CAPTAIN'S CORNER

Once again ACS President Tom Hahn and his wife Nathalie traveled along the English canals in the Narrow Boat "Phoebus" - 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 keeping 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 smelly structures in spite of the greater marshes 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 and 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. Whatever the merits of historic preservation and going to help anyone? (as in, in spite of my naval background, I 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 Suzal Canal would be a good place to start.

Dispersed in this issue is an article on the dedication of the Chesaapeake 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 (Concluded on Page Two)

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 were asked to tell their friends and fellow enthusiasts about 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 have been notified that there is an organization close at hand with which they can communicate and perhaps meet, until they establish their own canal society. John Larsen, ACS Director, serves as the first President of the new society. Membership is $5.00 a year, students $1.00. Charter members (by the end of July 1977) will receive a handsome map of the Illinois and Michigan Canal free. Mail to: John M. Larsen, Illinois Canal Society, 1139 (Bafield Ave., Lurton, Ill. 60441)

The Virginia Canals & Navigation Society is reverent in 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. Truett, Jr., 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 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 prominence began on July 4, 1827 when the Ohio and Erie Canal was opened between Cleveland and Akron.

It can be safely 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 wonderful speech from the original celebrators and other suitable remarks and associated activities, including the dedication of a plaque commemorating the event.
CAPTAIN'S CORNER

An interesting visit through several of the old bridges of the Aylasbury Arm, a little-used canal traveled by Tom and Mai Hahn this summer.

(Concluded from Page One)

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 have liked to be known as a member of the American Canal Society. 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 by and others have been instrumental in the past of doing a little more attention 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. I wrote to Justice William O. Douglas, and let her know that by and others have been instrumental in the past of doing a little more attention 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. I wrote to Justice William O. Douglas, and let her know that by and others have been instrumental in the past of doing a little more attention to the preservation needs of our country.

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. Patts, 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 lobbied the length of the canal in 1954 to point out to the press his 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 17th. (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... and yet honored by the roar of machinery and the sound of homes... The stretch of 185 miles of canals 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 expanded canal park. This act has since been realized into the C&O Canal Association in 1957 and canal clubs supporting park legislation for the upper west section of the canal. Under the leadership of Justice Douglas these and other organizations became an effective voice for a national and historical national park.

Thank you, Justice Douglas!

AMERICAN CANALS. NO. 22 — August, 1977

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 contorted 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.

Lockage through limestone bedrock posed a major problem in the basin 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 stack 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 guardock introduced them to the next section of canal.

Construction of the canal required vast amounts of labor. This was usually a job for Irish immigrants. These men were 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 $60 a day plus meals. Often the unfortunate laborers came down with canal fever, a combination of influenza and dysentery which saw many to their death bed. Locally those who died were burned in unmarked graves on the Deppen Farm plot near Blood Road. The Deppens were the only Roman Catholic in the vicinity and they provided burial for these of like faith. To offset these dismal conditions, the canal company employed medical men and the entire crew was given a daily dose of whisky 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 those "bluejackets" 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. So there was a brawling known as the "Nuremberg Plot" which ended in an inconclusive court case that was technically won by the canalmen.

By 1826, the only unfinished points on the 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 bedding and inadequate water supply, a system of reservoirs, feeder canals, steam-powered water wheels, and pumps were utilized. Water from the Great Dam on Swatara Creek was channelled down a large feeder canal to the "water works" located at the junction of the Swatara and Tulpehocken. Here four 120 horsepower pumping engines, two 40 foot water wheels, and two steam engines were required to pump 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 daily. The water was raised 85 feet through a wooden, helix-type pipe three feet in diameter. A 7,460 foot brick-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 Lemml Ball, whom who became unpopular with the directors when he criticized the choice of small-sized locks and a poor route through the summit level. Impacts of White's elaborate water system, time would prove White 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 229 feet in length, the tunnel penetrates the highest level on the summit. The tunnel passage was so narrow that buonmen 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, 90 lift locks, 47 culverts, 43 weirs, 12 aqueducts, 2 guard locks, and 102 miles of canals. Why did such a 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 Westminster 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 boatsmen unloaded their lumber and towed it behind them to avoid dragging bottoms.

