

# AMERICAN CANALS

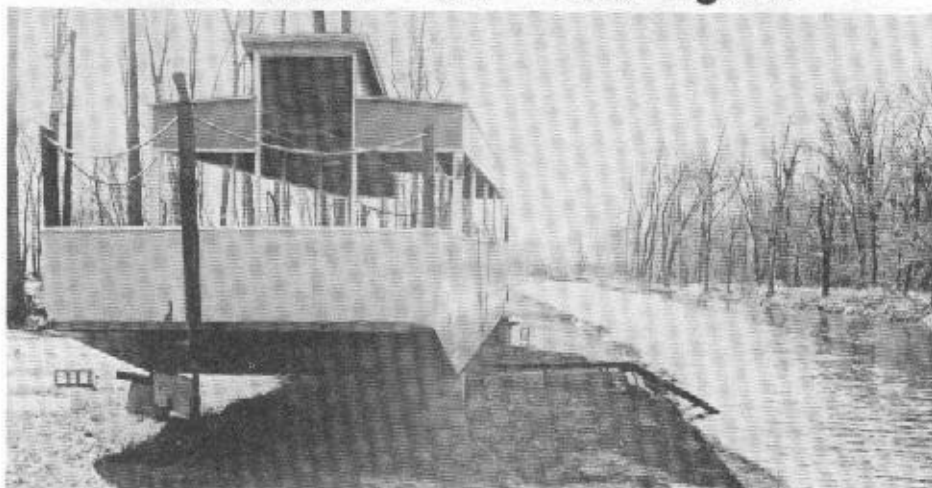
BULLETIN OF  
THE AMERICAN CANAL SOCIETY

BULLETIN NUMBER 21

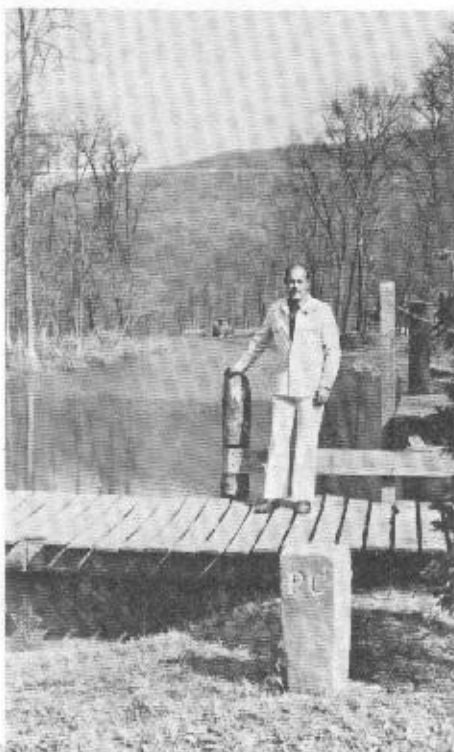
Editorial Address - Box 842, Shepherdstown, W.Va. 25443

MAY 1977

## The "Main Line" Lives Again!



"The Juniata" Canal Boat, undergoing Spring repairs, alongside the restored old Main Line Canal at Lewistown.



Dave Knox stands at the boarding dock for his half-mile re-watered section of the Juniata Division of the Pennsylvania Main Line Canal. Note one of the original "P.C." (Pennsylvania Canal) markers in the foreground.

David M. Knox, a partner in the contracting firm of John C. Knox and Sons, Lewistown, Pa., is once again preparing his canal boat "The Juniata" for a full season of operation on a half-mile stretch of the old Main Line Canal which he and his brother Jack have dredged out. He reports that during the dredging operation he found the old clay lining at the bottom of the canal still "hard as concrete". This has made it a simple matter to retain all the water he needs in the canal, with a small stream at the eastern end of the project as the only water source.

The restored canal section is located on a property called "The Locust", a 278-acre plot of ground west of Lewistown, owned by the Knox family. Knox has plans for a recreational development in the area, which would include a convention center, a nine-hole golf course, pro-shop, gift shop and various arts and crafts operations. He already has a real-estate development underway in the immediate vicinity of the canal.

A year ago, he felt he had about exhausted his personal resources, and offered the entire property to the Mifflin County Commissioners, as a gift, retaining only the right to continue various development operations, through his contracting firm. They turned him down! Undiscouraged, Dave Knox is now considering forming a private corporation to complete the project, with the ever-present possibility of getting State and Federal help.

In any event, "The Juniata" canal boat will once again be available to tourists and special groups this summer, who want to experience the quiet pleasure of riding "back of mules" on the restored Main Line Canal. For information write: John C. Knox and Sons, P.O. Box 388, Lewistown, Pa. 17044.

## CORINTH CANAL

Any ACS members who are planning to visit Greece in the near future might consider a visit to the Corinth Canal near Athens. This waterway is well worth the hour and a half bus ride. A deep slash through the limestone of the Peloponnese, the Corinth Canal links the Saronic and Corinthian Gulfs. The Corinth Canal was started in 1882 by a French concern and completed in 1893. The Roman Emperor Nero attempted to build a canal with slave labor in the same spot in 67 A.D. but was foiled by the solid rock of the Corinthian Isthmus. The walk along the length of the Canal passes through four miles of beautiful Greek countryside. Some points along the well-marked canal-side trail reach 200 feet or more above the water level.

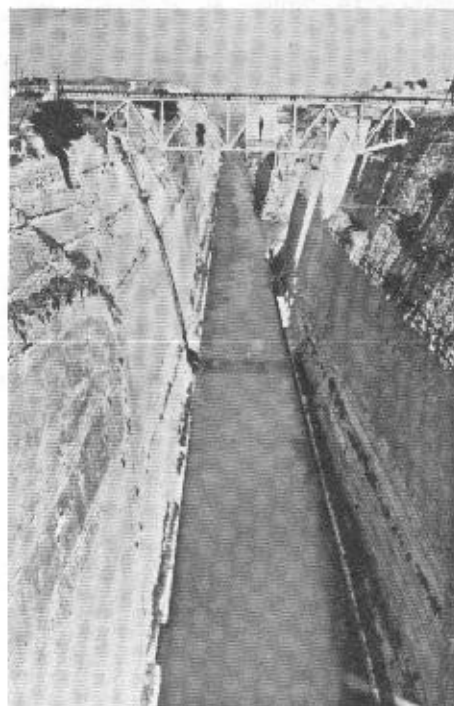


Photo taken from highway bridge looking toward railroad bridge - 1974. (By Bill Shank)

ACS members should disembark from the Athens bus at the Terminal located just north of the only highway bridge across the canal. Those who continue into the town of Corinth will find themselves many miles from the canal. Walk across the bridge and turn right. The walk begins here. Two notes: Don't look down as you cross the bridge; it's a long drop. Also, be sure to walk only on the **South** side of the canal. The north side is occupied by a cleverly camouflaged Greek Army Base. They might not accept your explanation that the USA is just a fellow NATO member, after all. (J. Wayne Halsema, 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.

