

AMERICAN CANALS

BULLETIN OF
THE AMERICAN CANAL SOCIETY

BULLETIN NUMBER 22

Editorial Address - Box 842, Shepherdstown, W.Va. 25443

AUGUST 1977

CAPTAIN'S CORNER



Once again ACS President Tom Hahn and his wife Nathalie traveled along the English canals in the Narrow Boat "Phobos" - a former working boat of the Grand Union Canal Company, owned by ACS Member Tom Sewell. The boat is shown here leaving a lock on the Grand Union Canal, northwest of London.

In the May issue of American Canals we mentioned that we are again going to England, and that we did. It is a dreamland for canal enthusiasts, but the country is having a hard time keeping up with structures which need full time attention and money to keep them going just as they did in the days of working canals. There are all too few maintenance and repair crews on the waterways, in spite of the fact that there are more and more people using them. Unless the Government of England is prepared to put more into their historic waterways for recreational use, we predict they will have a very tough time to keep them going. In some ways it is a vicious cycle in that more and more people using the waterways put more and more pressure on dwindling water supplies and creaky structures in spite of the greater interest generated. One drop of the money spent by this country (or others) on munitions and clean or dirty nuclear weapons (we have a choice?) would repair, maintain and operate such beautiful waterways for many years. One sometimes wonders if our assistance programs to other countries are really going into worthwhile projects. Whoever hears of historic preservation aid going to help anyone? I, for one (in spite of my naval background) would prefer to see my tax dollars going to preserve an old waterway than a new fighter jet somewhere in the Mid East. If we have to spend dollars there, the Suez Canal would be a good place to start.

Elsewhere in this issue is an article on the dedication of the Chesapeake and Ohio Canal National Historical Park to William O. Douglas. The C&O is my "home canal" and Justice Douglas is one of my "heroes", so it was a particularly meaningful ceremony to attend. One of the high

points of my life was several years ago when Justice Douglas in an article in the **Washington Star** said that he felt that it was time to leave conservation work to younger men "like Tom Hahn." It was his inspiration and dedication which led me to found the American Canal Society and to

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The River Lea, traveled by the Hahns, is still much in use for English commercial vessels, as shown here.

Canal Societies Formed

The American Canal Society is most pleased to announce the formation of two new canal societies in the states of Illinois and Virginia. The American Canal Society encouraged the formation of each of these societies. ACS members are asked to join if they can and to let their friends know of the existence of these societies.

The Illinois Canal Society (among other objectives) exchanges and collects information about the canals and inland waterways of the Midwest. Canal enthusiasts in Minnesota, Wisconsin and Iowa are hereby notified that there is an organization close at hand with which they can communicate, and perhaps meet, until they establish their own state canal societies. John Lamb, ACS Director, serves as the first President of the new society. Membership is \$5.00 a year, students \$1.00. Charter members (to 19 June 1978) will receive a handsome map of the **Illinois and Michigan Canal** free. Mail to: John M. Lamb, Illinois Canal Society, 1109 Garfield Ave., Lockport, Ill. 60441.

The Virginia Canals & Navigations Society is devoted to the preservation and enhancement of Virginia's rich waterways heritage. It is still in the formative stage, but has the full support of Dr. William E. Trout, III, Virginia's canal historian and Vice President of the American Canal Society. To gauge the breadth and character of interest in such a society, interested persons are asked to suggest ideas and indicate their willingness to be members and/or to serve some organizational function. Write: Virginia Canals & Navigation Society, c/o Robert O. Bush, 101 Hickory Sign Post Road, Williamsburg, VA 23185. Mr. Bush has been pushing for some sort of an organization for several years, and this looks like the right organization to do it.

Ohio Canal Sesquicentennial

In 1820, Cleveland was a struggling hamlet perched above a rivermouth swamp, but Cleveland's ascent to commercial and industrial pre-eminence began on July 4th 1827 when the **Ohio and Erie Canal** was opened between Cleveland and Akron.

It can be justly said that this event is the most significant event of the Cleveland-Akron history. So it was altogether fitting that the 150th Anniversary of the opening of the canal on the 4th of July 1977 was held at the very same spot on the same day where the original celebration occurred. The event featured a verbatim speech from the original celebration and other suitable remarks and associated activities, including the dedication of a plaque commemorating the event.
(James F. Kuth, ACS)

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 842, 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.

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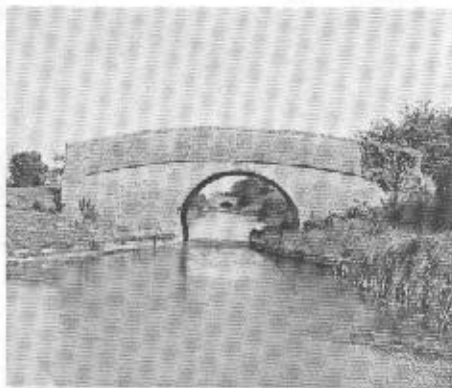
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Chairman, Canal Boat Committee, ACS Director, Carroll M. Gantz, 7100 Oxford Road, Baltimore, Md. 21212.

CAPTAIN'S CORNER



An interesting vista through several of the old bridges of the Aylesbury Arm, a little-used canal traveled by Tom and Nat Hahn this summer.

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devote part of my life to conservation. It is very necessary for a country to have its "heroes" and they need not all be on the battlefields. I think Justice Douglas would like to hear from his American Canal Society friends. He will be unable to answer your letters, but tell him of your interests in conservation and in what state or county and let him know that he (and others) have been instrumental in the rest of us being a little more attentive to the preservation needs of our country. At the ceremony I asked Mrs. Douglas (Cathy) to take Justice Douglas' place as a Director of the American Canal Society. Cathy is also an ardent conservationist who currently practices law in Washington. To write to Justice William O. Douglas, send your letter to the Supreme Court, Washington, D.C. and he will get it.

Tom Hahn

C & O Canal Dedication

On 17 May a ceremony was held on the Chesapeake and Ohio Canal at Georgetown dedicating the canal to Justice William O. Douglas, a Director of the American Canal Society. The ceremony was highlighted by the unveiling of a bust of Justice Douglas by his wife Cathy. The sculpture was an inspiration of Wendy M. Ross, a National Park Service employee. Several members of the American Canal Society attended.