Despite water problems, toll collections rose in 1825 to $185,554, 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 Schuykill boats. The cost of transferring cargo to smaller Union boats was too expensive and, as the season became more consumed to be practical, shippers were reluctant to use them.

Now, mid-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.

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 those hard times lock tending 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 Columbus, others say there is no 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.

Finally in 1884, the canal went out of business. For some it marked the end of a way of life, but for me 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.

(Thiss is the second half of an article by ACS member Robert A. Pawling, R.D. #3, Kutztown, Pa. 19659. The first half was published in the May 1977 issue.)

AMERICAN CANALS, NO. 22 — August, 1977

Page Three
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 by the U.S. Signal Corps.

As the train rolled by National Airport, a group of Alexandria preservationists and others gathered on the waterfront, paid tribute to a quieter, almost extinct, form of transportation—canal traffic.

The occasion, sponsored by the Alexandria Archeological Association, the Alexandria Canal Society, and the U.S. Signal Corps, was the presentation to the City of Alexandria, depicting the southernmost lock of the Alexandria Canal. Commissioned by Dr. William E. Trout of the American Canal Society, and done by Lohn Abell of Hagerstown, Md., it shows the old tide lock of the one-mile-long canal. In the 19th century, the canal ran from the Alexandria harbor north to Keyport 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 have been blown up and removed, the canal 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.

(The following was received from Bob Whalen, DVM. "It has been some time since you last heard from me, but the summer is still at its height and the Illinois-Michigan Canal restoration project here from LeSable to Utica III."

The work is virtually complete except for filling it with water and the restoration of a set of working lock gates. The Illinois Waterway was built in 1860, and Lock 15 has been restored. The work on Lock 14 is being done by a crew from the Chicago & North Western Railroad. We are hopeful that we will be able to use some of the hardware and use the gates themselves for patterns.

We dredged out the quiet pool between Locks 14 and 15 and cleaned out the river below Lock 15, which leads into the Illinois Valley. We will put a dam across the upper part 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 Charlton, creator of The Saint detective stories.)

Dear Mr. Charlton,

How about giving the Saint (in his prime) a horse along the Chesapeake and Ohio Canal towards the Potomac River? For example, perhaps he could have prevented a disaster (unknown to us) by the famous hiker along the canal,Wr. O. Douglas in 1954, which prevented the canal from being destroyed by a highway, and led to its establishment as a Natural Historical Park. The Douglas hike was therefore a significant event in the canal's history, but for historic preservation, and park planning generally. With the help of the Saint this event would be commemorated in fiction, as well as Saint enthusiasts. I shall certainly keep your suggestion up forward in my mind, and perhaps I shall be able to discuss some of your questions at any time. With best wishes,

Dr. William E. Trout II

Dear Dr. Trout:

Many thanks for your interesting letter.

By a coincidence which may appeal to you, the Keen Men of the Saint Club (who sponsor the London Youth Centre) held their retirement dinner, which was a big event for British canal enthusiasts, and he has always wanted to do something about the canal scene.

I shall certainly keep you suggestion up forward in my mind, and perhaps I shall be able to discuss some of your questions at any time. With best wishes,

Dr. William E. Trout

"Canal Era Optimist and Pessimist"

Donnie and Ronnie were young twins of a canal boat family. They were identical in every way but one: one was a persistent pessimist, while Ronnie was an outstanding optimist. Their opposite personalities 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 puzzle and delight the boy of six. 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 was too small, etc., etc., etc. 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 toys. They peeked into the hold and saw the boys digging frantically in the pile and saying happily to each other: "You know there's a mole in here! JUST LOOK, THERE'S A MILE IN HERE SOMEWHERE!"

(From Bill McKeely.)

