steer him to other canal buffs of the American Canal Society in Eastern USA, who saved him much time in finding points of greatest interest quickly.

Since his return to England, he has written us that it took him 3 hours and 25 minutes from Washington to London, flying at 1370 MPH and 58,000 feet ("where the sky is dark blue," he says) in the fantastic, new CONCORD. Anyone who wished to compare notes with Peter on the many other canal points of interest which he enjoyed while here, not to mention English canals, may correspond with him, care of his home address: Castlebourne, Bromsgrove Road, Belbroughton, Nr. Stourbridge, Worc. DY9 9XU, England. He is in the printing business, and is a member of just about every canal society in the United Kingdom, a most knowledgeable, international canal buff!



Hiram M. Chittenden Locks on the Lake Washington Ship Canal at Seattle, built in 1916. Peter Currell tells us that about 13,000 boats pass through these locks in a month's time; he counted forty boats going through in one hour.



A well preserved lock on the old Illinois and Michigan Canal at Channahon State Park, near Chicago.



Monocacy Creek Aqueduct on the Chesapeake and Ohio Canal close to the Montgomery County and Frederick County Line in Maryland. Note stabilization work on the old masonry.



A lock on the Erie Barge Canal, near Utica, through which Peter Currell traveled on the "Emita II" out of Syracuse, N.Y. enroute to Troy, on the Hudson.

Orphan Canal Boys

We find in the Syracuse *Daily Star*, the proceedings of a meeting of the citizens of Syracuse held on the 15th inst. to consider the condition of the Orphan and destitute boys who are engaged principally as "Canal Drivers" during the season of navigation. Hon. Daniel Pratt presided, and addresses were made by Rev. Messrs. J. W. Adams, Samuel J. May, and others, relative to the condition and necessities of this much neglected class.

It appears from facts elicited on this occasion, that there are about 5,000 boys engaged upon the New York Canals, one half of whom are orphans; and nearly all of whom are destitute of a home on the approach of Winter. Many of these boys are under twelve years of age, but their extreme youth, and hapless, unfortunate condition, are not sufficient to exempt them from the most wanton wrongs on the part of their employers. Most of them are precocious, as well in vice as intellect, and the Canal is just the place to put them through all the gradations of crime, from stealing a six penny loaf or a bundle of hay up to the most daring burglary, and even murder itself. Indeed, in some instances they are instructed in theft, &c., by the Captains of these boats, who endeavor to give to those in their employ the same kind of an education they have themselves received. At the close of navigation, these "drivers" are generally destitute of money and comfortable clothing, and congregate at such places as Utica and Syracuse, upon the line of Canal, and practice upon the community the evil propensities which have been nourished and exercised upon the Canal. They seem to be regarded as outcasts. They have no home - no friends to advise or assist them - no instruction except in vice; and the jail is often regarded by them as an asylum. Of the sixteen hundred convicts who have been or now are inmates of the Auburn State Prison, four hundred and eighty had been Canal boys!

In view of these facts, a memorial to the Legislature, drawn up by Mr. May, setting forth in earnest and eloquent language the condition of these boys, was adopted by the meeting. The memorial asks that the Legislature appoint supervisors or guardians of the canal boys, in suitable places, by whom registers shall be kept of all the youth under 20 years of age, who may be employed within their several sections, without whose knowledge and permission no youth shall be employed upon the canals; and to whose satisfaction all contracts shall be made, and all accounts settled with these boys; and establish, at convenient distances along the canals, houses under the care of suitable persons, where those canal boys who have no home may go, and be made comfortable, when not employed upon the canals; and where they may receive such mental and moral culture as they may need. In such establishments as we propose, in the charge of men and women who would be interested in the work, and competent to perform it, these neglected youth may be brought under improving, saving influences.

The memorialists ask that in addition to these "Homes," a "House of Refuge," to be established at Syracuse, for the benefit of those boys who may be found guilty of petty crimes. - *Tribune*.

"Orphan Canal Boys" appeared in the February 1846 issue (Vol. XVIII #6) of the *Sailor's Magazine and Naval Journal*. The article was obtained by ACS Director Bill McKelvey from the Navy Department Library.

(Classified ads are available at 15¢ per word, \$5 minimum) Send to Editor, American Canals, Box 310, Shepherdstown, WV 25443 by 1 April for next issue.)

"SHOWBOAT"



The "SHOWBOAT" takes passengers from coast to coast in Florida via the Intercoastal Waterway, taking in the Okeechobee Waterway and a section of the St. Lucie Canal, returning by bus after an overnight stop at a motel in Clewiston. The fare of \$72.50 includes the boat trip, return bus, lunch, dinner, breakfast, and motel. Call toll free 1-800-282-8375, for further information or reservations from the Ft. Myers office. (Photo by Alden Gould)

An Immigrant's View of The U.S.A.

(Copy of a letter from Christena Watson to Mrs. Thomas McKean, in Patrick, near Glasgow, Scotland)

Wheeling, September 4th, 1849

My Dear Daughter -

I take this opportunity of letting you know that we arrived here four weeks since and are all well at present. Thank God for it and I hope this will find you all well likewise. We had a long journey after leaving New York on the 25th of July at three o'clock afternoon by steam boat. Went so far then we got into railway cars and on we went till ten at night then we got into steam boat again and lay to all night. Started at 9 next morning and reached Philadelphia by 7. We went straight to Leech's office and took out our passage for Pittsburg which we paid 16 dollars and half. Our luger was all away but one chest. All the luger a passenger is allowed is 50 pound. We went by railway all that day and got in to a cannal boat that night Thursday and was in it till Tuesday morning we came to the foot of the Allegany mountains then we got into railway cars again to cross the mountains. We was drawn up one side of a mountain and down the other by chains and where there was a flat on top was drawn by mules and sometimes by a engine and sometimes by nothing at all, flying with rail way speed we got into Johnstown that afternoon and had to take lodging there as the rivers was low and the boats was all detained, but we got a swift boat next afternoon and had to pay 4 dollars and half more. We was all night in that and got into Pittsburg the next night. We had to take lodgings there again but we got a steam boat next morning, Friday, to take us to Whelling and we paid another 4 dollars and half and we did not reach Whelling till Sunday afternoon the 5th of August. It was eleven days from we left New York and our passage and luger and every other expense came near to sixty dollars. It was a great expense and fatigue. I was very poorly all the way but I am quite well now. We had not great trouble to find out Adam Thomson and they were all very happy to see us and very kind to us. They had a house provided for us before we landed but we stopped with them two weeks and we have been in our own two weeks. We have two apartments and seler (cellar) below and oven attached to the back of the house for baking our bread. We

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have a water pipe and garden for drying our cloths. The people here dont bleach any. The water and aire makes them as pure as they were new out of the shop. Our rent is two dollars per month and no dutys. Catherine and Mary went to the factory to work spare work till looms would be ready for them. Catherine has got looms of her own as she was first in. While working spare work they have a set wage of 3 dollars and 3 quarters per week which is just 15 shillings and seven pence half penny of british money. This is but a small town about twelve or 13 thousand inhabitants. It is a quite pleasant place. I can stand at the door and view the hills round and round. It is a rich plentiful country. We have plenty of coals and very cheap. Fruits of every kind is very cheap. Flour is 5 dollars per barrel, beef is just 4 to 6 cents per pound, butter from 15 to 20, eggs 8 cents per dozen, sugar 7 cents, tea 48 cents per pound . . .

Christena Watson