The Chesapeake and Ohio National Historical Park Act, approved 8 January 1971, culminated 17 years of effort to preserve, restore and develop this remarkable Federal property, and retired Supreme Court Justice William O. Douglas deserves much of the credit for making this a reality. Conservationists led by Justice Douglas hiked the length of the canal in 1954 to point out to the press its historic and natural values as a place to walk and get away from roads and vehicles.



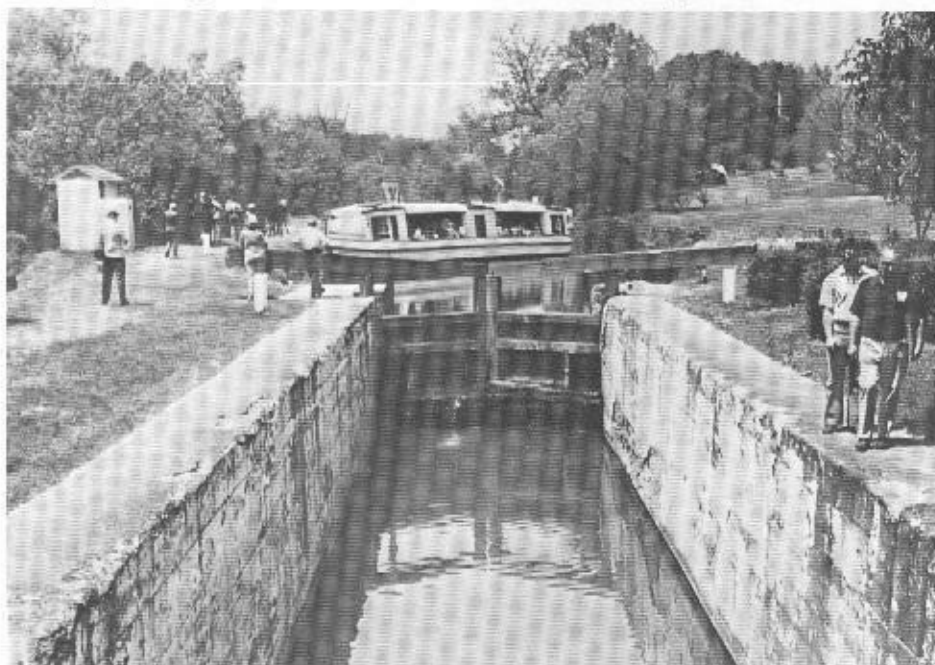
Cathy Douglas poses with the bronze bust of her husband immediately after the unveiling ceremony on May 15th. (Photo by Don Ramsey.)

In a letter urging editors of the *Washington Post*, which had supported the parkway concept, to accompany him on this walk, Justice Douglas described this natural sanctuary "... not yet marred by the roar of wheels and the sound of horns... The stretch of 185 miles of country from Washington to Cumberland, Maryland is one of the most fascinating and picturesque in the Nation...."

On the last evening of the historic hike which took place during late March of 1954, Justice Douglas organized a committee to draft plans and make recommendations for land use for an extended canal park. This ad hoc committee evolved into the C&O Canal Association in 1957, and canal clubs supporting park legislation formed along the upper river section of the canal. Under the leadership of Justice Douglas these and other organizations became an effective voice for a natural and historical national park.

Thank you, Justice Douglas!

Spring Tour - Canal Society of Ohio



The Canal Society of Ohio enjoyed good weather for their tour of the Ohio and Erie Canal, Saturday, May 21, 1977. The tour included watered sections of the canal both north and south of Akron, and a ride on the *St. Helena II* at Canal Fulton, Ohio, with luncheon served on board. In this photo (by Bill Shank) the *St. Helena II* is being turned around, just above Lock 4, after loading up with the second bus-load of CSO canal buffs.

THE UNION CANAL (Part II)

by Robert A. Pawling

Between Reber's Mill and Lock 47, the canal had to be blasted and chiseled through a cliff of hard shale rock, no small feat for black powder and muscle power. Drill marks are still visible at the steep cut near Lock 47.

Leakage through limestone bedrock posed a major problem in the area about five miles west of Reading. Here a clay and lime puddling compound was employed to help keep the water in the channel.

By 1824, work was underway on the aqueduct which carried the canal across Plum Creek near Reber's Mill. Other aqueducts in the area crossed the Tulpehocken at Meyer's Oil Mill and the Angelica Creek below Reading. Aqueducts were difficult to maintain and often sprang troublesome leaks. So poor was the condition of the aqueduct across the Tulpehocken at the oil mill that it had to be replaced by a slack water dam and a towpath bridge. Thereafter, boats were lowered by a lock to the creek and towed to the opposite shore where a wooden guard lock introduced them to the next section of canal.

Construction of the canal required vast amounts of back-breaking labor. This was usually a job for Irish immigrants. These men are the unsung heroes of the canal whose axes and spades cleared the land and dug the ditch. Commonly they were hired for a wage of \$.80 a day plus meals. Often the unfortunate laborers came down with canal fever, a combination of influenza and dysentery which sent many to their death bed. Locally those who died were buried in unmarked graves on the Deppen Family plot near Bernville. The Deppens were the only Roman Catholics in the vicinity and thus they provided burial for these of like faith. To offset these dismal conditions, the canal company employed a "jigger man" whose only job was to dispense an hourly shot of whiskey to each workman.

Things were hardly better after work was through. The immigrants were housed in crowded shacks with 40 men assigned to one floor. To make matters worse, the local Pennsylvania Germans resented the presence of these "auslanders" who were responsible for digging up their land. Occasionally when canal men would venture into town, words would be exchanged, tempers would flare, and a fight would ensue. Such was the case in a brawl known as the "Myerstown Riot" which ended in an inconclusive court case that was technically won by the canallers.

By 1826, the only unfinished points on the entire length of canal were found on the eastern section below Reading. Construction costs on the eastern portion were running about \$13,000 per mile or about \$5,000 cheaper than average.

