

# AMERICAN CANALS

BULLETIN OF  
THE AMERICAN CANAL SOCIETY

BULLETIN NUMBER 36

Editorial Address — Box 310, Shepherdstown, W. Va. 25443

FEBRUARY 1981

## PRESIDENT'S MESSAGE

Since our last issue, a new administration has taken over the reins of government in Washington. We wish them well in their attempt to turn our ailing economy around and to help both commerce and industry start moving in the direction of stabilized prices and new job opportunities.

While on the subject of government policy, it seems to me that our previous administration made a grave tactical error in giving away the Panama Canal to a government which may not even exist when transfer time arrives in the year 2000. The Panama Canal represents the greatest military and engineering achievement of all time. Until a better connection can be made between the Atlantic and Pacific Oceans, the United States must maintain control of the route which we built, shortly after the turn of the century, at such great cost. It is essential to our military and economic survival that we do so. If other members of ACS feel strongly on this matter, pro or con, I would be happy to hear from you.

Another matter of government policy is covered separately by our Vice President, Bill Trout, elsewhere in this issue. All of us must be alert to governmental projects which threaten to destroy what few relics of our historic Canal Era remain untouched.

Our new ACS book project — "CANAL ENGINEERS OF THE 1800's" — moves slowly, primarily because of the difficulty in unearthing good biographical information on the lesser-known canal engineers, such as Nathan Roberts, William Milnor Roberts, David Bates, Loammi Baldwin II, Horatio Allen, William Strickland, and Samuel Kneass. We know what they did, but very little about their personal lives. If any of our members know of good biographical information on these men, please get in touch with me.

I am delighted to report that our ACS Director, William J. McKelvey, Jr., has just agreed to become Chairman of the ACS Canal Boat Committee. Bill will continue the work begun so capably by Carroll Gantz of Baltimore, who asked to be relieved of this assignment a year ago. Carroll's excellent "CANAL BOAT CONSTRUCTION INDEX" is still available (at a Xeroxing charge of \$5) by writing our Secretary, Charlie Derr. Thanks, Carroll, for all your good work! Anyone wishing to assist Bill McKelvey in his new assignment is invited to write him at 103 Dogwood Lane, Berkley Hts., N.J. 07922.

We are pleased to report that the American Canal Society has been asked to act as Co-Sponsor, with the Canal Society of Ohio, of a special train trip along the Whitewater Canal in Indiana on October 17, 1981. (See separate article) ACS is most anxious to assist in

*(Continued on Page Two)*

## NEW BRITISH CANAL FILM GIVEN ACS



Sir Frank Price, (left) Chairman of the British Waterways Board, presents the new BWB movie film to Dr. Roger Squires, who accepts it on behalf of the American Canal Society. (Photo courtesy of "Waterways News", BWB publication.)

The accompanying photo shows the official presentation of a new 35-minute, 35-mm, color and sound film entitled "Waterways — Our Heritage" to Dr. Squires, ACS Director in the United Kingdom, who accepted the film on behalf of the American Canal Society. Presenting the film was Sir Frank Price, Chairman of the British Waterways Board. The ceremonies took place at Melbury House, London, December 4, 1980, after which Dr. Squires gave an illustrated lecture on the Canadian Canals, which he has just visited.

We have reviewed the film here and find it to be a first-class, fully professional production, and we are most grateful to the British Water-

ways Board for making it available to us. It touches briefly on the historical aspects of canals in the U.K.; the present canal restoration program now going on there; operational features of the canal locks, aqueducts, and "lifts"; but most of all, the delights of leisure travel on the beautiful canals of the English countryside with all the scenes, sights and sounds which a canal traveler encounters there. It is ideal for showing at meetings of the various canal societies in the United States. We offer it to you on a "first-come, first-served" basis, asking that you indicate your exact showing date, plus prompt return after your meeting. Requests may be sent to ACS headquarters at 809 Ralston Road, York, Pa. 17403.

## Sandy and Beaver Canal Group

A new canal group has recently formed a "non-profit corporation" — the SANDY BEAVER CANAL INC., with headquarters at 496 Carrollton Street, Magnolia, Ohio 44643. The President is James H. Crowe (same address); Vice President - Dan Joseph; Secretary and Treasurer - John Joseph; Trustees - John Greer, Art Shilling and Fred Loomis, Jr. They are concerned with the

history and preservation of the Sandy and Beaver Canal, which connected the Ohio and Erie Canal in eastern Ohio, with the Ohio River in western Pennsylvania. Some of the excellent restoration work they have already done is outlined by Terry Woods in the February 1980 issue of AMERICAN CANALS. Another name for their operation is "The Project 79 Canal Group".

# 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, Incorporated. Objectives of the Society are to encourage the preservation, restoration, interpretation and use of the historic navigational canals of the Americas; to 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 \$8.00 Individual copies may be purchased at \$2.00

EDITOR—Capt. Thomas F. Hahn, USN (Ret.), Box 310, Shepherdstown, WV 25443.

PRESIDENT—William H. Shank, P.E., 809 Rathton Road, York, PA 17403.

VICE PRESIDENT—Dr. William E. Trout III, 1932 Cinco Robles Dr., Duarte, CA 91010. Editor, AMERICAN CANAL GUIDE.

SECRETARY-TREASURER—Charles W. Derr, 117 Main Street, Freemansburg, PA 18017.

CHAIRMAN, Canal Index Committee—Terry K. Woods, 6939 Eastham Circle, Canton, OH 44708.

CHAIRMAN, Canal Boat Committee—William J. McKelvey, Jr., 103 Dogwood Lane, Berkeley Heights, NJ 07922.

CHAIRMAN, Canal Parks Committee—Dr. William E. Trout III, 1932 Cinco Robles Drive, Duarte, CA 91010.

DIRECTOR, Canada—Louis J. Cahill, 215 Ontario Street, St. Catharines, Ontario L2R 6Y3, Canada

DIRECTOR, United Kingdom—Dr. Roger W. Squires, Bailiff's Cottage, 4 Manor Way, Beckenham, Kent BR3 3LJ, England.