Page Four

American Canals, No. 22, August 1977
TROUBLE ON THE KENTUCKY

A James River & Kanawha Canal Steam Packet Boat

by T. Gibson Hobbs, Jr. (ACS)

(The Lynchburg Virginian in 1856 was a biweekly newspaper. Many issues are on file at Jones Memorial Library in Lynchburg, Va. The editor, 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. - The splendid vessel left her temporary wharf, at the 1st Lock, this would have been this guard lock at 10 o'clock, now Scott's Lock No. 1, yesterday morning at 7 o'clock on her western voyage and amid 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 embarkation was thronged with hacks, carriages, omnibuses, baggage wagons and pedestrians, and up to the point of starting the city was "still alive." The scaling of a grand Curander squad ever produced more sensation, and almost as many voices were spoken, good wishes expressed and blessings invoked on the passengers as New Year's day, the 'Flying Dutchman,' her path a streak of danger, and her destination the "other side of Jordan." Friends, relations and lovers were there by the score to give their last words of instruction, their last whisperings and kisses of love, to the departing, and to wave them a last goodbye on their completed voyage. The hour of starting approached, the baggage was piled mountain high on the dock, the apogee of which was human heads, the cabin was crowded to capacity, the steam was gotten up; the whistle sounded, the "all aboard" uttered, the last words spoken, and away they went. "FANNY" had a spirited departure, which was the last thing of the day, with her precious freight, on the waters of the "raging currents." The destination of all this crowd, of course, was Lexington, where they go to enjoy the approaching feasts and festivities. In the delegation we were pleased to notice many who will represent our good city with credit, and maintain its full name for beauty and gaiety. Many of our belles and beaux were of the number, who will not fail to do honor to their homes, and make and depend on the attentions of the devotees of Cupid and worshipers at the shrine of Hyman with whom they will meet. May happiness and success attend them.

(All issues starting with June 29, 1856, No. 139 through July 19, No. 150, except for July 7 which is missing, were stretched but no further reference to this or other canal boats was found.)

KENTUCKY RIVER LOCK #7 under construction in 1897. (Courtesy of Lock #8 Lockmaster R. E. Convey)

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 problem the navigation is having. Although Locks 1 through 4 are used commercially and are kept open all year, Locks 11 through 14 are used closed during the winter and used almost exclusively by pleasure boats wanting 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 having the lock 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 nice, 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 outbuildings 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, from the stone locks (last perhaps original lockhouses) from the 1830's, to the last in the 1910's.

Visitors to the Kentucky can take boat trips in season. Camp Nelson (probably not through a lock) and at M. Boonesborough State Park (at Lock 10), and can dine at Jim's Seaboard Restaurant in Frankfort, with Lock 4 on the place mat, and lock down on the SAM DRYER towboat 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 parks with public access.

(WM. E. Trotz)

"BRIEFS"

Any canal society or other organization interested in the possibility of keeping a program of canal tours and streets can contact The Canal Advocate printed in 1887 and 1888 on a weekly basis.

Dr. Bill Trotz challenges any comers to the alleged "facts" that the first canal system in America with locks was the James River Canal opened 1793 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 Okeechobee and back. Write Hy-Line of Florida, Box 105, Stuart, FL 32145.
THE HENNEPIN CANAL (Part Four)

By Mary M. Yestal

(This article is the fourth of a series on the Hennepin Canal, formerly the Illinois-Mississippi Canal and the completion of the Seventeenth 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 that in a distance of eight miles it ascends 196 feet from the Illinois River and requires twenty-one locks with lifts varying from six to twelve feet. Because of the high embankments needed to make the terrain usable, a three-mile section was built to haul dirt and materials. The construction methods on the canal had to be modified 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 parallel to 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 Miller gate is in mile 24 in the eastern section. The other - of the Desfontaines type - was placed at the embankment crossing Green River on the feeder.

In addition to these expected construction challenges, one particular problem arose on the construction site; the cost of a quadruple engineering decision made when the canal was being located, when work began, a three-mile section was found to be a beak gap. The Corps of Engineers was not allowed to do work over the work begun by a contractor. Long's men exacerated by the innovative means of an overhead conveyor and the new towers were abandoned from afar. They also had to tire the best of the canal with clay to prevent water loss through the piers.

Now the final status allowed work to begin on the western section of the canal under Assistant Wheelie's charge. There were few problems in connection with the construction of this particular part of the canal. Unlike many American canals, the Hennepin Canal was constructed after railways came into being. This means 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 Pacific. 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 1890s.