To remedy the problem of leaky bedrock and inadequate water supply, a system of reservoirs, feeder canals, steam engines, water wheels, and pumps were utilized. Water from the Great Dam on Swatara Creek was channeled down a large feeder canal to the "water works" located at the junction of the Swatara and Quitapahilla. Here 4 huge 120 horsepower pumping engines, two 40 foot water wheels, and two steam engines were required to push 2,015 cubic feet of water per minute to the summit level. The steam engines required three men to operate and three tons of coal apiece for each day they were in use. Water was lifted 85 feet through a wooden, barrel-type pipe three feet in diameter. A 7,450 foot brick-



New, mitre-type wooden gates and balance-beams are shown here being installed at Lock Number 47 of the restored Union Canal section west of Reading. This is a project of the Berks County Parks and Recreation Board.

lined tunnel carried the water the remainder of the way. The man responsible for this ingenious engineering was Canvas White, a veteran engineer with other American canal projects. White had replaced Loamm Baldwin who became unpopular with the directors when he criticized their choice of small-sized locks and a poor route through the summit level. In spite of White's elaborate water system, time would prove Baldwin to have been correct.

Perhaps the most enduring feature of the Union Canal is its famous tunnel near Lebanon. Completed in 1826, it is the oldest surviving transportation tunnel in the United States. Originally 729 feet in length, the tunnel penetrates the highest level on the summit. The tunnel passage was so narrow that boatmen were obliged to pole through while their mules were led across the hill to await them on the other side.

When the canal was finally finished in 1827, it consisted of 135 bridges, 93 lift locks, 47 culverts, 43 waste weirs, 12 aqueducts, 2 guard locks and 2 weigh locks, not to mention the well publicized tunnel. One year later the canal was opened to commercial traffic with the maiden voyage of the "Fair Trader" which made the trip from Philadelphia to Middletown in five days.

No sooner was the canal in operation than the effects of poor planning began to show. Water levels in the summit fell so drastically during the summer season that boatmen unloaded their lumber and towed it behind them to avoid dragging bottom.

Despite water problems, toll collections rose in 1835 to \$135,354 the highest level ever recorded. While trade prospered, it was mostly of a local nature. During the 1830's "through traffic figures were about stationary," according to historian J. W. Livingood. Why was the canal failing to live up to its promise as a main route to the West? The simple answer is that the locks were too small to accommodate Pennsylvania and Schuylkill boats. The cost of transferring cargo to the smaller Union boats was too expensive and time consuming to be practical, thus shippers were reluctant to use them.

The Union Canal bottleneck was bypassed in 1834 by the Philadelphia and Columbia Railroad. Completion of the Susquehanna and Tidewater Canal in 1840 offered another alternative route and toll revenues on the Union Canal dropped a drastic 40 percent.

When it was finally decided that lock enlargements were needed, it was almost too late. First the western and then the eastern section was widened to accommodate boats of 17 x 90 feet weighing up to 80 tons. Business improved in 1857 following the costly enlargement, yet even in its moment of triumph, the canal was confronted by a new competitor, the Lebanon Valley Railroad. Revenues continued to dwindle and the canal never became a money making proposition. During these hard times lock tenders' salaries were cut from \$10.00 to \$5.00 and finally to \$2.50 per month. By 1884 only one lock tender remained on the lower seven locks, elsewhere, boatmen had to help themselves.

The following statement by the west end toll collector pretty well sums up the situation during those last desperate years:

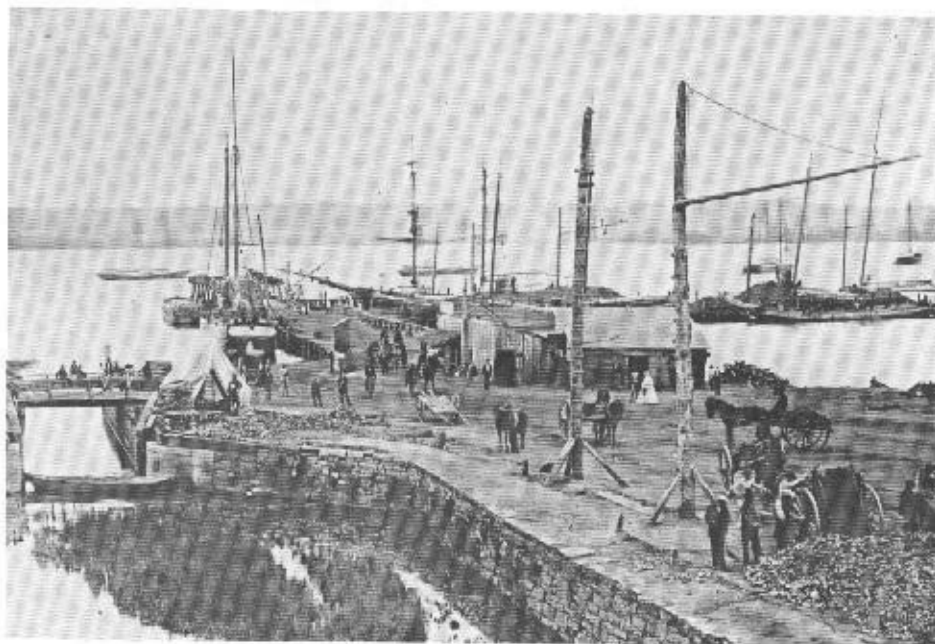
I am sorry to say that there are many lumber boats coming down the river (Susquehanna) the last few days bound for Baltimore, New York, and Philadelphia and for my life I can't get them to pass through the Union. I try them all. Some say they have cleared for Columbia, others say there is not difference enough in the rates of toll while on the Union they must pay their light toll back. They have all manner of excuses. I will do the very best I can.

N. Thompson.

Finally in 1884, the canal went out of business. For some it marked the end of a way of life, but for most it passed with barely a notice. Less than a century later, interest has revived, and soon the boatman's horn will once again be heard along the banks of the Union Canal.

(This is the second half of an article by ACS member Robert A. Pawling, R.D. #3, Kutztown, Pa. 19530. The first half was published in the May 1977 issue.)