## PRESIDENT'S MESSAGE

(Continued from Page One)

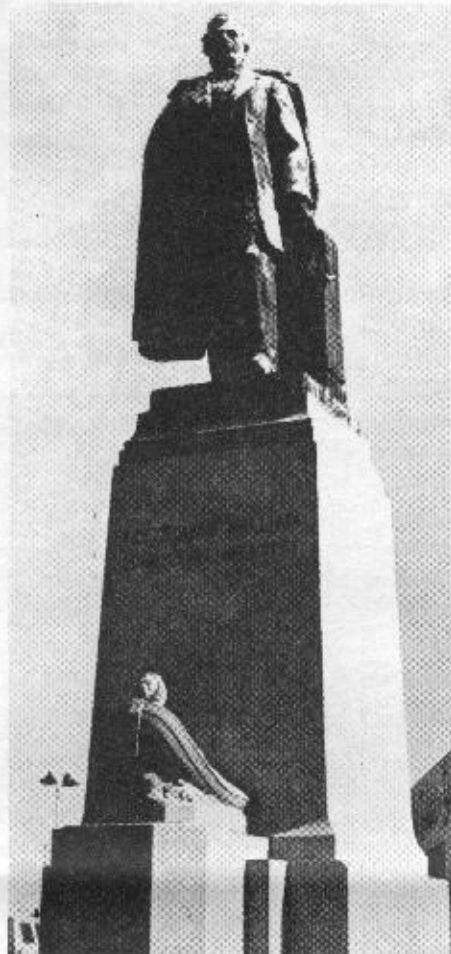
starting a canal society in Indiana. Along this line, the Allen County-Fort Wayne Historical Society, of Ft. Wayne, Indiana, is sponsoring a Symposium on Early American Transportation (slanted toward the Canal Era) April 24-26, 1981. Our members in Indiana are invited to attend both functions, and to offer suggestions for the forming of an Indiana Canal Society.

ACS has also been invited to participate in a Seminar on Canals and Inland Navigation to be held in the Spring of 1982 at the Canal Museum in Syracuse. Lynette Jentsof-Nilsen, Weighlock Building, Erie Blvd. East, Syracuse, NY 13202, is the Coordinator.

We welcome, into membership in the ASC LIFE MEMBER category, Richard A. Davis of Virginia Beach, Virginia, and Dennis K. McDaniel of Baltimore, Maryland. This brings to fourteen the number of ACS members in this important group!

Bill Shank

## First Welland Canal 151st Anniversary



Statue of William Hamilton Merritt, close to the route of the original Welland Canal, which he laid out in 1824.

Encouraged by the international success of the Welland Canal 150th anniversary in 1979, a successor organization, the Welland Canals Foundation, is now at work to ensure that the four canals which linked the Great Lakes system will not be forgotten and again fade into history.

"William Hamilton Merritt", the pioneer builder of the first Welland Canal, 1824-29, portrayed by David MacKenzie, a playwright historian, is calling upon Canadians to commemorate the unifying benefit of the canals, and support a continuing program of public support and observances in the years ahead.

The 151st anniversary of the opening of the first Welland Canal was observed Saturday, November 29, 1980 with a special ceremony at Lock 3 of the present and fourth canal. David MacKenzie, in his role as William Hamilton Merritt, Ken Ludwig, director of operations, Western Region, St. Lawrence Seaway Authority and John Campbell, chairman, Regional Municipality of Niagara all participated. A Welland Canal Anniversary plaque, Seaway flag and special memento from the Region was presented to the master of the upbound vessel transiting the canal.

International attention focused on the Welland Canal, which links the Great Lakes for commercial navigation, is not restricted to heavy industry and import-export trade which annually approximates 60 million tons of cargo, about 40 per cent grain from Western Canada.

Louis J. Cahill

## OLD ERIE RESTORED

The town of Camillus, New York has restored a seven-mile section of the Enlarged Erie Canal to a navigable condition, has constructed a replica of the original Sim's Amboy General Store, (open on Sundays May through October), and provides canal boat rides/lectures on its 28-ft. pontoon boat (the Camillus Erie) which is moored in a new boat house. The lectures include the Camillus Feeder, an unnumbered culvert, the Nine-Mile Creek Aqueduct (which is on the National Register), and an excellent portion of the original Erie Canal. The town invites all canal enthusiasts to visit their Erie Canal Town Park.

(David W. Beebe, D.D.S., P.C., Project Director, 109 East Way, Camillus, NY 13031.)

## 1981 DUES

Our Treasurer, Charlie Derr, reminds us that there are a few members who have neglected to pay their dues for 1981. With U.S. postage costs again due for a sizable increase in March, we cannot afford to carry along those who do not assist us with our costs, most of which are spent on your newsletter and the cost of distributing it to you. Any members whose dues are not paid by the time of our May 1981 newsletter will automatically be dropped from our mailing list. We have not raised our dues since November of 1978, but may find it necessary to do so in 1982 if we cannot count on the full support of our present membership.

## ENGINEER OF THE YEAR



Robert S. Mayo, P.E., Lancaster, Pa., has been named 1981 "Engineer of the Year" by the Lincoln Chapter, Pennsylvania Society of Professional Engineers. Bob has been an avid canal buff for years. He is a Director of the Pennsylvania Canal Society and has written a number of articles for the PCS quarterly — CANAL CURRENTS, as well as for our AMERICAN CANALS. He is presently working with an ACS team on the history of canal engineering in America. He is nationally known as an authority on tunnel construction and has served with distinction on various national committees of the American Society of Civil Engineers. He has written a textbook entitled "PRACTICAL TUNNEL DRIVING," originally published by McGraw Hill in 1941; now re-edited and in its fourth printing since 1975. Bob, in spite of his eighty years, could easily pass for sixty-five, and spends much of his time traveling throughout the United States, lecturing on tunnels (and bridges) to technical and historical groups of all types.

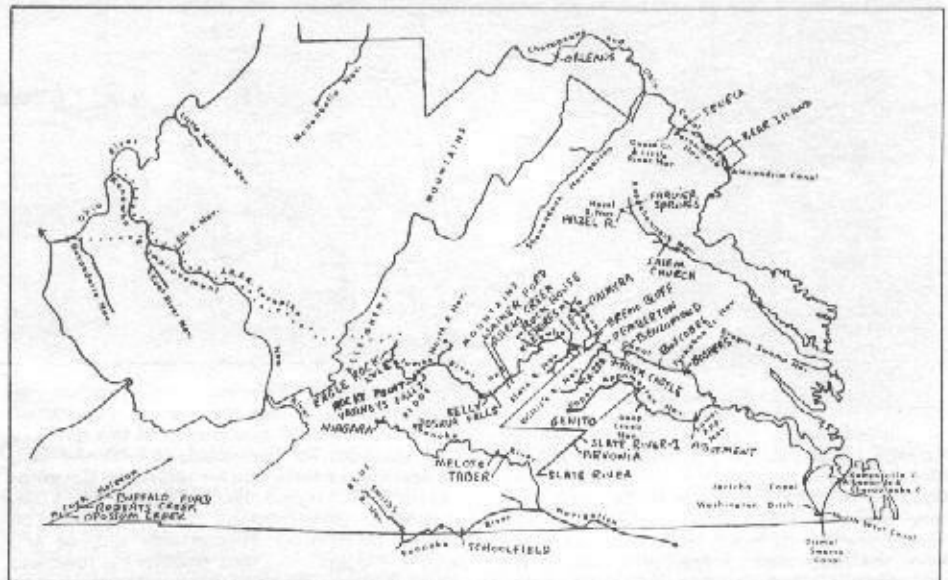
# CANALS AND THE ENERGY CRUNCH

By William E. Trout III

As part of the country's search for new sources of energy, interest is increasing in the use of historic canals for generating hydroelectric power. This might be a good thing where it results in canal restorations and new canal parks, while at the same time putting our old canals back to productive work; but it would be a disaster where new construction and turbine installations are allowed to ruin canal sites through misguided planning. It is important for canal people to keep up with all of these energy projects and to make their voices heard during the planning process.