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

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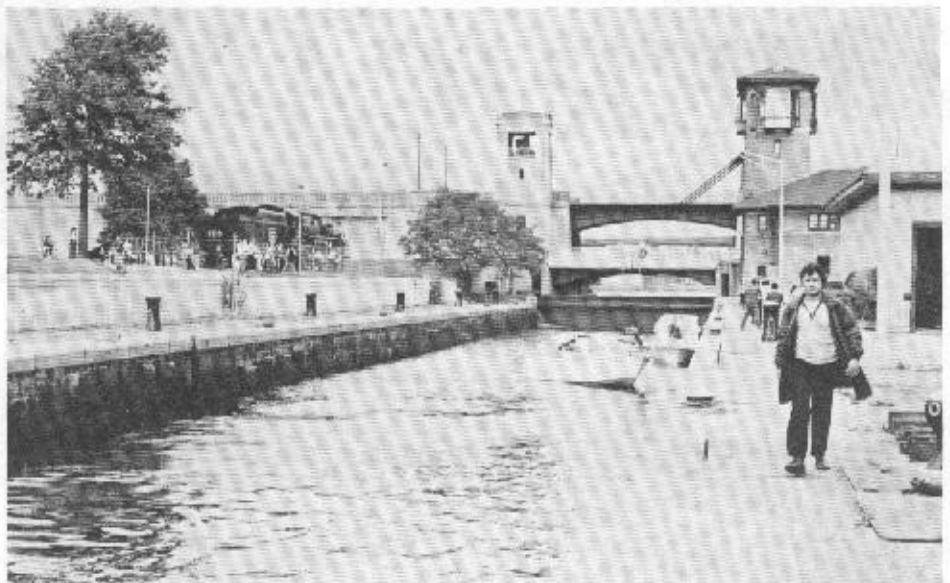
## CAPTAIN'S CORNER

By the time that this issue of **American Canals** reaches you, we will be back on the British inland waterways using ACS member Tom Sewell's Narrow Boat PHOBOS, this time on the Rivers Lee and Stort and the Grand Union Canal.

It may seem odd to some that we would spend our working holiday on British waters rather than here at home, but the truth of the matter is that we don't have the old time flavor on our canals and rivers. Where else but Britain can one take an old working canal boat (or a modern one) under nearly historic operating conditions? When you get your back onto a balance beam, or your arm and shoulder muscles into a cranky wicket gate or feel the water pouring down a ventilation shaft in a tunnel or pouring down in the rain while steering a canal boat, then you begin to get some of the feeling of how it was in the old canal operating days.

Whether the British like it or not, their inland waterways could be their greatest tourist attraction. For those who are interested (how could you not be), there are three firms now actively involved in attracting North Americans to waterways vacations in the United Kingdom. These are: Star Line, East Whitley Farm, Shamley Green, Surrey, England (comes equipped with a couple to help work the boat) - the PHOBOS is an ex-working boat (10% discount to ACS members); Bargain Boating, 127 High Street, Morgantown, WV 26505; and Paulsen Travel Bureau,

## Boston Lock "Bows" to C. E. Project



This is the lock at the Charles River Dam in Boston. It was completed in 1908-10, is 350' long, 45' wide and 18' deep at low water. A new project about a mile to the east now under construction by the Corps of Engineers will replace this lock. The new complex will have three locks, side-by-side: one for commercial use and two for recreation. The commercial lock will be 300' long, 40' wide; the recreation lock will be 200' long and 22' wide. Expected completion date is sometime in 1977. (Alden Gould, Director, ACS)

## HATS OFF TO DR. ZIP

During a recent visit with fellow ACS member Dr. 'Zip' Zimmerman, I was telling him about my forthcoming book - **Champlain to Chesapeake**. Zip said he remembered a doctoral dissertation on the Champlain Canal when he was working on his own dissertation at Columbia University. He even recalled the name of the author - John E. O'Hara, and the year - 1951! A quick call to the Columbia Library produced the title: **Erie's Junior Partner: The Economic and Social Effects of the Champlain Canal upon the Champlain Valley**. It is published on demand by University Microfilms International, P.O. Box 1346, Ann Arbor, MI 48106. It is their publication #2548 and costs \$21.00.

The dissertation is a real classic canal history which I feel every canal enthusiast will find thoroughly enjoyable reading, even though it lacks illustrations. It belongs in the library of each serious researcher of the American Canal Era. The eleven chapters are just loaded with detailed facts and figures. There are a total of 389 pages, including a phenomenal 22 page bibliography, between soft covers. (Bill McKelvey, Director, ACS)

431 Springfield Avenue, Summit, NJ 07901.

You should only take this kind of a vacation, however, if you don't want to worry about where to spend each night, or don't want to have to face the traffic in another country and do want to see how the folks in another country really live and do want to have the experience of really traveling on a canal or navigable river.

We'll give you a report on our return in the August issue of **American Canals**. Added bonuses this year are the Queen's Jubilee and the 200th Anniversary of the Chesterfield Canal in early June.

Tom Hahn, Editor

## Appomattox River

(The following letter was sent to Senator Frederick Gray of Virginia by Dr. Bill Trout of ACS regarding the Appomattox River.)

"On behalf of the American Canal Society, I urge you to do what you can to designate the Appomattox a scenic river. The river above Petersburg is a beautiful river section, which I have visited by canoe and foot, and explored as an historic canal enthusiast. In addition to the portion of the Upper Appomattox Canal at Matoaca which is now a park, there are many mill races and other signs from a century ago which make the area particularly fascinating - a combination of natural and cultural resources which needs protection now before it is ruined and lost to our descendants. I suspect that our remaining scenic rivers, which we are just beginning to save, will be much more valuable to future generations than we can imagine. Please save it now while it's in good condition!"

## 150-YEAR O. & E. CANAL CELEBRATION

From ACS Member James Kuth in Cleveland, and also from Jim Tabaczynski of the same city we have learned of the recent forming of the Ohio Canal Sesquicentennial Commission. Prime purpose of this organization is the observance of the 150th Anniversary of the opening of the Ohio and Erie Canal between Cleveland and Akron on July 4th, 1827. The well-watered O. & E. Canal, in the section south of Cleveland, is now part of the new Cuyahoga Valley National Park, recently approved by Congress and administered by the National Park Service.

The Commission plans a series of public events this summer. Included are plans for a "Canal Days Drama", photo and essay contests, audio-visual displays, tours, band concerts, historical marker dedications, and restorations.

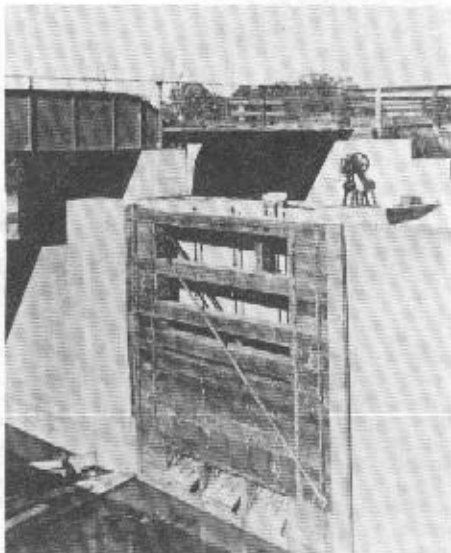
# THE HENNEPIN CANAL (Part Three)

by Mary M. Yeater

*(This article is the third of a series on the Hennepin Canal, formerly the Illinois-Mississippi Canal. Part three is the beginning of "The Seventeen Year Construction Project." Mary M. Yeater is an historian working for the Hennepin Canal Parkway.)*

The Hennepin Canal construction project began on September 19, 1890 when Congress passed the River and Harbor Act authorizing construction under the authority of the Secretary of War and appropriating an initial \$500,000 for specific portions of work. The canal, however, was not officially opened for navigation until November 15, 1907. A number of engineering and administrative decisions account for this rather lengthy construction period.