Alexandria Canal Presentation



This is the Tide Lock of the Alexandria Canal, showing the Quartermaster wharf. This photo, a century old, was the basis for the painting by Lola Abell, which was presented to the City of Alexandria May 15, 1977. (Brady collection, U.S. Signal Corps.)

As jets landing at National Airport screamed overhead, a group of Alexandria preservationists and politicians gathered on the waterfront and paid tribute to a quieter, and almost extinct, form of transportation — canal traffic.

The occasion, sponsored by the Alexandria Archeological Commission, was the presentation to the city of a painting, depicting the southern-most lock of the **Alexandria Canal**. Commissioned by Dr. William E. Trout of the American Canal Society, and done by Lola Abell of Hagerstown, Md., it shows the old tide lock of the seven-mile-long canal. In the 19th century the canal ran from the Alexandria harbor north to Rosslyn and across the **Potomac River**, via an aqueduct, to connect with the **Chesapeake and Ohio Canal** in Georgetown, D.C.

According to maps of the old canal, which was in operation from 1843-1887, there were four

locks on the Alexandria end. Though all four locks are thought to be buried underground, the only lock which could be restored now is the one nearest the shoreline. "The lock is buried about three to four feet underground," said Dr. William Trout, one of the American Canal Society founders.

The Northern Virginia Conservation Council has proposed that the restored lock be the focal point for a National Historical Park to run along Alexandria's shoreline.

The Alexandria Canal was used primarily to bring coal from the C&O Canal's end to the Alexandria harbor, where much of it was shipped to the west coast to fuel steam lines going to the orient.

(Adapted from an article by Alice Digilio in the *Washington Post*.)

I & M Canal Restoration

The following was received from Bob Whalen, DVM: "It has been some time since you last heard from me, but the volunteers are still at it on the **Illinois-Michigan Canal** restoration project here from LaSalle to Utica (Ill.) The work is virtually complete except for filling it with water and the restoration of a set of working lock gates for Lock 14. Since the **Illinois Waterway** was built the river has effectively been raised about 15 ft. overflowing Lock 15. This removed the need for gates in Lock 15, so we removed the remains of the gates and stored them on timbers. It was our hope that we could use some of the hardware and use the gates themselves for patterns.

"We dredged out the quiet pool between Locks 14 and 15 and dammed out the river below Lock 15 which comes into the Steamboat Basin. We will put a dam across the upstream of Lock 14 and then pump out the water to repair and restore Lock 14."



The downstream end of Lock 14 on the Illinois-Michigan Canal being restored by volunteers. (Photo by R. F. Whalen.)

THE SAINT RETURNS

(The following exchange of letters is between Dr. Bill Trout, ACS Vice President and Leslie Charteris, creator of *The Saint* detective stories.)

Dear Mr. Charteris,

How about giving the Saint (in his prime) a hike along the Chesapeake and Ohio Canal towpath, beside the Potomac River? For example, perhaps he could have prevented a disaster (unknown up to now) to the famous hike along the canal by Justice Wm. O. Douglas in 1954, which prevented the canal from being destroyed by a highway, and led to its establishment as a National Historical Park. The Douglas hike was therefore a significant event in not only the future of canal parks, but for historic preservation and park planning generally. With the help of the Saint this event would be commemorated in fiction, a great boon to preservationists and park planners as well as Saint enthusiasts. I still remember the Saint's hike in "The Golden Journey" (*The Saint in Europe*), which I hope had some effect on your readership and the future of hiking. In any event canal enthusiasts everywhere would be most grateful to you for a canal story anywhere and anytime.

Dr. William E. Trout, III

Dear Dr. Trout:

Many thanks for your interesting letter.

By a coincidence which may appeal to you, the Hon Sec of the Saint Club (which sponsors a London youth centre) before his retirement was Chief of Security for British Inland Waterways, and he has always wanted me to do something about the canal scene.

I shall certainly keep your suggestion well up forward in my mind, and perhaps I shall be able to please both of you one of these days. With best wishes,

Sincerely,
Leslie Charteris

"Canal Era Optimist and Pessimist"

Donnie and Ronnie were young twins of a canal boat family. They were identical in every way but one . . . their personalities. Donnie was a persistent pessimist, while Ronnie was an outstanding optimist. Their completely opposite attitudes were revealed in everything they did and said.

Their parents tried to find some way to engender a little enthusiasm in the pessimist and to restrain or control the liveliness of the optimist, but to no avail.

When the twins were to have a birthday, the father hit on an idea . . . the perfect answer.

When the big day arrived, they led the little pessimist into one section of the hold and the little optimist into another. Donnie, the pessimist, was presented with many gifts . . . all designed to intrigue and delight any boy of his age. As he opened his presents, one by one, he expressed nothing but concern: one would break too easily, another was not the right color, or wasn't as shiny as he liked . . . in short, nothing pleased him.

Trying to hide their disappointment at the pessimist's reaction, the mother and father proceeded to the bow hold where they had been accumulating the optimist's gift . . . a huge pile of manure. They pecked into the hold to see him digging frantically in the pile and saying happily to himself, "I know there's a mule in here! I JUST KNOW THERE'S A MULE IN HERE SOMEWHERE!" (Bill McKelvey).

A James River & Kanawha Canal Steam Packet Boat

by T. Gibson Hobbs, Jr. (ACS)

(The Lynchburg Virginian in 1856 was a tri-weekly newspaper. Many issues are on file at Jones Memorial Library in Lynchburg, Va. The Friday, July 4, 1856 issue, Volume 33, No. 144, carried the following story.)

Sailing of the Fast-Running, High Pressure, Horse Power Packet Boat, "FANNY" - GREAT CROWD AND GREAT EXCITEMENT. - This splendid vessel left her temporary wharf, at the 1st Lock, (this would have been the guard lock at the Waterworks Dam, now Scott's Mill Dam.) yesterday morning at 7 o'clock, on her western voyage amid much excitement, "noise and confusion", and with an unusually large number of passengers.