A useful source of current information on hydro projects is the SMALL HYDRO BULLETIN, published by the Department of Energy's Division of Hydroelectric Resources Development, Idaho National Engineering Laboratory, P.O. Box 1625, Idaho Falls ID 83415. To get on the Bulletin mailing list, write the Editor, RoseMarie Peterson. Earlier issues have listed, for example, the small-scale hydro contacts in the DOE regional offices, and the latest projects requesting licenses. Of special interest in the August 1980 issue was a report on proposals received by DOE for studies on "ultra low-head hydro" - involving falls in water level of three meters or less - in response to their request for "proposals pertaining to concepts for retrofitting existing dams, locks or canals with power generating equipment."

This new interest in developing low-head hydro technology and devising pre-engineered "mall-order" installations, to keep costs to a minimum, is also of special interest to old mill buffs, some of whom are actively putting old mills back to work; so another good source of information is OLD MILL NEWS, an excellent illustrated quarterly available at \$6 a year from The Society for the Preservation of Old Mills, P.O. Box 435, Wiscasset, Maine 04578. There is also a section on small hydro in the International Society for Geothermal Engineering's Journal, at \$14 from ISGE, P.O. Drawer 4743, Whittier CA 90607. For those involved in their own small hydro projects, there is even the Small Hydro Society (at \$2 from SHS, RD 3, Slippery Rock PA 16057) to help find parts, information, and inspiration.



Proposed dams along the Virginia waterways, which may affect historic canal and navigation sites, as listed in the "Preliminary Inventory of Hydropower Resources", July 1979. (Map by Bill Trout).

A considerable number of studies for specific site development are already underway by DOE and others, at Corps of Engineers navigation dams, on western irrigation canals, and for example, on the Windsor Locks Canal, the Augusta Canal, and the canal network in Lowell. In the case of Virginia, ACS has already had some preliminary inquiries about old canals which might be used for hydropower. One that is receiving serious interest is the Rappahannock Navigation Company's canal in Fredericksburg. Fortunately, Tom O'Kane, the City Engineer, is enthusiastic about the canal as an historic site, and assures us that the new plant will be placed in the dam, beside the entrance to the canal, so the stone guard lock will not be disturbed. This also means that the canal into Fredericksburg will not be used as a power canal and can flow slowly for use as a park; so

in this case the traditional conflict between power or irrigation (requiring fast canal flow) and transportation or recreation (slow flow) has been avoided. Not so in Richmond, where the James River & Kanawha Canal is already used for hydroelectric power and more intensive utilization is planned; but we think that the rapid flow will still be safe for downstream canoeing. If anyone has information on this sort of problem we'd like to know about it.

Another important problem will be the temptation for engineers to use old canal lock chambers as handy turbine pits (as had been done in the past in Virginia); this may damage the lock, would make it less attractive for park purposes, and would preclude restoration. This is something which should definitely not be allowed to become standard procedure. The type of turbine used will make a difference; Dr. Schmidt of the Small Hydro Society has suggested that a "bulb turbine" could be used to keep the installation fairly unobtrusive in a park, something that can't be done very well with Pelton, Banki or Kaplan turbines, which require housing.

At the present time it is not generally considered economical to use a low-head site which needs a new dam. However, if this would also create a canal park you might be able to use the combination to finance restoration, as an important historical, recreational, and energy saving asset. It goes without saying, to canal people, that considerable attention must be given to the possible detrimental effects of rebuilding even a low canal dam, on a river which has returned to a free-flowing state. In fact, this concern constitutes a legal requirement on officially designated scenic and historic rivers, where old dam foundations, locks, canals and batteau sluices have become an essential part of the scenery, and can be used as points of interest along canoe trails (ACS has historic site markers available for marking such trails). Also, DOE's projects must take special note of any sites either on, or eligible for, the National Register of Historic Places, so be sure that your state Historic Preservation Officer is aware of any threatened canal sites. I think that national policy should go further than this, and require that planning for all river and stream projects include not only an inventory of the usual archaeological and historic sites (such as locks) but a deliberate search

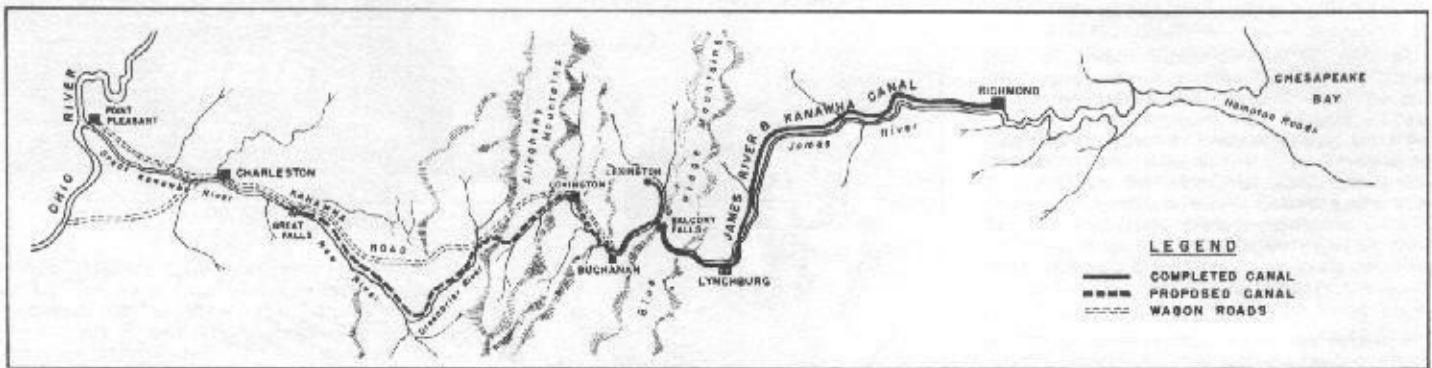
(Continued on Page Seven)

## THE "THREE-MILE ISLAND" LOCKS



Virtually in the shadow of the Three-Mile Island cooling towers, this well-preserved lock on the old "Main-Line Canal" is located about a mile south of Middletown, Pa. Its somewhat isolated location has preserved it from vandalism and the inroads of a nearby branch of the Penn-Central RR., which has almost destroyed "Buck Lock" a mile or so further south. Falmouth Lock, a deep lock at the lower tip of Three-Mile Island is in almost as good shape as the Middletown Lock. (Photo by Bill Shank, 1980)

## THE JAMES RIVER AND KANAWHA CANAL (Part I)



By T. Gibson Hobbs, Jr.