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 west of the corporate limits of the city of Rock Falls and opposite Sterling. It follows a course almost due south for 23.3 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 prevent 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 standard type (Pony Warren truss) by these lines. The Pratt truss type with a span of ninety-eight feet and are set at right angles to the axis of the canal with a clearance of nine 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 (reputed Pratt truss upon 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 its entire excavated, a tow path sixteen feet wide is excavated at one side, two and one half feet above the water in such a way 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 to 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-five feet beam, and 8,400 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-two percent of the height of the wall. The lower end of the walls are stopped down and connected with wing walls. Necessities to two, nine inches wide made in the walls to receive the gates.

All of the locks are manually operated. They are fitted by means of two tunnels, one in each lock wall. At the head of each tunnel is a butterfly 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 ordinary miter type, placed at an angle of 71° 30' with the center line on the lock and were built of yellow pine lumber. Nineteen of the locks also have ordinary miter type upper gates. The gates shut against a miter sill which is anchored into the miter wall and the foundation are operated by a special form of hand-powered cranes or maneuvering gears on the tops of the walls.

The remaining fourteen locks were fitted with automatic gates designed by Major Marshall in 1877.

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.)

AMERICAN CANALS, NO. 22 — August, 1977
KENTUCKY'S GREEN RIVER NAVIGATION

This spring William McClellan, author of THAT LAST BOAT IN THE EVENING, and Bill Trout made a survey of the American Canal Guide of the locks and dams on the Green River in Kentucky, and its branches the Rough and Barren. There are only eight locks and dams on the system, but over a century and a half some 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 1830s to New Locks 1 and 2 built in 1869. Lock 3 at Rochester (1868) 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 1903). 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 G. of E. The Rough River Lock is on private property, so any visitors should call first at 278-2005. Lock 4 at

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 c1920. Much of the work had been done during the winter and the masonry just didn't hold up. Ford Morley, 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 sawmill, 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 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 in the photo are requested to advise Editor, American Canals.)

SECOND WELLAND CANAL UNEARTHED

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

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

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

AMERICAN CANALS, NO. 22 - August, 1977
150 MILES ON THE BARGE CANAL

Here is the Emilia II on the second night out of Syracuse, tied up in Amsterdam, N.Y., while Captain Peter Miles, 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 Flush Shank boarded the Emilia II on the western end of Oneida Lake, east of Syracuse, N.Y., for a three-day cruise down the Erie 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 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 Emilia II, a former ferry boat, was smaller than the 250 passenger Rhine packets, comfortably accommodating a group of fifty passengers, with three 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 finding time to inform us of some "cruises", on land, to pick up supplies for meals on board, not to mention extra film, cigarettes, etc., for the passengers.

We took our bed at the next Lock and at Home. All our noon-day meals were served on board, and an excellent Greek dinner one evening, with the entire crew pitching in to provide a gourmet feast. Our baggage was moved on and off of the boat each night and into and out of the motor, 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 gullotine of the locks. Bill (Oneida Falls, N.Y.) and the adventure of descending 184 feet on the Waterford Flight of 12 locks, up to the Hudson River at the terminus of our water trip. We were returned to Syracuse on a modern bus. After a day and night of rest, Miles was ready to load up with another group of passengers for a return, three-day trip to Syracuse.

A gullotine-type lock on the Erie Barge Canal near Little Falls, N.Y. The upper gate is the conventional lift-type, but the lift of the lock is so great, nearly 45 feet, that the lower gate remains 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, Reno, Nev., San Francisco, CA 94129) for a supplemental announcement on the 1977 plans and 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 expedition through the Casmurcane Canal in Venezuela. The canal, the only navigable connection in the world between two major river systems, tunnels under the Orinico in Venezuela with the Amazon in Brazil. The connection was in 1874 by the French engineer, Charles de Baudot, who built the canal at the turn of the century. In 1945 to make a feasibility study for commercial navigational improvements, the French government built the canal at the turn of the century. In 1945 to make a feasibility study for commercial navigational improvements, the French government built the canal as a waterway for the carrying of goods from the north. The latter is to be constructed by United States under the auspices of the Federal government.

AMERICAN CANALS, NO. 22 — August, 1877