At an early hour in the morning the approach to the point of embarkment was thronged with hacks, carriages, omnibuses, baggage wagons and pedestrians, and up to the hour of starting the cry was "still they come". The sailing of a grand Cunarder scarcely ever produced more sensation, and almost as many adieus were spoken, good wishes expressed and blessings invoked as though the scene had been New York harbor, the "Fanny", the "Persia", her path "old oceans wave", and her destination the "other side of Jordan". Friends, relations and lovers were there by the scores to give their last words of friendship, their last tokens of affection, their last whisperings and kisses of love, to the departing, and to wave them a last goodbye on their projected voyage. The hour of starting approached, the baggage was piled mountain high upon the deck, the apex of which was human heads; the cabin was crowded to repletion; the steam was gotten up; the whistle sounded, the "all aboard" uttered; the last words spoken, and away moved the majestic "Fanny", "like a thing of life", with her precious freight, on the waters of the "raging canal". The destination of all this crowd, of course, was Lexington, where they go to enjoy the approaching fetes and festivities. In the delegation we were pleased to notice many who will represent our good city with credit, and maintain its fair name for beauty and gallantry. Many of our belles and beaux were of the number, who will not fail to do honor to their home, and make sad deprecation on the affections of the devotees of Cupid and worshippers at the shrine of Hyman with whom they will meet. May happiness and success attend them.

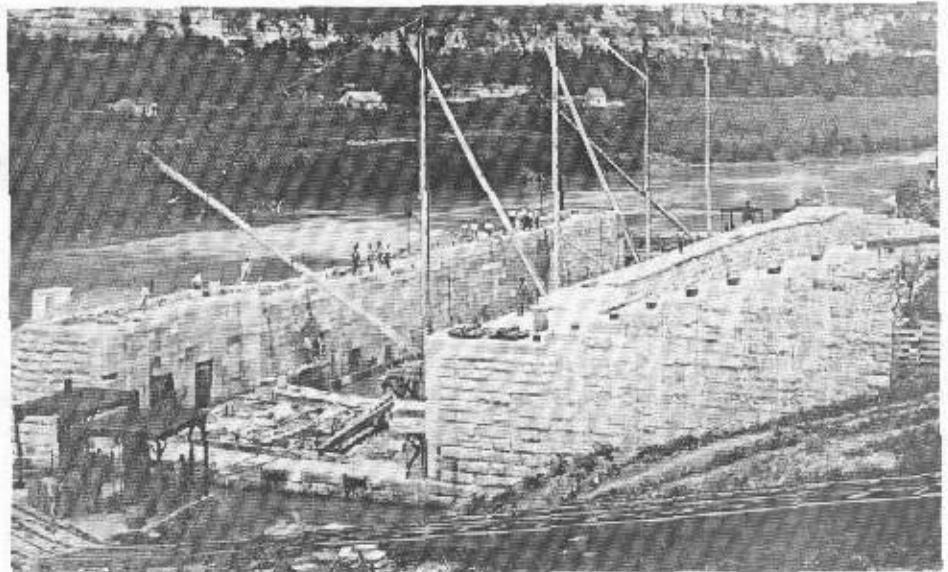
(All issues starting with June 23, 1856, No. 139 through July 18, No. 150, except for July 7 which is missing, were searched but no further reference to this or other canal boats was found.)

CANAL CALENDAR

October 1, 1977. Tour of the Pennsylvania Canal Society along the Susquehanna and Tidewater Canal from Havre de Grace, Maryland to Wrightsville, Pa. Contact Bill Shank, 809 Rathton Road, York, Pa. 17403.

October 22, 1977. Bus tour by the Canal Society of Ohio along the Miami and Erie Canal from Dayton to Cincinnati. For further details and registration information, contact: Ralph Hamey, 405 Corry Street, Yellow Springs, OH 45387.

TROUBLE ON THE KENTUCKY



Kentucky River Lock #7 under construction in 1897. (Courtesy of Lock #8 Lockmaster R. E. Conway.)

Earlier this year a flood wrenched off the right bottom gate and part of the wall of Kentucky River Lock 11. The rumor that the Corps may not be able to justify putting it back (although it might well have been repaired by this time) is symptomatic of the problems the navigation is having. Although Locks 1 through 4 are used commercially and are kept open all year, Locks 5 through 14 are used closed during the winter and used almost exclusively by pleasure boats visiting the impressive scenery. There is also talk of further reducing the lock personnel, abandoning, destroying, or moving one of the two lockhouses at each lock, and leaving the locks and lockhouses unattended when closed down during the winter. This unfortunately will also leave the houses ready for inevitable vandalism, so we hope this rumor is not true, and that the Corps will continue to keep the lockhouses looking like new, complete with gingerbread, as it has faithfully done for more than a century. The Corps deserve a lot of credit for

the systematic upkeep of these historic houses, and a great many other lockhouses and out-buildings all over the country. Will an architectural historian please make a study of these documented historic buildings before more of them disappear? On the Kentucky the progression of architectural styles is quite striking as one goes up the river, from the early locks (and perhaps original lockhouses) from the 1830's, to the last in the 1910's.

Visitors to the Kentucky can take boat trips in season at Camp Nelson (probably not through a lock) and at Ft. Boonesborough State Park (at Lock 10), and can dine at Jim's Seafood Restaurant in Frankfort, with Lock 4 on the place mat, and look down on the SAM DRYER lowing sand barges through the lock. One should also encourage the establishment of a "Kentucky National Recreational Waterway" or other means of preserving the old locks and lockhouses in operating condition, or at least as parks with public access.

(Wm. E. Trout)



Lock #11, Kentucky River, showing gate washed off, May 1977. (Photo by Bill Trout.)

"BRIEFS"

Any canal society or other organization interested in the possibility of booking a program of canal songs and stories can contact Pumpkin Pie, Primrose Mount (annexe), Old Neighborhood, Chalford Hill, Nr Stroud, Glos., England.

The Canal Museum, Weighlock Building, Erie Blvd. East, Syracuse, NY 13202 is trying to find information on or locate copies of **The Canal Advocate** printed in 1887 and 1888 on a weekly basis.