In colonial days, Virginia stretched from the Atlantic Ocean west across the Alleghany Mountains to the Ohio River and beyond. Coursing through the center of this vast territory was the James River, with the Jackson River, one of its main feeders, running east from the mountains. A few miles west across the watershed, between present day Covington and White Sulphur Springs, the Greenbrier River and its feeders flowed west into the New River. This great stream, flowing north out of the mountains of North Carolina, was joined below the Greenbrier by the Gauley River to become the Kanawha River just above its great falls. From this breathtaking, 20 foot high cataract, the Kanawha continued on to join the Ohio at Point Pleasant about 485 miles from Richmond.

By 1750, settlers were becoming established in the Piedmont section along the James above Richmond to the Blue Ridge Mountains. Others coming down the Shenandoah Valley from Pennsylvania were settling the upper reaches of the James. West of the Alleghenies, there were only explorers and Indian traders. The French, with their Indian allies, were in control of the Ohio River. Roads were poor or non-existent in this back country and small boats on the James River and its feeders offered the most practical means of moving goods to eastern markets and bringing in supplies. After the defeat of the French in 1758, settlers began moving across the mountains into the Ohio River valley.

In 1770, George Washington made his fifth journey to the Trans-Alleghany region. From Fort Pitt, now Pittsburgh, he boated down the Ohio River and 14 miles up the Kanawha River in search of land. After the Revolution,

Washington, in 1784, made still another trip west to find a tide of settlers moving in. Convinced of the future growth of this territory and the need for connecting it with the east, he addressed a letter, on his return, to Governor Harrison of Virginia. Dated October 10, 1784, it said in part that this country would "be settled faster than anyone ever did, or any would imagine . . . . But smooth the road and make the way easy for them, and see what an influx of articles will be poured upon us; how amazingly our exports will be increased by them, and how amply we shall be compensated for any trouble and expense that we may encounter to effect it." This was to become the justification for all the many canals and railroads attempting to connect east and west during much of the next century.

Acting on Washington's further plea for action during his visit to Richmond in November, 1784, the General Assembly, by an Act of January 5, 1785 chartered the James River Company to improve navigation of the James with the ultimate aim of connecting its eastern commerce with that of the Ohio River. This was one of the earliest such efforts in this country. The charter required that Tidewater at Richmond be connected with some type canal past the falls and the river improved for navigation as high as practicable. It was agreed later that the head of navigation should be Crow's Ferry at the mouth of Looneys Creek, just above present Buchanan, about 200 miles above Richmond. When improvements were completed to allow boats of one foot draft to pass during the dry season, tolls would be allowed on all river traffic.

The lure of profits from expected river commerce brought a ready sale of the stock,



Locks #4 and #5 on the J.R. & K. as restored by the Reynolds Metals Company in Richmond. (Photo by Alden Gould).

and the company was organized August 20, 1785. A survey for the canal at Richmond was made in 1786 by Eliot Lacy. It was not until 1795, however, that the eight miles of canal above Richmond were completed so that river traffic could come into the city. Improvements on the river above were not reasonably complete until about 1806, when full tolls were allowed. Improvements had also been made on the North River to Lexington and on the Rivanna River to Charlottesville. A rough Kanawha wagon road over the mountains had also been completed.

River improvements consisted of cutting sluices through the rocky ledges of the rapids, and sometimes adding low wing dams to channel water into the sluices in the dry seasons. By 1808, river traffic had reached the point where the stockholders were realizing handsome dividends on their stock. Various river boats and flat bottom batteaux in great numbers were poled up and down the river.

That same year Albert Gallatin, Secretary of the Treasury, in his famous report to Congress on Public Roads and Canals, in referring to this project said: "The natural navigation of the river through that extent (from Richmond to Crow's Ferry) is considered better than that of any other Atlantic river above the falls." He was concerned, however, that the Tidewater connection had not been completed, because it was needed to provide the least expensive way to put coals on vessels below the falls. He said, "For coal is in no other part of the United States found in abundance in the vicinity of tide water." (Referring to the mines above Richmond.) How little could he foresee the tremendous coal traffic from the vast mountain beds flowing along the James to Tidewater, over a century later by railroad.

In a section titled "Communications Between the Atlantic and Western Waters," Gallatin was dismayed by the 3,000 foot height of the Alleghenies. Since the highest canal in Europe had a summit level only 600 feet above the sea, he concluded that canal passage over the mountains was not possible. Again, he could not foresee the Erie Canal skirting the upper end



Canal boat traffic on the J. R. & K. in the late 1800's. Photo made at Tuckahoe Creek. (Courtesy of Ted Haxall).

of the Appalachian range or tunnels piercing through it. He felt the only answer was river navigation as high as practical on the eastern and western rivers, connected by artificial roads across the mountains.

In 1810, a contract was made with Ariel Cooley, a contractor from Springfield, Massachusetts, to build a series of 13 locks at Richmond to complete the connection to Tidewater. These were poorly constructed, however, and soon deteriorated to where they were of little use. Meanwhile the company, while making exceptional profits, showed little interest in spending enough money to improve navigation further, or improve the rough road across the mountains. Largely because of the insistence of the western interests, a commission of 21 members was appointed in 1812 to survey and report on improving the upper James and making an improved connection across the mountains to the Kanawha River. Chief Justice Marshall headed a party of about six members. Leaving Lynchburg on September 2, they proceeded up the James by boat to Dunlaps Creek at Covington. Hauling the boat by wagon, they followed the rough mountain road up the creek and over the mountain to strike the Greenbrier River past White Sulphur Springs.

They boated down the Greenbrier, in spite of low water, to the New River, then past its 23 foot falls, and on down to the great falls of the Kanawha. The surveyor, Alexander McAndrew, recorded distances, elevations and obstructions for each part of the route. Retracing their path, the party reached Lynchburg again about November 1. Their report and detailed map, delayed by the War of 1812, was not acted on until 1816. It said the route was eminently suitable and desirable. This had much to do with the establishment by Virginia that year of the first Board of Public Works in this country. This board was to prove responsible for most of the roads, river and canal development, and railroads built in the state for the next 60 years.

The state interests urged the James River company to undertake this great project. Failing to get the company to act, the state took control in 1820, and in 1823 took over complete operation, while agreeing to pay handsome dividends to the stockholders forever. Starting in 1817, the State Engineers made a series of surveys of the proposed route. Loammi Baldwin, the first principal engineer for the Board of Public Works, surveyed the whole route. In 1818, his successor, Thomas Moore, made a second, more detailed survey. He suggested a lock and dam plan as an alternate to the river navigation plan. This was followed by another survey by Moore the next year with Isaac Briggs, a consultant, participating. In 1824, the new and noted state engineer, Claudius Crozet, with Judge Benjamin Wright, then chief engineer of the nearly complete Erie Canal as consultant, made still another joint survey, and recommended a canal



Opossum Creek Culvert below Lynchburg, completed in 1840, second largest of the culverts between Richmond and Lynchburg. (Courtesy of John Taylor.)