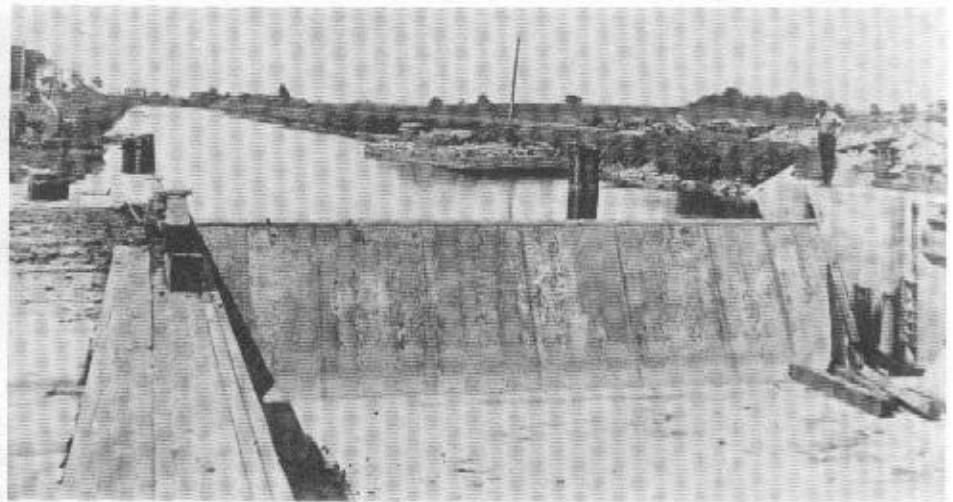
The most significant decision, and surely the best, concerning the project was made in 1891: to substitute artificial stone made of Portland cement - concrete - for traditional cut stone facings in the canal's locks and dams. Some European nations had experimented with concrete prior to 1891, but the Hennepin Canal marks the beginning in America of the use of concrete in canal construction.



One of ordinary mitre type upper gates at Lock 24 on the mainline of the Hennepin Canal. September 25, 1905. (Photo courtesy of the Rock Island District, Corps of Engineers.)

During the detailed planning stage for the first section of the canal, Major W. L. Marshall, who was in charge of the Second Chicago District of the U.S. Army Corps of Engineers and thus commanding officer for the entire Hennepin Canal project, asked the Secretary of War, Charles Foster, for permission to use concrete. Marshall argued that it would be stronger and more durable than traditional cut stone masonry and that it was less than half the price of the more conventional material. Furthermore, recognizing though not successfully remedying what was to be the canal's fatal flaw, Marshall suggested that the savings resulting from the use of concrete be used to increase the width of the locks by five feet. On May 11, 1891, the Secretary of War granted permission to use concrete in construction of dams and locks and accepted the suggestion on expanded lock width.

Because of the uniqueness of their situation as officials in charge of the first American canal



Looking north over Aqueduct 9 (over the Green River) on the Feeder Canal. Showing the north emergency gates (Desfontaines type) closed under a head of about five feet of water while the aqueduct chamber remains dry. July 13, 1909. (Photo courtesy of the Rock Island District, Corps of Engineers.)

constructed with concrete, Marshall and Assistant Engineer L. L. Wheeler, a civilian engineer, who had direct responsibility for the first section of actual construction work, had to develop methods for working with the material. They used a combination of established techniques and new procedures especially developed for the project. The concrete for the arch culverts was mixed in the traditional way by hand, but that for the lock walls was mixed by machine.

Although not in accordance with tradition, the decision to substitute concrete for cut stone was an important and wise action. The pioneering work done on the Hennepin Canal "revolutionized the construction industry and set a pattern for canal construction, especially at the Panama Canal."

Not all the decisions made in the Hennepin Canal construction project were equally wise either from an engineering-technological or financial point of view. When the project was begun in 1890, the estimated cost was \$6,925,900; by June 30, 1908, the total cost of the canal and related structures was \$7,319,563.39. Despite the very real and substantial savings that resulted from the use of concrete, the canal cost nearly \$400,000 more than anticipated.

The work began at once, but did not continue uninterrupted. In November 1890, Marshall and two Assistant Engineers, L. L. Wheeler and James C. Long, began work on the final location of the canal. This was not an easy task even though the area had been surveyed and resurveyed with a proposed canal in mind since the 1830's. Not only had the Chicago, Rock Island and Pacific Railroad been constructed along the same route that the canal would naturally follow and taken the most suitable terrain, but the sur-

vey also had to avoid valuable property and buildings where an equally good site might have been obtained. Eventually, Marshall and the two engineers located the mainline: it leaves the Illinois River about two miles above the town of Hennepin at a point known as the Great Bend where the river turns from a westerly course to run almost due south, then parallels the tracks of the Chicago, Rock Island and Pacific Railroad until it enters the Rock River near the mouth of the Green River. It follows the Rock to Milan after which it goes through Big Island and enters the Mississippi about three miles below Rock Island.

Once the main line had been located, the first of a series of questionable administrative decisions was made: the location of the feeder canal was postponed. This decision probably came about because in the winter of 1890-1891, the adjacent cities of Sterling and Rock Falls put in a joint claim for the terminus of the feeder line even though Dixon, another city on the Rock River, had been chosen as the head of the feeder by earlier government surveys.

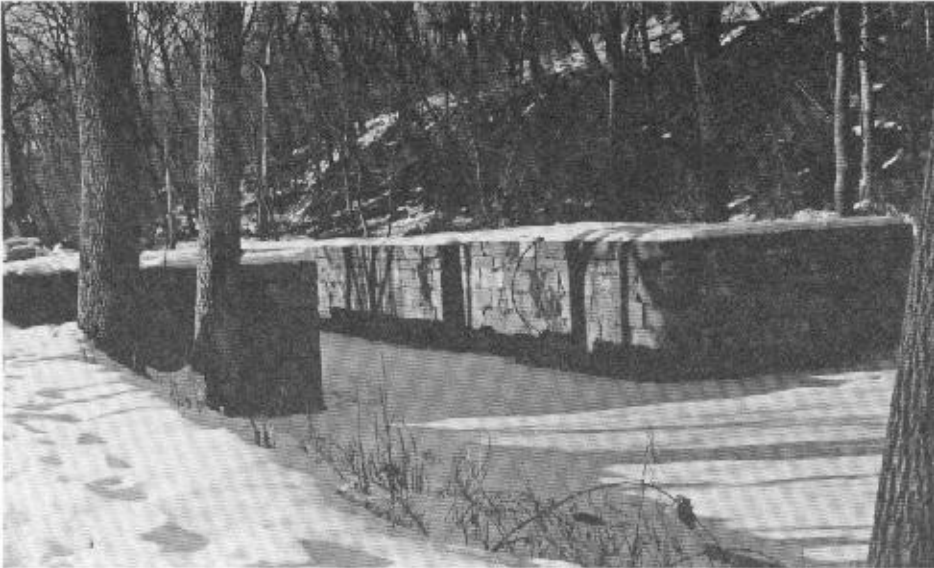
Even though the problem of the feeder had not been dealt with, right-of-way acquisition began in 1891. Assistant Engineer Wheeler had the primary responsibility for the actual work of securing the right-of-way: describing the tracts, negotiating with land owners, preparing condemnation cases, perfecting titles and generally protecting the federal authorities against unreasonable claims. A second questionable administrative decision was made in relation to this work, one probably more significant than that involved with locating the canal. Although funds had been appropriated by the Congress of the United States and the Illinois legislature had ceded to the federal government jurisdiction over lands acquired

(Concluded on Page Seven)



Building bank across slough on ice showing narrow gauge train with six cars dumped. January 23, 1903. (Photo courtesy of the Rock Island District, Corps of Engineers.)