Dr. Bill Trout challenges any comers to the alleged facts that the first canal system in America with locks was the **James River Canal** opened 1789 and the highest lock is the **Baillie-Grohman** at 2,660 feet. Any takers?

Hy-Line of Florida will operate boat trips from mid-December until the end of April from Stuart up through **St. Lucie locks and Canal to Lake Okechobee** and back. Write Hy-Line of Florida, Box 105, Stuart, FL 33494.

THE HENNEPIN CANAL (Part Four)

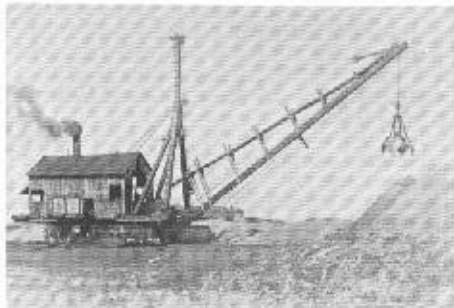
by Mary M. Yeater

(This article is the fourth of a series on the Hennepin Canal, formerly the Illinois-Mississippi Canal and the completion of "The Seventeen Year Construction Project.")

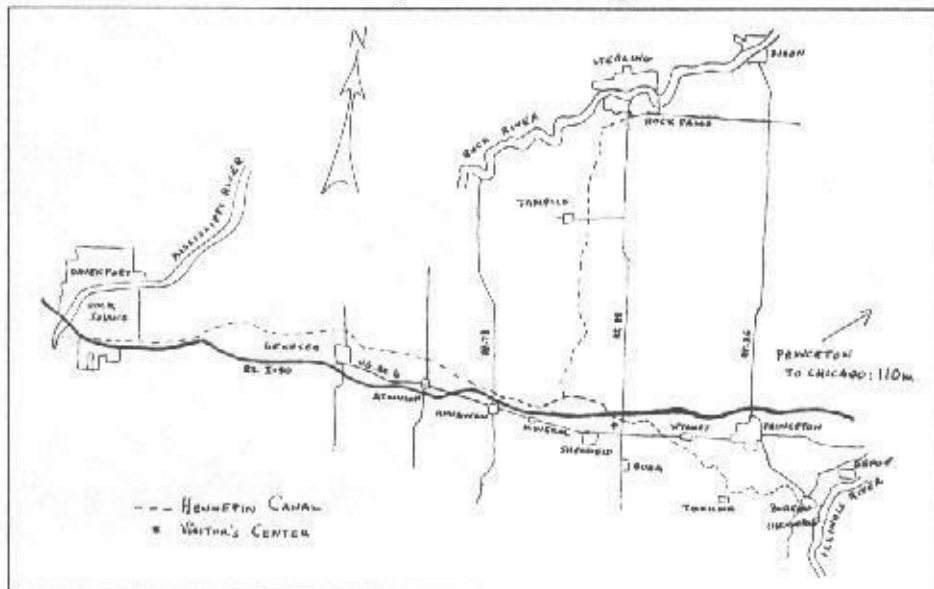
Work on the eastern section under Assistant Engineer Long began in 1894. From an engineering standpoint, it was the most challenging section of the canal in that in its first eighteen miles it ascends 196 feet from the Illinois River and requires twenty-one locks with lifts varying from six to twelve feet. Because a high embankment was necessary, making the use of teams very difficult, a three-foot gauge railroad was built to haul dirt and materials. Three of the nine aqueducts on the canal had to be constructed in the eastern section. The aqueducts vary in length from four to ten spans, each span being thirty-five feet long. The summit level passes through level prairie land. It drops only thirty-one feet in thirty-one miles and therefore stands above the surrounding farm land. When the feeder section, which is also unbroken by locks, is added the result is forty miles of canal. A break in any part of this forty miles would allow nearly all the water to escape into the surrounding country. To minimize that danger, two gates which could be closed quickly were constructed. One of these emergency gates — a miter gate is in mile 24 in the eastern section. The other — of the Desfontaines type — was placed at the aqueduct crossing Green River on the feeder.

In addition to these expected construction challenges, one particular problem arose on the eastern section as the result of a questionable engineering decision made when the canal was being located; when work began, a three-mile section was found to be a peat bog. The Corps of Engineers using hired labor had to take over the work begun by a contractor. Long's men excavated by the innovative means of an overhead cableway with wooden towers about 500 feet apart. They also had to line the bed of the canal with clay to prevent water loss through the peat.

New funding status allowed work to begin on the western section of the canal under Assistant Wheeler's charge. There were few problems in connection with the construction of this part of the canal. Unlike many American canals, the Hennepin Canal was constructed after railroads came into being. This meant that a total of eight railroad bridges had to be built by the government; four for various branches of the Chicago, Burlington and Quincy; three for the main line of the Chicago, Rock Island and Pacific; and one (the only railroad swing bridge built) for the Rock Island and Peoria. All these bridges were originally planned as swing bridges, but had to be changed to fixed spans because of the prolonged delays in construction when the bridges had been designed in the 1890's.



Kinser & Son's Orange Peel Dredge excavating on Mile 15, Eastern section of the Hennepin Canal. September 15, 1899. (Photo courtesy of the Rock Island District, Corps of Engineers.)



While the eastern and western sections of the canal were being built, the feeder section was also receiving attention. The feeder as finally located leaves the Rock River just east of the corporate limits of the city of Rock Falls and opposite Sterling. It follows a course almost due south for 29.3 miles where it makes a junction with the main line. The bottom of the feeder has a total fall of but one foot. Excavation work on the feeder began in 1899. Only one lock had to be constructed on the feeder — a guard lock at its head to protect the canal from high water in the river.

There are sixty-seven highway bridges and several pontoon bridges for farm crossings over the canal. Most of the highway bridges are of a fixed type (pony Warren truss or through river Pratt truss types with a span of ninety-eight feet) and are set at right angles to the axis of the canal with a clearance of seventeen feet over the water in the canal. There is one swing bridge, operated on a center pier; three lift bridges; and two plate-glider bridges, which are carried over the ends of the locks. The twenty-one bridges on the feeder section, however, only clear the water by twelve feet and are of a different style (riveted Pratt truss span which is seventy-five feet long).