Guard Lock and House at Lynchburg, Virginia. This lock was in operation until 1940.

with turnpike road across the mountains. In 1827, this was followed by a detailed survey of the best mountain crossing by Capt. William G. McNeill of the Army Corps of Engineers. His was the first survey for an all water route over the mountains, which he reported to be feasible. This was the plan the canal advocates were to pursue vigorously for the next 50 years.

In 1825, the Erie Canal, under construction for seven years, was completed from Albany on the Hudson west to Lake Erie, a distance of 363 miles. It was an instant success and the greatest transportation improvement this young and expansive nation had ever seen. It set off a great wave of canal building. Pennsylvania and Maryland both started canals to connect the east coast with the Ohio River, while Ohio and Indiana started connections between the Great Lakes and the Ohio River.

Ironically, that same year in England, George Stephenson completed the 125-mile Stockton and Darlington Railroad, and his steam locomotive pulled the first successful passenger train. On July 4, 1828, the C & O Canal on the Potomac River and the B & O Railroad, one of the earliest in this country to follow England's lead, both broke ground to compete for the western trade.

During this same period, the state owned company extended the James River Canal to Maiden's Adventure Dam, 28 miles above Richmond, built a seven mile canal through the rocky and treacherous Blue Ridge gorge, and paralleled it with the Blue Ridge Turnpike wagon road. They also completed the 200-mile Kanawha Turnpike road from Covington across the mountains to Charleston and on to the Big Sandy River near present Huntington.

In 1828-29, Crozet made still another survey, to be assisted again by Judge Wright. However, Crozet had become convinced that a railroad was more practical than a canal, while Wright felt the canal with a railroad over the mountains was the answer. Refusing to work together, they filed separate reports. In 1830, Crozet publicly recommended a railroad while Wright presented his canal plan. The canal interests being in the Legislature brought about Crozet's resignation the following year.

By 1832, it became obvious the state-owned company was not going to do the job and should be replaced. Joseph C. Cabell, long an advocate of the canal extension and a brilliant and able legislator, let the effort, resulting in a charter being granted that year for a joint stock company called the James River and Kanawha Company. The charter allowed the options of a canal from Tidewater at Richmond to Lynchburg or above, a railroad across the mountains to the Kanawha River and river navigation to the Ohio River, or a railroad from Richmond to Point Pleasant at the mouth of the Kanawha River.

It was not until 1835 that Cabell, with the able assistance of Justice Marshall, was able to raise the \$5,000,000 in stock subscriptions required by the charter. Of this, the state took \$2,000,000 plus \$1,000,000 as the value of the old canal properties. Private investors took less than \$1,000,000 with Richmond, Lynchburg and the banks making up the balance. At the first stockholders meeting on May 25, 1835, Cabell was elected president, and the stockholders agreed to a canal to Covington and a railroad across the mountains.

Cabell immediately organized an Engineering Corps headed by the logical choice, he felt, of Judge Benjamin Wright as Chief Engineer. Wright agreed to come if he could appoint three principal assistant engineers and be allowed time to handle his other considerable consulting work. The first Grand Division from Maiden's Adventure Dam to Lynchburg was laid off in three divisions with a principal assistant engineer for each. Survey parties spent the fall laying out the work, and bids on over half the distance were taken in December, with all the work scheduled to be completed by 1838. First work began on some of the 201 sections in January, 1836 on the Brems lands of General John H. Cocke, one of the leading stockholders.

In early 1836, Charles Ellet, Jr., one of the principal assistant engineers, succeeded Chief Engineer Wright, who stayed on as a consultant. Suitable labor was scarce, and agents were sent to Scotland and Germany to hire stone masons and mechanics. The financial panic of 1837 caused a slowdown of canal and railroad work in the north, so that labor, including many Irish plus much slave labor, became more plentiful. That year, over 3,500 men were at work, about one-third being slaves. The year 1838 had an extremely hot summer, causing many white laborers to go north. Later that year, slaves comprised over two-thirds of the labor force.

*(To be continued in the next issue)*

On February 1, 1981 the Canal Museum and the Onandage Historical Association presented a program in underwater archaeology at the Canal Museum at Syracuse, New York in which Dr. Robert Farrell, Professor of English Medieval Studies at Cornell University and Mr. Ronald Hynes, Director of the Underwater Archaeology Association, spoke on underwater archaeology and the Canal Museum's project to locate and document sunken canal boats in Central New York State. Dr. Farrell presented an overview of underwater archaeology and Mr. Hynes spoke on his work on canal boats, discussing specific sites and what new information has been learned from them about canal boat design and construction.

## RAIL TOUR OF WHITEWATER CANAL



The Canal House at Metamora, Indiana, with the Whitewater Canal in the foreground, one of the stopping points on the CSO-ACS Fall Field Trip.

By John W. Droege

The Canal Society of Ohio will act as host for a tour of the Whitewater Canal October 17, 1981. The tour will be cosponsored by the American Canal Society and by the White-water Valley Railroad, which will provide transportation.

The Whitewater is in southeastern Indiana. The canal now seems to have been one of those minor waterways that went from nowhere to nowhere. But Lawrenceburg, Brookville, and Connersville were not sleepy little Hoosier villages bypassed by progress in the early 19th century. They were centers of enterprise in a new state. A canal to give the surrounding agricultural countryside access to Ohio River markets looked like the answer to a really tough transportation problem. Local enthusiasm was hard to quench, in spite of countless delays by state officials, in spite of the panic of 1837, in spite of bad management, in spite of numerous disastrous floods, in spite of growing competition from the railroads. But eventually the railroad won out, and tracks were laid on the towpath.

Now the railroad has had its time of triumph. Now it too has come on hard times and been replaced by the truck and airplane. But the tracks are still there and are used by a restored scenic railroad running alongside a restored scenic canal. The railroad provides ideal transportation for a canal tour since it directly parallels most of the canal.

At the site of one of the aqueducts, located between two stone locks, is the village of Metamora, restored canal town. A rebuilt mill uses water power from a wheel mounted, as it was a hundred years ago, in one of the locks. The other lock has been fully rebuilt by the state park service, and the "Valley Bell" takes passengers up and down the canal and across the aqueduct. Water flows into the canal from Laurel Dam, just as it did years ago. The restored canal has now served the recreational needs of visitors from Indiana and elsewhere for a considerably longer time than the canal originally provided uncertain transportation for valley citizens to and from Cincinnati.

(For information about the tour, please contact John W. Droege, 2937 Neil Ave., Columbus, Ohio 43202.)

## CANAL CALENDAR

**March 15-19, 1981** - Second Inland Waterways and Ports Development Exhibition, Cologne, Germany. Write TMA-AG Delsbergerallee 38, CH-4018, Basel, Switzerland.

**April 24-26, 1981** - Symposium on Canals, Rivers and Railroads, Allen County-Fort Wayne Historical Society, 302 East Berry Street, Fort Wayne, Indiana 46802.

**April 25, 1981** - Ohio Historical Society bus tour of canal, Columbus area. Write OHS, I-71 & 17th Ave., Columbus, OH 43211.