# THE UNION CANAL (Part I)



Winter, 1977, photo of Lock #47 of the Union Canal along the north side of Tulpehocken Creek, a few miles west of Reading, Pa. This lock is being completely re-built, mitre gates and all, by the Berks County Parks and Recreation Board as part of a canal restoration and re-watering project, now in full swing.

by Robert A. Pawling

It's hard to believe that the Union Canal was once hailed as the "Golden Key" to the West; yet, in the early nineteenth century it was hoped that this six million dollar project would finally provide Philadelphia with a highly advantageous trade route to the agricultural interior of America. When completed in 1827, the canal extended a distance of 79½ miles from Reading on the Schuylkill to Middletown on the Susquehanna.

Attention is once more being focused upon this long forgotten waterway because of Berks County's Bicentennial efforts to restore a portion of it to operation. Near Reading the canal followed the Tulpehocken Creek and passed through what is now Gring's Mill Park and Recreation Area. Here, to the delight of canal buffs and Sunday strollers alike, a five mile stretch of the towpath from Reber's Mill to Stonecliff has been preserved. In addition, the park contains Lock 47 around which the county's restoration interests are being centered. State and local funds have been directed toward reconstruction of the lock with work having begun last spring. Construction of the lock gates is progressing toward completion in 1977, however, other channel improvements are necessary before a one-mile stretch of canal can be reopened. To complement the lock restoration, a canal museum is planned that will house the C. Howard Hiester collection of Schuylkill and Union Canal artifacts. Mr. Hiester, who is the last remaining Schuylkill Canal captain, recently donated his life-long accumulation of canal memorabilia to the county. Cataloguing of the collection, which consists of everything from boat pictures to bilge pumps, is being undertaken by the park's historian-naturalist Richard Pawling. According to the county's long-range plan, the museum will be placed near the red covered bridge and the relocated Gruber Wagon Works.

Five characteristics bring distinction to the Union Canal: 1) it was the first canal ever surveyed in the United States, 2) it was visited several times by our country's first president, 3) it sponsored the largest canal lottery in our nation's history, 4) it required an elaborate water supply system to keep its summit level from going dry, and 5) it boasted the second oldest transportation tunnel ever constructed in America.

The desire for a water connection between the Delaware and Susquehanna Rivers dates back to William Penn's day. To investigate the feasibility of such a water route, two early surveys (1762 & 1770) were carried out. Names such as David Rittenhouse and William Smith, both of whom accompanied the second survey team, reveal the importance of this first endeavor to tap Pennsylvania's agricultural wealth. Unfortunately the Revolutionary War intervened, delaying the start of this ambitious project.



The famous Union Canal Tunnel, west of Lebanon, Pa., as it appeared during a tour of the Union Canal by the Pennsylvania Canal Society, several years ago. (Photo by Bill Shank).

Following a post-war depression, interest in internal improvements renewed. In 1791, two separate companies were chartered to effect a connection between Philadelphia and the Susquehanna Valley. The Schuylkill and Susquehanna Canal Company was to dig a canal through the summit level near Lebanon in order to connect the Schuylkill and Susquehanna by means of their tributaries the Tulpehocken and Quitapahilla. Meanwhile, the Delaware and Schuylkill Canal Company was responsible for building a small canal above Philadelphia which would more effectively unite these two rivers for purposes of navigation.

Work on the projects began in 1792 under the supervision of William Weston, a highly acclaimed English engineer. It was during this period of construction that George Washington, accompanied by Secretary of the Treasury Hamilton, visited the canal near Myerstown. The President was delighted to note that four brick locks descending the east end of the summit level "appeared admirably constructed." Unfortunately, neither Weston's expertise nor Washington's optimism could stave off the financial collapse of both canal companies.

To inject new life into the faltering project, the Pennsylvania legislature in 1811 combined the interests of both bankrupt firms into a new Union Canal Company. Appeal to pursue the proposed task had grown especially urgent since trade-rival Baltimore was threatening to snatch central Pennsylvania's commerce from the anxious grasp of Philadelphia's merchants.

In those days, lotteries were a common method of fund raising and as a quick way to raise cash it seemed perfectly suited for the Union Canal. Indeed, efforts to finance the canal became so intense that the Union lottery became known as the greatest canal sponsoring scheme in our nation's history. As early as 1795, the canal had been granted permission to raise \$400,000 by lottery, yet only \$60,000 had been brought in by 1811. The new commissioners were authorized to raise the remaining \$340,000. This time, lottery agents marketed their tickets on a national scale exhibiting a competitive zeal that would rival present-day advertising campaigns. In two decades of some 50 drawings, 33 million dollars in prize money was awarded. Incredibly, only \$270,000 in proceeds ever reached the canal.

Despite financial difficulties, work on the canal continued on schedule. The Reading section from Reber's Mill to outlet lock 54 was one of the last to be finished. By 1823, most of the contracts for particular jobs were ready to be let out to individual contractors. A typical offer proposed by a Roark and Barker called for the construction of Locks 47, 48, 49, and 50 with the following prices quoted: "For the face work including the backing thereto \$6.50 per 25 cubic feet, the rough work \$4.50 per perch, the carpentry work \$18.00 for each lock, and the capping \$.75 per cubic foot."

The lock dimensions were small, 8½ x 75 feet with an average lift of 5 to 6 feet. Some lock construction was accomplished with the use of hydraulic cement, however, the most common material used in the facing was red sandstone. Fine examples of this stone, originating in the quarries of Cornwall Furnace, can still be seen at Lock 47 and at the Gring's Mill Park amphitheater. The actual canal cut was 4 feet deep and 36 feet wide at the top affording ample room for boats to pass one another.

(This is the first half of an article by ACS member Robert A. Pawling, R.D. #3, Kutztown, Pa. 19530. It will be concluded in the next issue.)

# THE TENNESSEE CANAL

by L. W. Richardson

The title is misleading. The Tennessee Canal was the second of record in Alabama and the name derived from the river rather than the state. It was more familiarly known as the First Muscle Shoals Canal.

As the early canal projects in this part of the mid-south owed their reason for being to the navigational problems on the Tennessee River, it may be in order to briefly review the obstacles that confronted the pioneer boatmen.

From the head of the river near Knoxville, for 185 miles downstream to just below Chattanooga, reports of the Army Engineers described the river as having "numerous shoals and a shallow channel." Nevertheless, this stretch was navigable for all types of river craft with experienced pilots and a decent level of water.