As completed in 1907, the canal ascends 196 feet from the Illinois River to the summit level in a distance of eighteen miles and descends ninety-three feet to the Mississippi River in forty-six miles. The summit level is eleven miles long and the total length of the main line is seventy-five miles. The feeder, which has the same capacity as the canal is 29.3 miles long.

The canal is fifty-two feet wide at its bottom and eighty feet at the water line; the depth of the water is seven feet. Turnouts were built every four or five miles and the canal is wider above and below the locks. Thus, it is up to 500 or 1000 feet wide in places. Where the canal is carried entirely above the natural surface of the ground, the banks are ten feet wide on the top. Where it is entirely excavated, a low path sixteen feet wide is excavated at one side, two and one half feet above the water, providing a continuous path so that boats may be towed by animals if necessary or desired.

There are thirty-three locks on the canal; one at the head of the feeder and thirty-two on the mainline. Flowing down from the junction of the feeder and the main line, the water for supplying the successive levels of the canal is carried from

the upper end of each lock over a spillway to the lower end. The spillways are cast iron pipes laid back of the lock walls and vary in size from forty-eight inches at the summit level to eighteen inches at the lower end. All of the locks are 170 feet long and thirty-five feet wide and are capable of passing barges of at least 140 feet length, thirty-four feet beam, and 840 gross tonnage. The lock walls are 240 feet long and have a width of four feet on top and a width at bottom of about forty-five percent of the height of the wall. The lower end of the walls are stepped down and connected with wing walls. Recesses two feet, nine inches wide were made in the walls to receive the gates.

All of the locks are manually operated. They are filled by means of two tunnels, one in each lock wall. At the head of each tunnel is a butterfly filling valve which is operated from the top of the wall by means of a hand wheel. The valves for emptying the locks are of similar design but smaller and are placed in the lower gates where they are operated from the top of the gates by levers. The lower gates in all the locks are of the ordinary mitre type, placed at an angle of 71° 30' with the center line on the lock and were built of yellow pine timbers. Nineteen of the locks also have ordinary mitre type upper gates. The gates shut against a mitre sill which is anchored into the mitre wall or the foundation and are operated by a special form of hand-powered crabs or maneuvering gears on the tops of the walls.

The remaining fourteen locks were fitted with automatic gates designed by Major Marshall.



Excavation at Mile 22, Eastern section of the Hennepin Canal, showing the cableway, towers and bucket specially constructed for this problem area of canal prism. December 10, 1904. (Photo courtesy of the Rock Island District, Corps of Engineers.)

KENTUCKY'S GREEN RIVER NAVIGATION

This spring William McClellan, author of *THAT LAST BOAT IN THE EVENING*, and Bill Trout made a survey for the *American Canal Guide* of the locks and dams on the *Green River* in Kentucky, and its branches the *Rough* and *Barron*. There are only eight locks and dams on the system, but over a century and a half three locks have been replaced once and one twice, leaving a total of 12 locks of various styles and sizes, from the original four in the 1830's to New Locks 1 and 2 built in 1956. Lock 3 at Rochester (1838) is the only original stone lock still operating, and until this fall was hand operated, perhaps the last hand operated commercially operating lock in the country (any challenges?). and the *Rough River Lock* (1896) above *Livermore* was the first monolithic concrete river lock in the country (the first concrete canal locks were on the *Hennepin Canal*, begun in 1892). Now only locks 1, 2 and 3 are still operating, the rest abandoned, some of them now on private property, and some still owned by the C. of E. The *Rough River Lock* is on private property, so any visitors should call first at 278-2995. Lock 4 at



William McClellan on the first concrete river lock on *Rough River*, a branch of the *Green*, in Kentucky. (Photo by Bill Trout.)

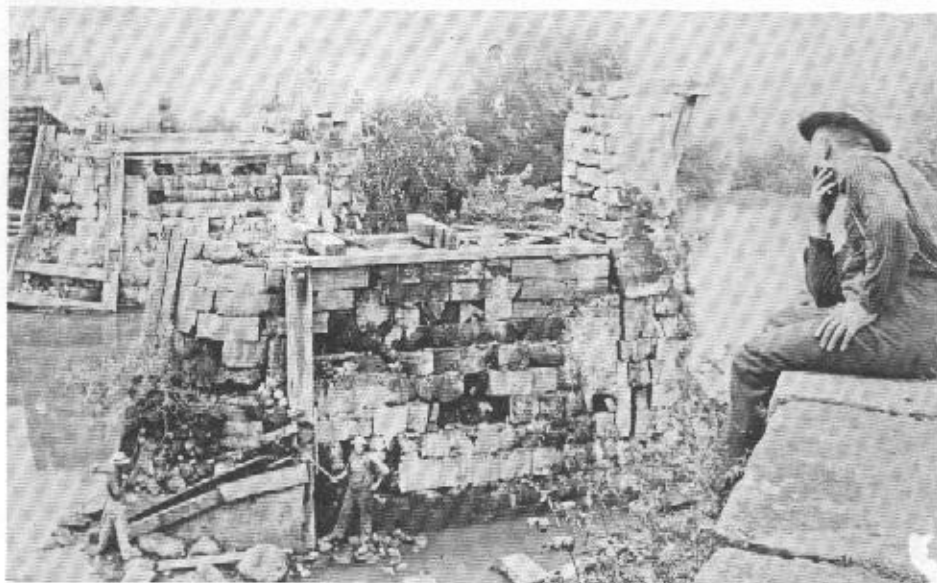
Woodbury, complete with an inscription, is in a park, but Locks 5 and 6 and the *Barren River Lock* are in limbo, with an uncertain future. We urge the Corps to make certain that public access to these locks is maintained, and that they and the remaining lockhouses remain quiet parks or are otherwise preserved through adaptive use.

Lock 3 at Rochester is especially scenic and accessible, and is featured in Mr. McClellan's book about that part of the *Green River* (Box 76, Rochester, KY 40601, \$8). A number of men were killed during the construction of the lock, the contractor died mysteriously after its completion, and years later the river wall collapsed, obliterating forever the inscription with the names of those involved. This is good material for a much-needed American canal ghost story ("The Curse of Lock 3") but somehow there seems to be little local enthusiasm!