**April 25-26, 1981** - Canal Society of New Jersey trip to the D. & H. Canal Gravity Railroads in Pennsylvania. Contact Bill Moss, P.O. Box 127, Fanwood, NJ 07023.

**April 26, 1981** - Annual Justice Douglas Hike, C & O Canal, middle portion. C & O Canal Association, 104 Valley Road, Bethesda, MD 20016.

**May 15-16, 1981** - Pennsylvania Canal Society Spring Field Trip along the Morris Canal, Western Division. (Headquarters: Holiday Inn, Philipsburg NJ) Contact John Miller, Wulakamike Farm, 3107 Farmersville Rd., Bethlehem, PA 18017.

**June 6, 1981** - Canal Society of Ohio Spring Tour of locks on the Muskingum. (Headquarters: Zanesville) Contact Ted Kasper, 1980 Sedro St., Cuyahoga Falls, OH 44221.

**July 4, 1981** - Canal Society of New Jersey, New York Harbor Tour on the "Miss Moore" party boat. Contact Bill McKelvey, 103 Dogwood Lane, Berkeley Heights, NJ 07922.

Mr. and Mrs. Edward W. Dehm, who have enjoyed boating vacations in England, would like to compare experiences with others who have had similar experiences. Their address is 261 Deer Meadow Lane, R.D. No. 1, Chatham, MA 01633.

Jim Lee was recently selected by the American Association for Local History to receive a certificate of commendation for collecting, preserving, and disseminating the history of the Morris Canal. Mr. Lee is particularly noted for his work in preservation of Inclined Plane No. 9W.

## "POUND LOCKS"

We have frequently encountered and wondered about the term "Pound Locks" in reading about the canals of antiquity. Charles Hadfield, English canal historian, recently explained this for us. We quote Hadfield: "Pound-Lock is the ordinary term used over here to mean a lock chamber with gates (of any design) at either end. In other words, a lock that 'impounds' water. It is the opposite of 'flash lock', which uses only one set of gates."

Hadfield also defines other terms used abroad which are unfamiliar to us Americans: "Flash-locks used loosely to mean any kind of lock with only one set of gates. I myself distinguish three kinds: (a) true flash-locks - a navigation gap in a river weir, closed by a number of (removable) vertically-rising paddles held in a gate-type framework across the opening. (b) Staunches - the opening has a vertically-rising guillotine gate. (c) half-lock or watergate - a single pair of mitre gates, or just one, which are winched back against the current". Thanks much, Charles, for clearing up this mystery!

Bill Shank

## Albemarle & Chesapeake 125th Anniversary



Mrs. Elizabeth P. Sanderlin displays her 1856 Currituck County Canal Co. stock.

In September 1980 the 125th anniversary celebration of the beginning of construction of the Chesapeake and Albemarle Canal was held at the Currituck County North Carolina High School at Coinjock. This is the town in Currituck County which is bisected by the North Carolina Cut of the A & C Canal. Work first started on the canal construction at this point in 1855 although the canal was not opened throughout until their little dispatch steamboat CALYPSO made the first transit on 9 January 1859, towing the iron barge ENTERPRISE.

Currituck residents brought in a variety of pictures and documents to display in the occasion and an exhibit was set up at the school. One of the most interesting items exhibited at the affair was an original 1856 stock certificate of the Currituck County Canal Company of 1856, owned by Mrs. Elizabeth P. Sanderlin. Curiously, the certificate is embellished with an engraving of a Long Island Sound "palace" steamer, probably the EMPIRE STATE of the Fall River Line, considerably grander than any little paddler that ever passed down Albemarle Sound way.

(Provided by Alexander C. Brown, Director, ACS. Mr. Brown's new book on the Albemarle and Chesapeake Canal, entitled the JUNIPER WATERWAY, will be published later this year.)

## I. & M. Canal Park

The Heritage Conservation and Recreation Service (HCRS) of the U.S. Department of the Interior is conducting a \$150,000 study of the Illinois and Michigan Canal as a recreational facility. The study is expected to offer different strategies for the development and management of the canal as a linear park.

The entire 100-mile stretch of the canal from Chicago to LaSalle, Illinois is being studied. At present the canal is managed by the Illinois Department of Conservation as a state trail. However, proponents of the I & M Canal park fear the budget crunch in the federal government and other cutbacks in funds could jeopardize the linear park plan in spite of widespread public support.

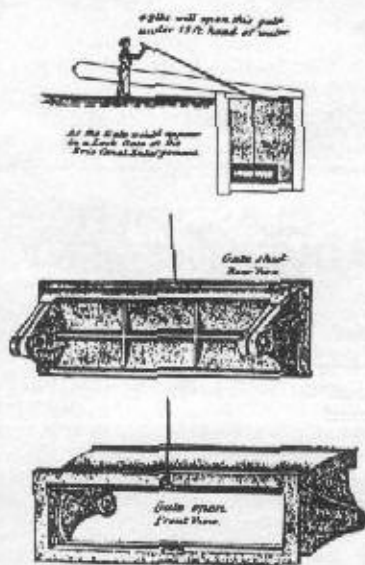
At present, there is no actual plan for the management of the canal, only a concept. The federal government would manage most of the public lands in cooperation with the State of Illinois. Also proposed is the designation of the Illinois and Michigan Canal as a National Historical Park or National Historic Trail. Bills to that effect were introduced in Congress in the past, but have not yet been enacted. The cost of developing the park has been estimated at as high as \$30 million.

Members of the American Canal Society who support federal funding for the preservation of the Illinois and Michigan Canal are advised to contact their own Congressmen and Senators. Letters of support should also be sent to: Heritage Conservation and Recreation Service, Lake Central Region, Federal Building, Ann Arbor, Michigan 48107.

(Reprinted with permission from the Illinois Environmental Council News, Submitted by Joe Taylor, Aledo, Illinois.)

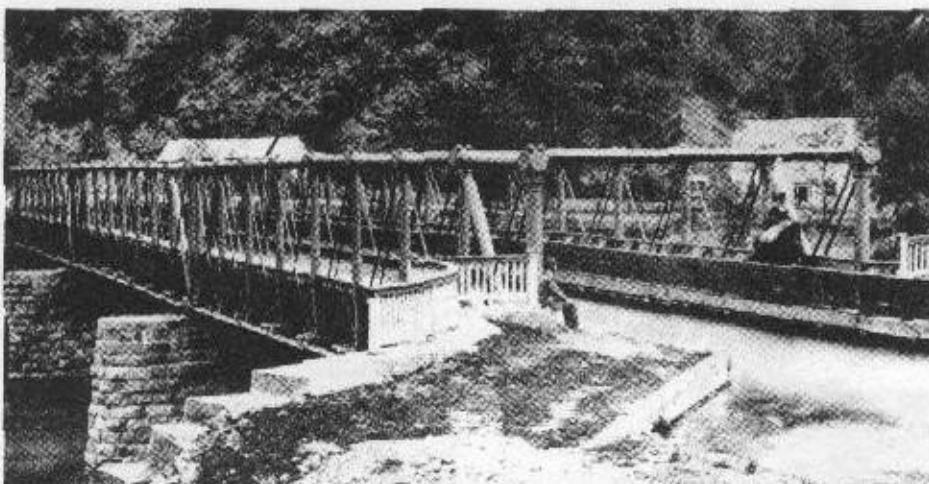
### QUADRANT SLIDE GATE.