Just below Chattanooga, conditions changed. Here the river cuts through the rocky outcrops between Walden's Ridge and Raccoon Mountain for twenty miles, falling some twenty feet in the distance. The names given by the boatmen to the series of obstructions they encountered here graphically illustrate the problems. First there was the Tumbling Shoals; then the Suck, where the big river was constricted to a width of 150 feet; then the Boiling Pot, a huge eddy that sometimes held boats for hours and last, the Frying Pan, a collection of smaller eddies and shoals. The whole was called the Narrows, the "Narrows" to the rivermen.

While this section was dangerous, and for those craft bound upstream almost impassable, no bypass canal was ever proposed. The mountains were too close to the river to make it practical. Until a power company lock and dam was built at Hales Bar in 1913, the only improvement to navigation was a horse operated winch on shore above the Suck. With the help of the one horsepower device the upbound boats were able to make it through the worst passage.

For nearly 140 miles below the Narrows, the boatmen had relatively easy traveling, with only minor shoals and bars. This changed abruptly at Brown's Island. Here began the series of rapids known collectively as the Muscle Shoals. At the foot of the island was Elk River Shoals; six miles below began the Big Muscle Shoals; still further along was Little Muscle Shoals, these ending nearly opposite the town of Florence; nine miles beyond was Bee Tree and twenty miles further was Colbert Shoals. Between Brown's Island and the foot of Colbert Shoals, the river fell 170 feet, 134 feet in the Elk River - Little Muscle Shoals area alone. At one point at Big Muscle Shoals the descent was 15 feet to the mile.

The situation was intolerable, not only to the settlers in the valley but to merchants and boatmen all along the vast inland river system, from Pittsburgh to New Orleans. It was admittedly a national problem. Although direct Federal aid in the financing of internal improvements was then thought to be unconstitutional, help could be had - indirectly.

On March 2, 1827, Congress appropriated the tremendous sum of \$200 toward the expense of a survey of the shoals and shortly thereafter, teams of Army Engineers were at work along the river. Technically, these crews were "loaned" to the State of Alabama. In fact, it appears that the cost was absorbed by the War Department. Alabama had enjoyed the status of statehood for only nine years, could boast of less than 250,000 inhabitants (of these, nearly 100,000 were slaves) and certainly could not afford any mas-

sive program of internal improvements. If anything was done, Federal assistance would have to be provided.

Congress acted on May 23, 1928, granting to the State, title to 400,000 acres of unrelinquished Federal land in six northern Alabama counties. The grant provided that the proceeds from the sale of this land would be devoted to the improvement of navigation on the river; that these improvements would follow plans approved by the President; that work would begin in two years and that no tolls would be charged without Congressional approval.

On Jan. 15, 1830, the Alabama General Assembly accepted the grant and named a board of Tennessee Canal Commissioners to oversee the work and to begin the acquisition of land as indicated by the preliminary reports of the Engineers. The surveys and plans were completed later in the year, reviewed by the U.S. Board of Internal Improvement and approved by President Jackson. Since it had been impossible to

sign, Congress was therefore petitioned to grant some relief. The Alabama Board submitted new plans and these were approved on March 3, 1833. This new proposal was for a much shorter canal, one that would only bypass Big Muscle Shoals.

The record is silent as to whether or not the Army Engineers or the U.S. Board of Internal Improvement saw or approved the new proposal. It is most probable that they did not, that the decision of the Congress was purely political.

Work on the new project began early in 1833. The canal, as built, was 14½ miles long, 60' at the top and, 42' wide at the bottom with a depth of 6 feet. To overcome a fall of 96' there were 16 lift and 2 guard locks, each 32' x 120'. These structures were built of stone. An important change in design placed the canal trunk about 8' lower than was originally planned. This eliminated the need for an aqueduct as it allowed all streams along the route to empty directly into the canal. A constant and serious silting problem was the inevitable result.

The Canal Board may not have included any practical engineers but the members were able administrators and pursued the business of construction with vigor. They soon found, as the builders of the nearby Fearn Canal had learned, that the availability of labor was a serious problem. A project of this magnitude could not be completed by the use of black field hands, leased for short terms. Very few members of the immigrant Irish labor pool so useful to northern canal contractors could be attracted to the south. The Commissioners then resorted to advertising - a new approach for the time and place. The following notice appeared in the WESTERN HERALD, a short lived newspaper in Auraria, Georgia. Auraria was a boom town in the gold mining region and by 1833 the boom had collapsed. There were hundreds of penniless and disappointed miners in the North Georgia mountains and there is no doubt that many were willing to try their hand at canal building.

As the work neared completion it was realized, since no tolls could be collected, that there would be no money for maintenance. In June of 1836, Congress again relaxed the terms of the grant and permitted the State to establish these rates of toll:

Boats under 60 feet .....	\$ 5.00
Boats 60 to 80 feet .....	\$ 8.00
Boats over 80 feet .....	\$10.00

The canal was open to traffic a few weeks later. It had cost \$644,594. Almost immediately there were serious problems to be faced. As expected, there was silting after every rain, delaying traffic and adding to the cost of operation. But the real problem was the peculiar location of the canal. Elk River Shoals was just above and Little Muscle Shoals close below the canal entrances. In periods of low water, (in some years as long as six or seven months) boats could not enter the canal from either direction. In May of 1838, there were 70 large flats, loaded with cotton, tied up below the downstream guard lock. These craft had passed through the canal but could not safely navigate Little Muscle Shoals downstream. At the same time, up-river, another fleet waited above Elk River Shoals, unable to reach the canal.

To add to the woes of the Canal Board, by this time a railroad was operating along the south bank of the river. The Tuscumbia, Courtland & Decatur was begun in 1832 and is said to have been the first rail line west of the Appalachians. It was intended solely as a portage road, from the river at Tuscumbia to the river at Decatur, a dis-

**(Concluded on Page Seven)**

## Muscle Shoals Canal

The undersigned, Commissioners of the Tennessee Canal, having heard that some alarm exists from a report of the Cholera having broken out among the hands, take this occasion from their personal observation on the line and from information on which they can rely, to assure the public, that it is certainly unfounded.

No case of Cholera has occurred upon the canal nor has there recently been any case of severe illness or death.

There are at this time employed, from 500 to 600 hands who are well fed, comfortably lodged, in good health and are in the regular receipt of higher wages than are generally earned by others in the surrounding country.

John Craig, Pres't.  
J. Lane  
Thomas Fearn  
James Jackson  
J. K. Swope

The subscriber is authorized to employ 500 or two thousand hands at \$15 per month for the above company, he may at all times be found at Leather's Ford or in Auraria.