(Bill Trout)

We regret to announce the death of Captain Frank Henry Godfrey, veteran sea and inland waterways captain, on 10 March 1977. Capt. Godfrey spent over 55 years in various ships. Capt. Godfrey was a member of ACS and has provided *American Canals* with photos and articles in the past. He is survived by his wife, Capt. Daisy Godfrey.

WALHONDING AQUEDUCT - WHEN?



This photograph of the *Walhonding Aqueduct* of the *Ohio and Erie Canal* was taken at an unknown date. The original aqueduct was built c1929. Much of the work had been done during the winter and the masonry just didn't hold up. Ford Mortley, an English carpenter who came to the states in 1832 in time to build coffins for victims of the cholera epidemic in New York, later went to Ohio and rebuilt the aqueduct in 1835. He stayed to successfully operate a saw-mill, making use of the canal to bring logs to his mill. By 1905 the masonry in three of the piers was settling and a recommendation was made to rebuild the structure with a new steel truss and steel piers. No evidence has been uncovered to show that the aqueduct was rebuilt. It was completely destroyed during the 1913 flood. (Nancy Lowe Lonsinger, Historian, Roscoe Village Foundation. Readers knowing the date the photo was taken and who the persons are in the photo are requested to advise Editor, *American Canals*.)

The New York District, Corps of Engineers is evaluating the need for modernizing and/or rehabilitating navigation improvements in the *New York State Barge Canal System*. Pub-

lic meetings will be held in Syracuse and Buffalo this fall. Contact: Office of the District Engineer, U.S. Army Engineer District, New York, 26 Federal Plaza, N.Y.C. 10007.

SECOND WELLAND CANAL UNEARTHED



A stinking sea of mud and garbage being unearthed in the center of Thorold Ontario's *Battle of Beaverdams Park* from Lock 25 of the *Second Welland Canal* 1847. Lock 25 is being made into a sunken pit which will be used for band concerts and outdoor theater. (Provided by ACS Director, Louis Cahill, from an article by Mary Nolan in the *St. Catharine's Standard*.)

150 MILES ON THE BARGE CANAL



Here is the *Emita II* on the second night out of Syracuse, tied up in Amsterdam, N.Y., while Captain Peter Wiles, on the left, prepares a grilled-steak dinner for all passengers on board. The "Crew", on the right, includes the Captain's son and daughter.

On August 7th, Bill and Ruth Shank boarded the *Emita II* on the western end of Oneida Lake, just north of Syracuse, N.Y., for a three-day cruise down the Erie Barge Canal to Troy, N.Y., on the Hudson. We had heard that the trip was a good one, and it more than justified our expectations. After crossing Oneida Lake, largest inland lake in the State, we entered the Canal and traveled some 150 miles, both up-hill and down (mostly down) through some 22 of the largest locks we had seen since our trip down the Rhine Canal in Germany in 1970.

In many ways, this trip was reminiscent of our Rhine trip on a somewhat smaller scale. The *Emita II*, a former ferry boat, was smaller than the 250-passenger Rhine packets, comfortably accommodating a group of fifty passengers, with shore stops for sleeping at Herkimer and Amsterdam, respectively. The relationship between the passengers and crew was most informal and delightful, with the latter doing everything to make the trip thoroughly enjoyable, even following along with a separate "service car", on land, to pick up supplies for meals on board, not to mention extra film, cigarettes, etc. for the passengers.

We took one side trip, by bus, to Rome, N.Y., where a special ceremony was being held by British and American troops in uniform, complete with flint-lock rifles, commemorating the 200th anniversary of the siege of Ft. Stanwyck. We re-joined our boat at the next Lock east of Rome. All our noon-day meals were served on board, and an excellent steak dinner one evening, with the entire crew pitching in to provide a gourmet feed. Our baggage was moved on and off the boat each night and into and out of the motels, where we ate breakfasts and some evening meals.

Our trip through the many locks of the Erie Barge was most interesting, with the experience of riding under the guillotine gate of the lock at Little Falls, and the adventure of descending 184 feet on the Waterford Flight of five locks, down to the Hudson River at the terminus of our water trip. We were returned to Syracuse on a modern, stream-lined train, while the *Emita II* prepared to load up with another group of passengers for its return, three-day trip to Syracuse.

This is a delightful and relaxing trip, for canal buffs, and others, and is well worth the modest fare of \$150 per person, which includes all transportation, meals and motel accommodations. Trips continue through September and October. For information write Midlakes Navigation Company, Ltd., R.D. 3, Skaneateles, N.Y. 13152, or phone (315) 873-3896.



A guillotine-type lock on the Erie Barge Canal near Little Falls, N.Y. The upper gate is the conventional mitre-type, but the lift of the lock is so great, nearly 45 feet, that the lower gate raises up like an elevator, high enough to allow the superstructures of the boats to pass under it. Passengers on deck enjoy an unexpected shower-bath!

Sierra Club Canal Expedition

Contact the Sierra Club (Outing Dept., Box 7959, Rincon Annex, San Francisco, CA 94120) for a supplemental announcement on Outing 770 and a membership application if you have \$2,450, lots of stamina, and want to take off three or four weeks next summer to go on an

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expedition through the Casiquiare Canal in Venezuela. This canal is the only natural navigable connection in the world between two major river systems, connecting the Orinoco in Venezuela with the Amazon in Brazil. The connection was inferred in the 18th Century by Humbolt, when he found identical varieties of fish in both rivers. There have been a number of expeditions since, including one by the Corps of Engineers in 1943 to make a feasibility study for commercial navigation improvements. Fortunately the canal is still unspoiled and very much in the wilderness. We have urged the trip leader to watch for signs of native navigation improvements such as sluices and wing dams at shallows (the canal is regularly used by canoes) and major earthworks constructed long ago to keep the unique connection stable. The latter is rather improbable and might not be noticed without a major archaeological dig, but is worth looking for, and we will not insist that as announced in *AMERICAN CANALS* #11, the canal was constructed by gods from outer space!