G.W. Hilbreth, Patentee.  
LOCKPORT  
N.Y.



Old patent drawing of George W. Hilbreth's canal gate valving arrangement as used on the historic Illinois and Michigan Canal in 1847. Hilbreth's patent was successfully contested by George Heath of Little Falls, N.Y. in 1849, who received part of the proceeds of Hilbreth's sale to the I. & M. Canal. (Information and drawing provided by Mary Yeater Rathbun, Canals Interpreter, Illinois Department of Conservation.)

## "MYSTERY PHOTOGRAPH"



Which of you readers can provide the answer to the use and location of this canal structure? We know, but would like to have more details on the builder, dates of building, what remains, etc. The photo was provided by Robert M. Vogel from his stereoscopic view card collection.

Addison W. Austin, Alden W. Gould, and Charles F. Hruska all correctly identified the photograph in the November 1980 issue of *American Canals* as the Windsor Locks of the Enfield Canal in Connecticut. Mr. Hruska provided additional information on the canal from "ABANDONED NEW ENGLAND—ITS RUINS AND WHERE TO FIND THEM" by William F. Robinson (Boston: New York Graphic Society, 1976):

"The old Enfield Canal, while primarily a power canal, still locks boats through on the Connecticut River in Suffield and Windsor Locks, Connecticut. This comparatively small, 5 1/2 mile canal was built around the Enfield Rapids to lure boats from turning off the Connecticut River at Northampton onto the soon-

to-be-completed Farmington Canal. When it opened in 1829, the already large river traffic lined up to ascend its three tiers of locks, pass up the 80-foot wide canal bed, and cross over an aqueduct before clearing the northern locks to reenter the river. The Enfield was successful, and the town of Windsor Locks that sprang up at its southern end became a favorite haunt of rivermen as it mushroomed into the gambling, drunkenest, bawdiest town in New England.

"The coming of the railroad in 1845 put an end to all this. Outmoded, the canal fell into disuse until it was repaired later in the century for use as a power canal for local factories. Today, a few boats every year still lock through New England's most impressive remains of the canal era, the flight of three locks at the Canal's southern end. Moving up the canal into Suffield, they pass over New England's last complete canal aqueduct, standing 60 feet wide and 104 feet long, as it carries the canal bed high above the rushing waters of Stony Brook below.

"Completed 1829. Still in use although primarily a power canal. 5 m from Windsor Locks N to Suffield, Conn.

"Windsor Locks. Canal and set of three locks. Off Rt. 159 just N of Rt. 1-91. Flight of 3 locks, 90 ft. long, 20 ft. wide, lifting boats 10 ft. each. Separated by 50 ft. pools for passing. Canal continues N through town.

"Suffield Aqueduct, northern lock

From Windsor Locks drive N on Rt. 159, crossing RR tracks into Suffield. 1 m beyond tracks cross bridge. Take 1st right (E) onto Paper St. Descend to end of paved road. Park. Follow rd. to stream. 100 yds; downstream is Stony Brook Aqueduct, 104 ft. long. Return to Rt. 159 and continue N to Rt. 190 jct. Just S of jct. take road E to river. Park and walk to riverbank and northern lock."

As you can see, in 1976 the Enfield was still working, or at least Robinson thought so. However, in September 1980, it looked to me as if silting had made it impossible to close the gates, and I doubt that they could now be closed. There are also a number of swing drawbridges over the canal that serve as entrances to the factories using the canal's water and quite a few of these look as if they were now immobile.

{Submitted by Charles F. Hruska, ACS, 2074 Cropsey Ave., Brooklyn, NY 11214. ACS readers are encouraged to see *ABANDONED NEW ENGLAND* for more details on this and other New England canals.}

## Canals and the Energy Crunch

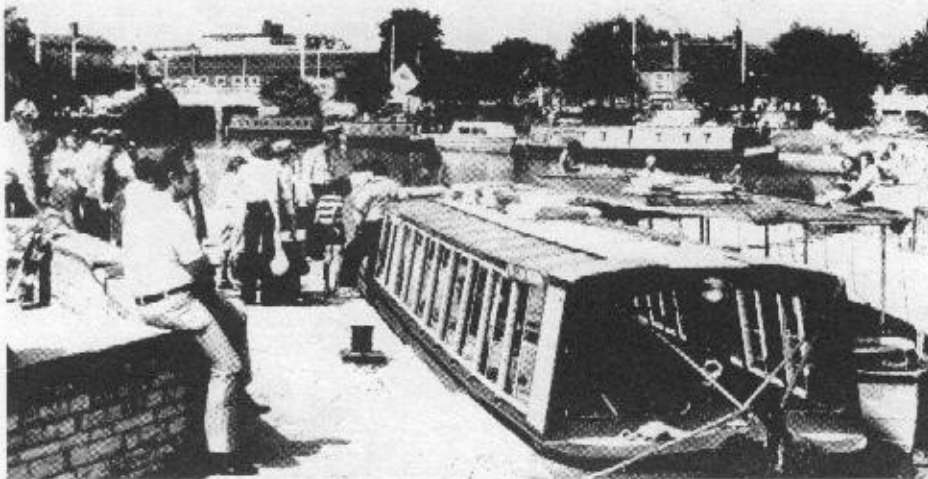
(Continued from Page Three)

for sluices, wing dams and other streambed sites, which should be thoroughly documented if the project is actually begun.

But rebuilding small dams associated with old canals is nothing compared with new big dams, which can destroy miles of canals and free-flowing rivers in one fell swoop. The frontier days of big dams are over, and as required of a democratic society, the momentum has to be balanced by pressure to preserve at least the best of the remaining streams. Certainly, a Corps of Engineers Colonel should no longer say, as he did in 1945: "You can never stand still in development of natural resources" (Tulsa District History, C of E, 1975). Even so, the energy crunch is putting more and more pressure on the as yet undeveloped hydroelectric sites, so it is even more important to keep watch over those whose misguided development would be disastrous. Hundreds of potential sites have already been listed in the 1979 Preliminary Inventory of Hydropower Resources; at least 34 of those listed for Virginia would affect historic canal sites. These regional reports are available for study in Corps of Engineers offices around the country and may be purchased in microfiche at \$3.50 per region from the National Technical Information Service, 5285 Port Royal Road, Springfield VA 22161. Those regions of most interest to canal people are New England (Region 1); NY, NJ (2); MD, PA, VA, WV (3); the South (4); and the Midwest (5).

(With thanks to E.F. Wehlage of ISGE, E.L. Gray of DOE, E.S. Powers of SPOOM, Lew Richardson of ACS, and others.)