D. C. Gibson

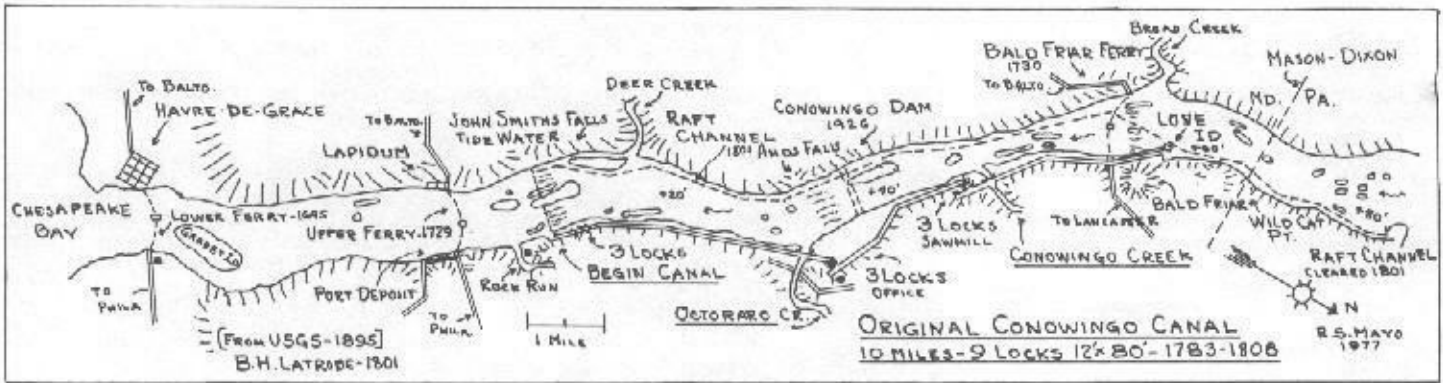
June 25, 1833

begin construction within the two years stipulated, Congress extended the time limit. Work actually began in 1831.

The plans submitted by the Engineers called for channel improvement at Colbert Shoals. It was thought that the blasting of some rock reefs in this section would allow the passage of boats except in periods of extreme low water. The major work proposed was a lateral canal on the north bank, beginning just above Florence and extending up-river to Brown's Ferry, a distance of about 38 miles. The canal would be 60' wide, would require two dams in the river, an aqueduct over Shoal Creek and would cost an estimated \$1,388,102. It would safely bypass Little Muscle Shoals, Big Muscle Shoals and Elk River Shoals, collectively the greatest obstruction on the entire river.

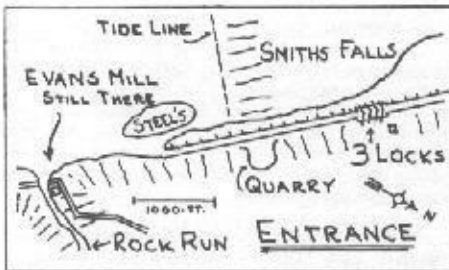
It was soon obvious that the sale of the Federal lands would fall far short of supplying the amount of money needed to implement the original de-

# THE FIRST SUSQUEHANNA CANAL



by Robert S. Mayo, P.E.  
& William H. Shank, P.E.

In the years following the Revolutionary War intense rivalry developed between the ports of Baltimore and Philadelphia for the trade of the so-called Pennsylvania "Hinterland", drained by the Susquehanna River. Since the Susquehanna River emptied into Chesapeake Bay just east of Baltimore, the commercial entrepreneurs of that city in the late 1700's considered the Susquehanna "their river", including the traffic in arks, flat boats and lumber rafts, which at that time were making their one-way trips into Baltimore from central Pennsylvania, and from as far north as upper New York State.



The Philadelphia city fathers, already keenly aware of the competition for overseas trade being given the Port of Philadelphia by the growing Port of New York City, were not of a mind to allow the Port of Baltimore to pull trade away from Central Pennsylvania which they considered rightfully theirs. So determined were Philadelphia's to prevent down-river trade of central Pennsylvanians with Baltimore that they lobbied for a Pennsylvania law (1799) which made it a criminal offense for anyone to "remove or attempt to remove (without proper authority) obstructions in the river Susquehanna between Wright's Ferry (Wrightsville) and the Maryland line."

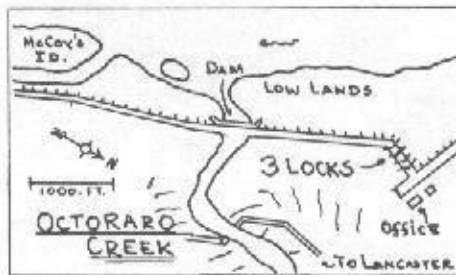
In the meantime, Baltimoreans were just as determined to capture as much of the Susquehanna river traffic as possible. In 1783, upon urgent petition from a group of Baltimore merchants, the General Assembly of Maryland passed an act granting a charter to build a canal from a point known as Love Island in the Susquehanna River, just south of the Mason-Dixon line, to Tidewater at Chesapeake Bay. The organization, of some forty-five men, which were said to include John Carroll, one of the signers of the Declaration of Independence, as well as Augustine Washington, half-brother of George, agreed to raise twenty-thousand pounds, and complete construction of the canal by 1801. The company was incorporated as "The Proprietors of the Susquehanna Canal". The undertaking was one of the first of its kind in the United States.

The east bank of the Susquehanna was selected and work began. The canal was 30 feet wide, three feet deep and nine miles long, running from the upper edge of Port Deposit, at John Smith's Falls, to Love Island. There were nine locks, 12 feet wide by 80 feet long, to overcome a sixty-foot rise in the river. The upper reaches of the canal are now drowned out by Conowingo Dam (built in 1926) and the lower section, approaching Port Deposit, was destroyed when U.S. Route 222 was built. However, traces of this old canal, one of the first built in the United States, can still be seen, south of the mouth of Octoraro Creek.

Around the turn of the nineteenth century, plans for a possible canal connecting Chesapeake Bay with the Delaware River enabled Philadelphians to perceive the advantages of an all-water route to connect them with the lower Susquehanna by way of Delaware and Maryland. Relations thus improved between Pennsylvania and Maryland to the point that Pennsylvania Governor Thomas McKean in 1801 commissioned Benjamin Henry Latrobe, a prominent architect of the day, to make a survey of the Susquehanna River from Columbia to the Maryland line and to prepare plans for improving navigation for arks, rafts, and keelboats.

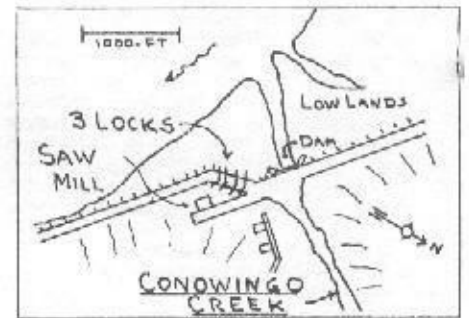
By 1802, the work on the "Susquehanna Canal", delayed by financial difficulties and previous political disagreements, had progressed to the point that sufficient water could be let into the canal to permit an official inspection trip, including the Governors of both Pennsylvania and Maryland. "In the course of the excursion", the canal managers reported, "we were able to demonstrate to the satisfaction of all persons present that the Canal will afford a safe, easy and expeditious navigation of more than nine miles up and down the most difficult and dangerous part of the River." The next year the managers announced that the route was officially finished.

In the meantime, Benjamin Latrobe continued to supervise improvements to the Susquehanna on the Pennsylvania side of the State line. These improvements for navigation, almost entirely down-river, included blasting of underwater rocks, diversion dams and marking of the channel. The fine large-scale map he prepared



from Columbia to Port Deposit showed all the rocks, shoals, falls and riffles as well as the "Susquehanna Canal" from Love Island to Tidewater. It is of interest that this map was destroyed by the British in 1814 when they burned the City of Washington. In 1817 Latrobe redraw this map from his original notes and sketches.