## SQUIRES — CANAL RESTORATION ADVOCATE



The restored Bancroft Basin, formerly a mud-filled blot on the landscape, close to the Shakespearian Playhouse at Stratford on Avon, now a popular assembly area for the colorful narrow boats of the Avon Canal and Avon River Navigation. (From Roger Squires slide-tape lecture, now available at ACS headquarters in York, Pa.)

The gentleman whose photo appears on the front page of this issue rates more than passing attention from any American canal buffs who are concerned about preservation and restoration of historic canals. Born in Welwyn, Hertfordshire, England, January 1940, Roger was early exposed to canals, living as he did in the county through which the Grand Union Canal wends its way.

Roger was graduated from Birkbeck College of the University of London with a B.S. in Geography. At the same institution he gained his M.S. in the Economic Geography of the USA, and finally, his Ph.D., with a thesis evaluating the Waterways Restoration Movement in Britain, Ireland and the USA. Part of this thesis was recently published (1979) by Moonraker Press as a 185-page hardback, entitled "CANALS REVIVED". He is presently working on a book entitled "THE NEW NAVVIES", due for publication in 1982. He is a regular contributor to various waterways publications in the United Kingdom, and has written the

"DRIFFIELD NAVIGATION GUIDE" and other pamphlets on canals and waterways of England.

As though this were not enough for an ardent canal buff, Roger is also President of the Waterways Activities Group, based in Birmingham, and an active member of IWA and IWPS, as well as some 15 individual canal societies. His regular title (at the job for which he is paid) is Principal Personnel Officer with the Civil Service Department of the government in London. He is also a Fellow with the Institute of Personnel Management. He and his wife live in a restored Bailiff's Cottage, 4 Manor Way, Beckenham, Kent BR3 3LJ. We are proud indeed to have Roger as our ACS Director for the United Kingdom!

He is presently master-minding a canal tour and lecture series for both British and American canal enthusiasts, which was outlined in the flyer sent with your last issue of AMERICAN CANALS, scheduled for August 1 through 16, 1981.

## Letters to the Editor

Recently reading Howard Pyle's Classic, "The Merry Adventures of Robin Hood" (that Pyle placed in 12th Century England), I came across an interesting passage: "... till at last they came to a wide, glassy and lily-padded stream." (sounds more like a canal than a stream!) "Here a path stretched along the banks, on which labored the horses that tugged slow-moving barges, laden with barley meal, from the countryside to the town..."

So far as anyone can prove today, "Robin Hood" is little more than a fictional character. He doesn't even have as much going for him as does "King Arthur", a Post-Roman period British chieftain (not a Medieval king as Mallory wrote) fighting against a Saxon takeover of his area. Still, Robin Hood may be based on some historical fact(s).

That being the case, did 12th Century England, at least in the area of Nottingham (about 100 miles NW of London), have canals?

Or did Howard Pyle (1853-1911), an American with (probably) some knowledge of canals, use "poetic license" to spice up his novel with a reference to a canal-like stream and an obvious towpath?

(Submitted by Edward Boss, ACS, 345 E. McMurray Rd., McMurray, PA 16317.)

Re the double masonry culvert over Turtle Creek, Shelby County, Ohio, no doubt you know the article in Frank Travorrow, *Ohio's Canals* (n.p., c. 1973), 51. On the Wabash and Erie in Indiana there was, reportedly, just one but it apparently no longer stands. My forthcoming (?) article, "Culverts on Indiana Canals, 1832-1862", will provide some standard engineering guidelines on the relative dimensions of that type of culvert, as well as others, but 186 feet is very long. Certain that's correct?

(Dennis K. McDaniel, the Peale, Baltimore's Historic Museum, 225 Holliday St., Baltimore MD 21202.)

(The following are excerpts from a letter by Ronald D. Reid, P.E. of 573 Marragansett Dr., Tallmadge, OH 44278.)

As a member of the Canal Society of Ohio, I just recently became chairman of the Restoration and Engineering Committee of the Cuyahoga Valley Group of the CSO. We shall be aiding the National Park Service in their efforts to restore several miles of the Ohio and Erie Canal within the park, which presently is maintained only as an hydraulic race for steel mills in Cleveland.

I would appreciate the addresses of any canal buffs rebuilding old locks.

## Canal Water Flowing at Freemansburg

As the song says, "It's been a long time coming," but Freemansburg's \$80,000 Lehigh Canal restoration project has finally been completed and water is flowing in the canal again.

Damaged in 1972 when Hurricane Agnes breached a section of the bank just west of Monroe Street, water levels were too low for canoeists to use the canal in summer or for ice skaters to use it in winter. Stagnant water beyond the breach was a breeding ground for mosquitoes.

At the prodding of canal buffs such as Freemansburg resident Charles Derr and other concerned citizens, Borough Council courageously decided this year to do something about the situation. The action was courageous because Freemansburg is not an affluent community, but with the help of state and federal grants, it was able to proceed. Even with those grants, Freemansburg had to go into debt to meet its commitment to the project.

Work got off to a slow start in the summer of 1980 because of heavy machinery getting stuck in the mud, but the contractor, Kichline & Montgomery of Bethlehem, has done an excellent job. The canal bed was dredged to its original depth, the banks have been reseeded, the breach repaired with a clay plug, and a rotten wooden dam at the canal's Eastern end has been replaced.

Esthetically, Freemansburg's section of the canal is one of the most beautiful spots in the area, with a view from the canal park that almost transports one back into the 19th century.

There is still a lot to be done to bring the rest of the Northampton County section of the canal up to the quality of the Delaware Canal. Easton and Freemansburg have recognized the canal's value, but the Bethlehem and Bethlehem Township sections are in sorry states. The city section is plagued by heavy silt, and the township section doesn't even have water in it.

To restore the entire canal to its former glory is a project that should be pursued by the state and counties involved. It would provide citizens of the Lehigh Valley with a convenient and scenic recreation area. Little Freemansburg has shown the way.

(From Allentown Morning Call)

## CLASSIFIED ADVERTISEMENT

Two classic canal novels by Samuel Hopkins Adams: *Canal Town* (1944) \$10; *Banner by the Wayside* (1947) \$6.

*The Guinness Guide to Waterways of Western Europe* (McKnight), inc. U.K. Beautiful maps, photos, hard covers. Outstanding, 240 pp., \$28.

*Canal* (Burton & Pratt). Excellent photo coverage of Brit. canals, hard covers, 96 pp., \$14.50.

*Canal People* (Hanson). The best on the history of the boatmen of the waterways of Britain. Hard covers, 224 pp. \$18.50.

*Shell Book of Inland Waterways* (McKnight) The most comprehensive contemporary coverage of the U.K. Hard covers, \$19.95.

(Add \$1 per order for shipping. American Canal and Transportation Center, Box 310, Shepherdstown, WV 25443. British canal and industrial archaeology book listings also available on request.)