Benjamin Henry Latrobe was born in 1764 and educated as an architect in England. There he met and married Ann Antes, an American, daughter of Col. Henry Antes who was prominent in the Moravian Church and the Revolutionary War. After Ann's death he came to the U.S., in 1796. Col. Antes had received a contract to improve the navigation of the Susquehanna River and on his sudden death, Latrobe was called in to complete the work.



Latrobe is best known for his architectural work. He was an advisor on the Washington City Canal, 1802-1810. He designed and supervised the construction of the National Capitol building, the Baltimore Cathedral and the Philadelphia Water Works, the nation's first water supply system using steam pumps. He also surveyed the route for the Chesapeake and Delaware Canal, 1804. He died in New Orleans in 1820 of Yellow Fever. His son, B. H. Latrobe, II (1806-1878) was equally famous. He was Chief Engineer of the B & O R.R. during its construction to the Ohio River.

In spite of state aid, assessments on the stockholders, and tax exemptions, the operation of the "Susquehanna Canal", later called the "Port Deposit Canal" or "Conowingo Canal", was not profitable. Expenses grew, construction was faulty and revenues could not be collected. The canal had been constructed, in part, for the benefit of mills powered by water along the route. Hence, there was a strong current in the canal channel, which washed the banks, carried in river silt, and generally made navigation difficult. Many of the down-stream rafts and arks, simply avoided the canal entirely. In 1804 the Maryland legislature granted the canal managers the right to operate lotteries to supplement their income, but apparently even this did

(Concluded on Page Seven)

## Hennepin Canal

(Concluded from Page Three)

through eminent domain for right-of-way, the Corps of Engineers did not move immediately to secure the right-of-way for the entire route in one complete, continuous operation. From 1891 until 1906, the right-of-way was obtained only as it was needed for construction.

By 1902, the estimated cost increase for right-of-way and damages was \$285,000; the eventual cost of obtaining the right-of-way was \$548,644. This piece-meal acquisition policy also delayed construction because the government was faced with many law suits which asked for more money than the landowners were being offered in bids based on 1890 valuations. As early as 1895, Major Marshall himself admitted that if right-of-way acquisition were completed for the entire route, the canal could be opened in two years — a far cry from the twelve more years it actually did take.

Even though the decisions had been made to complete neither the work of locating the feeder nor the acquisition of the right-of-way, the actual construction began on that section of the work already funded. The River and Harbor Act of 1890 had appropriated money for the construction of four to five miles of canal just above the mouth of the Rock River near Milan. This section was given priority not only because it traversed the most populated region on the proposed route, but also because in providing a by-pass of the lower rapids of the Rock River it opened navigation to those central Illinois coal fields closest to the Mississippi River.

As it was constructed under the charge of Assistant Engineer Wheeler, the Milan section was made up of four and one half miles of waterway with two dams, three locks, and three tainter gates.

Progress on the Milan section did not last long uninterrupted. In August another questionable administrative move came to light. The contracts under which the work had been begun were based on estimates figured on a ten-hour work day. The eight-hour work day had been a **cause celebre** for nearly ten years and during the summer of 1892, Congress was in the process of taking action on the question. Unfortunately, the Hennepin contracts reached the Chief of Engineers for final official approval only after August 1 when Congress passed an act providing that laborers should not be permitted or required to work more than eight hours a day for the government or government contractors. Whether Wheeler was gambling that the paperwork would clear channels at amazing speed or whether he simply chose to ignore every labor protest since the Haymarket Riot of 1886 or whether he was gambling on Congressional inability to act is no longer relevant. Work on the Hennepin Canal stopped.

## Erie Barge Canal

For canal buffs who would like a 160-mile, three-day cruise on a former ferry boat (the *Emita II*) up through the locks of the Erie Barge Canal, we understand there is a good one available (other trips too) by contacting (Erie Barge Canal Cruises) Mid-Lake Navigation Company, R.D. #3, Skaneateles, NY 13152. Included in the cost of the "*Emita II*" tour, which starts and ends at Albany, are passage, all meals and snacks, motel accommodations, transfer enroute, and train fare back to Albany, plus lots of local history enroute. All this for only \$150 per person (double occupancy); single for \$170, or triple for \$130. Nuf sed!

## TENNESSEE CANAL

(Concluded from Page Five)

tance of about 40 miles. Bypassing the three major shoals, it accomplished what the Engineers had sought in their proposal. Although the double handling and movement by rail materially increased freight charges, it did keep cargoes moving. This short line is still in use, now a part of the Southern System.

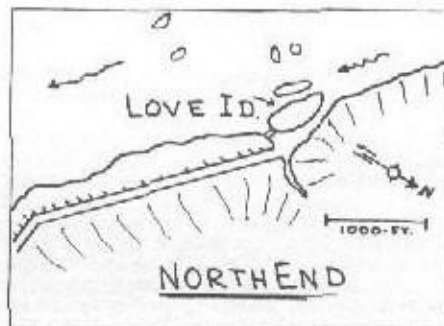
It was not long before Alabama again turned to Washington but the Congress turned a deaf ear to pleas for more financial aid. The canal was kept open, at least part of the time, for a few more years. Some traffic was reported in 1840. Soon after, it was abandoned forever. Somewhat later, one engineer wrote a rather harsh epitaph "It is a monument of misdirected energies and a foolish expenditure of money." It would be many years before another attempt to tame the river would be made.

Nothing remains to be seen of the canal, the structures, the shoals or the islands. All such landmarks are beneath the deep pools behind TVA's huge Wilson and Wheeler Dams.

(This is the second of three articles on Alabama's canals by ACS Director L. W. Richardson. Address: Route 2, Box 346, Gainesville, GA 30501.)

## The First Susquehanna Canal

(Concluded from Page Six)

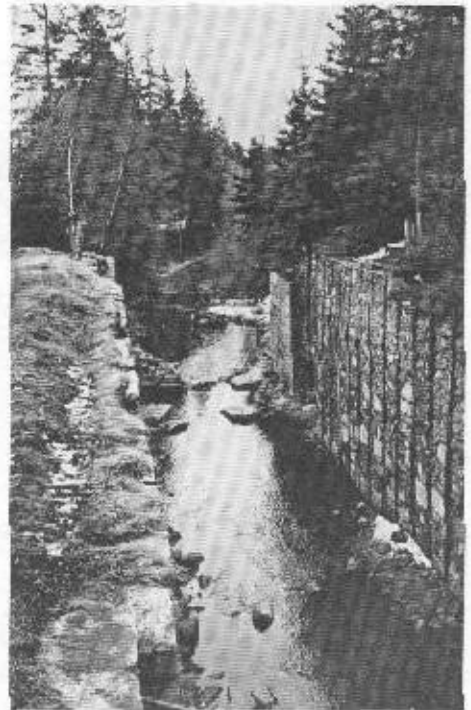


not help greatly, for in 1817, the canal was sold by the Sheriff of Cecil County at a great loss to the original owners.

The new owners threw a wing dam out into the river at Love Island in an apparent effort to force river traffic on the entire eastern channel of the river to use the canal. This move did not endear the new owners to the raftsmen and ark-owners who used the river, and led to further deterioration of relations between Pennsylvania and Maryland.

The old "Susquehanna Canal" was abandoned with the opening of the Susquehanna and Tidewater Canal on the west bank of the river in 1940, operating between Wrightsville, Pennsylvania and Havre de Grace, Maryland. This canal was built with the full cooperation of all parties concerned in Pennsylvania and Maryland. By this time the Chesapeake and Delaware Canal had been opened (1829). Philadelphians now had their "all-water" route to central Pennsylvania and their "Main Line Canal", which began at Columbia, just across river from the northern terminus of the Susquehanna and Tidewater Canal.

## Shubenacadie Canal



Remains of Lock 3, Port Wallis of the Shubenacadie Canal System (Nova Scotia). Photo courtesy Atlantic Region, Parks Canada.

Residents of Halifax county, Nova Scotia, bordering the Shubenacadie canal system have agreed to form a district 14 lakes advisory committee at a meeting which saw Bill Naftel, a historian and employee of Parks Canada Heritage Properties, give a detailed account of the historic waterway which actually was in operation for nine years in the late 1800's.

Mr. Naftel, with the assistance of slides, traced the history from the arrival of the first Acadians in 1689 through 1767 when the New Englanders moved into the region and the first survey of the river system was carried out.

While several surveys were carried out, the first sod was turned in July 1826, at the Fort Wallis locks and by 1829 a 20-mile section in the centre of the system was finished, but by the end of 1831 work was abandoned.

It was not until 1854 that work again got underway to complete the system and the idea of the inclined plane rather than locks was used at Porto Bello. In 1857 a steamer to tow barges on the canal system was built and in 1861 it was opened end to end.

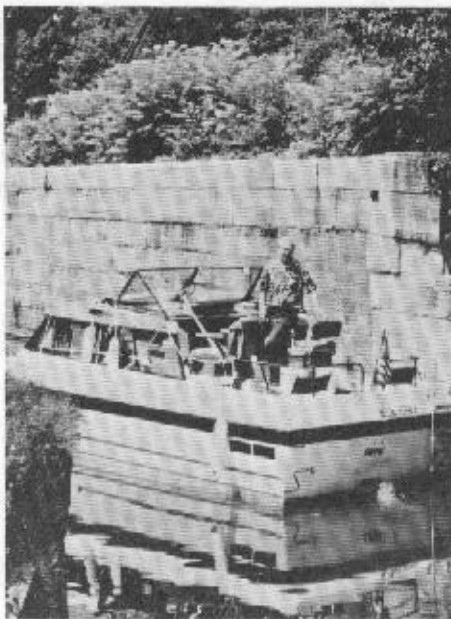
The canal then continued operation until 1870 hauling firewood, railway construction supplies, and supplies for the gold mines. With the coming of the railway, the need for the canal was diminished as rail proved more dependable and quicker. The largest barge to be used was an 80 ton barge.

(Mr. Naftel is a Director of the American Canal Society.)

## ERRATUM

**Correction:** "Old Canal Freighters", *American Canals* #20, page 4, col. 2 should read: "She is now hauling railroad ties and general freight between Colon and Darlen."

## CANAL WATCHERS



Bev Morant, in his boat "AMPHI", entering Lock Number 21 on the old Erie Canal.

Canal watching is a wonderful pastime, especially when one can take part by boating on an old waterway. Last summer I had a wonderful experience at Lock 21 on the Erie Canal near Rexford, New York. Lock 21 is still connected to the Mohawk River and for years the river was used as a feeder for the old Erie Canal. This old lock is still in use by the Schenectady Yacht Club as a boat launching basin.

From the Mohawk River I slowly brought my boat down the narrow Club channel past the moored boats and into Lock 21. What a feeling! Imagine having my own boat in one of the old Erie Canal locks.

A flash back to the old canal days is inevitable when one is in such a situation. I could just see the balance beam gates swing open and closed for various barges as they made their way up and down stream. There ahead was Lock 22 (all filled in, but the lock wall tops can be seen) and then that famous Rexford Aqueduct which spanned the Mohawk River (now a highway). In a few moments I too would be crossing and looking down into that beautiful river. Looking west from Lock 21 is the old Travis feed store of 1825 vintage, still standing and used as a club house.

(Bev Morant is Chairman of the ACS Navigable Canals Committee, his address is: 61 W. Bonita, Sierra Madre, CA 91024.)



Travis Feed Store for the Erie Canal Tow-Path horses, near Lock 22.

## An English Course on Canals

by Grace Elliott

A course on canals of Midland England will again be offered this year — July 30 to August 6 at Avoncroft College, Stoke Heath, Bromsgrove, Worcestershire, B60 4JS, England. While the format will be changed somewhat this year, it is an experience to be recommended.

We took the course last year. While we were not the first Americans to participate, apparently we were the first ones who could contribute anything about the canals on this side of the Atlantic. It was also amazing to us that a lot of places discussed and shown in slides were places we had been on previous English canal trips.

The course consists of lectures, slide presentations, films and field trips on various aspects of the English canal system — their development, engineering, economic aspects, future uses, the boats and the boatmen. The one that was of most interest to me was on the Birmingham Canal Navigations (BCN). It was so confusing before but between the lectures and the canal trips to view all four levels, it has become a fascinating place. We visited Gas Street Basin and the Worcester Bar, Farmer's Bridge locks on the Birmingham and Frazeeley canal. One of those locks is under the new post office building. We also visited the Long Boat Pub in Birmingham and saw Gallon Bridge by Telford and Summit Bridge by Smeaton on the Birmingham and Wolverhampton levels respectively. We walked along the Tame Valley canal and rode through Netherton tunnel and through Oozell's Street loop (a Brindley meander).

The most exciting part of one trip was a boat ride (electric powered) through 1½ mile long Dudley tunnel. Some course members took turns "legging" the boat. At one point the lights were turned off. All you could hear was the sound of boats along the tunnel walls and feel the movement of the boat in total darkness just as the leggers did a hundred years ago. It was an unbelievable experience.

Other outstanding things were a visit to Spon Lane Locks. These are Brindley built locks now located under an elevated expressway or as the English may say an overhead dual carriageway — the M 5. We also walked up part of the Stoke flight and all of the Tardebigge flight — 35 locks in five miles. It was discouraging to see Tardebigge reservoir so low but that was the big problem on English canals during the summer of '76. We also visited Worcester to see Diglis locks on the River Severn and then walked around Diglis Basin that connects to the Worcester and Birmingham Canal. We also visited Stourport with its Basins to connect the River Severn and the Staffordshire and Worcestershire Canal. At Walsall we visited Peter Keay's boatyard where boats are built and repaired by the same methods used since canal boats were first built in England.

If anyone is interested, the course is called Midland Canals — in Town and Country. The fee is \$55 plus V.A.T. this year. A deposit is required with your application form but it is possible to pay the bulk of the fee after arrival at the college. Incidentally that cost is inclusive — accommodations, meals, trips and tuition. Expect college type rooms and meals but it is adequate. There are two pubs within easy walking distance. There is the canal and a canal pub at Stoke Prior about a mile away. What more could anyone want!

(Grace Elliott is a member of ACS. Address, 300 Ohioville Road, New Paltz, N.Y. 12561.)

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