

AMERICAN CANALS

BULLETIN OF
THE AMERICAN CANAL SOCIETY

BULLETIN NUMBER 14

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

AUGUST, 1975

“CAPTAIN’S CORNER”

The American Canal Society announces the first President's (ACS) awards for outstanding service to the American Canal Society and/or its objectives in the preservation of canals, canal research and the dissemination of canal information. Others will follow. Each of the recipients will receive a presentation set of a matched silver and bronze Franklin Mint Medal Commemorating the Anniversary of the Completion of the Erie Canal. (These sets were given to the American Canal Society through the generosity of the Franklin Mint, a bronze mint medal as announced elsewhere in the August issue of *American Canals* is available to members of the American Canal Society and their friends.) The recipients are:

William E. Trout, III, PhD — A founder of the Society, its Vice-President/Treasurer, a director of ACS and Associate Editor of *American Canals* and Chairman of the Canal Parks Committee, for his efforts in the creation of Parts One and Two of *The American Canal Guide*.

William H. Shank, P.E. — A founder of the Society, its Vice-President/Secretary, an ACS Director, for his work in the creation of the first 14 issues of *American Canals* as the Production Editor of our quarterly publication.

William O. Douglas, Associate Justice of the Supreme Court of the United States — An ACS Director, for his outstanding leadership through the decades to canal enthusiasts, preservationists and conservationists everywhere and, specifically, for his successful efforts in the 17-year battle to create the Chesapeake and Ohio Canal National Historical Park.

Peter Stott — ACS Director and Chairman, Canal Index Committee, for excellence in canal research and his efforts in the acceptance of the Universal Transverse Mercator grid system in the Federal Government. (The American Canal Society was one of the first organizations in the U.S. to accept this system.)

Alden W. Gould — ACS Director and Member, Canal Index Committee for excellence in canal research and reporting.

Sets of these medals have also been presented to the Canal Museum at Syracuse, New York and to the Canal Society of New York State for their collections.

ACS Member Edith McNally suggests that ACS members and others should index their collections and make the index known to organizations such as ACS. We agree, and note in addition that all too often canal collections are lost to posterity because the owner did not decide in advance what should be done with his canal information. We urge that each person who has a canal collection, regardless how modest, should make arrangements for the collection to be

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Canal Boat Construction Index

The American Canal Society is pleased to announce the initial publication of the Canal Boat Construction Index.

The Index gathers together references and information on canal boat plans, photos, literature, models, planned constructions, completed constructions, and potential sites.

Since 1967, interest in reconstructing authentic boats has grown steadily, as part of the National trend to restore, reconstruct, and re-live our heritage. Many inquiries have been received, and this Index will simplify responses to questions.

The objective is to insure that reconstruction efforts result in constructions which are authentic in design and construction. Nothing can damage our heritage more than a poorly crafted, non-authentic 'boat' which deceives the public.

The Index was prepared by the ACS Canal Boat Committee, chaired by Carroll M. Gantz, with John Lamb, Gale Hartel, and Charles Derr as committee members.

Copies of the Index are available from ACS Vice President and Treasurer Dr. William E.

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ERIE CANAL MEDAL

For the past several years, The Franklin Mint, the world's largest and foremost private mint has annually issued a series of medals commemorating significant persons, places and events. These medals, termed Special Commemorative Issues, are available only to a closed group of established collectors who, prior to the start of each year, enter a standing order for all such medals to be issued during the next 12 months. The medals are not available except to SCI subscribers and through the sponsoring organization associated with the issuance of each medal.

The American Canal Society is now the sponsoring organization of such a medal — The Commemoration of the Anniversary of the 150th Year of the Completion of the Erie Canal. The design was worked out with the approval of the society, one side depicting the celebration of the Opening of the Erie Canal and the other with the logo of the American Canal Society showing the continents of the Americas. The result is a beautiful medal, of which we are quite proud.

Through a special arrangement with The Franklin Mint, the American Canal Society announces the minting and sale of the medal for ACS, to coincide with the 150th Anniversary of the Completion of the Erie Canal in October 1975. This Franklin bronze mint medal, measuring 39 mm in diameter — approximately the size of a U.S. silver dollar — may be purchased for \$3.50 (plus 50c) mailing charge (total \$4.00) from; American Canal Society, Box 842, Shepherdstown, WV 25443. Allow two months for delivery.

“PEREGRINE PROLIX” ILLUSTRATED



This rare photograph, showing a Pennsylvania Packet Boat on the “Main Line” Canal at the old Rockville Bridge north of Harrisburg, is the cover illustration for a new book entitled “Journey Through Pennsylvania-1835 by Canal, Rail and Stage Coach.” Just released, this 96-page publication is a complete reprint of Philip Nicklin's non-fiction classic, originally titled (1836) “A Pleasant Peregrination Through the Prettiest Parts of Pennsylvania, Performed by Peregrine Prolix.” It is profusely illustrated with drawings from the pen of the late canal-illustrator, Philip Hoffmann. Available for \$3.50 from American Canal and Transportation Center, 809 Rathton Road, York, PA 17403. (Photo courtesy Dr. Ernest H. Coleman.)

American Canals

BULLETIN OF THE AMERICAN CANAL SOCIETY

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.

ACS President and Editor-in-Chief — Capt. Thomas F. Hahn, USN (Ret.), Box 842, Shepherdstown, W.Va. 25443.

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

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

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

Chairman, Canal Bibliography Committee, ACS Director, Harry L. Rinker, 39 West Springettsbury Ave., York, Pa. 17403.

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

Canal Calendar

Sept. 14 — Delaware & Hudson Canal dedication of plaque given by Ulster Co. Meet at Grady Park, High Falls, NY at 2 p.m. Tour of High Falls Locks and D & H Museum follows.

Sept. 20 — Chesapeake & Ohio Canal 8-10 mile Study Hike. Meet at 9:30 a.m. at Tonoloway Picnic Area, Hancock, MD; bring lunch.

Oct. 5 — Delaware & Hudson 2-mile towpath walk to Accord, NY. Meet at Alligerville Bridge at 11 a.m. Bring lunch & beverage.

Oct. 18 — Canal Society of Ohio auto trip from Junction, OH north to St. Mary's Aqueduct (Miami & Erie Canal). Rendezvous 9:30 a.m. on Sat., 18 Oct.; stay in Lima overnight; start north again on Sunday, 19 Oct. from Deep End State Park.

Nov. 1 — Chesapeake & Ohio Geology 8-mile Study Hike. Meet 9:30 a.m. at Point of Rocks, MD RR sta.; bring lunch & binoculars.

Nov. 8 — Delaware & Hudson Canal Historical Society Spring Glen and O. & W. RR hike. D & H Hist. Soc., High Falls, NY 12440.

Canal Boat Const. Index

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Trout, III, 1932 Cinco Robles Dr., Duarte, CA 91010; or from Carroll M. Gantz, 7100 Oxford Road, Baltimore, MD 21212; for a reproduction cost of \$2.50. The Index consists of 23 pages.

Chairman Gantz urges all readers to forward to him any additional information regarding Canal Boat Constructions, that you feel would be helpful to those interested in constructing a boat.

The Index will be updated periodically.

New "Pennsylvania Packet" at Lewistown



The Knox brothers have re-built and considerably improved their canal boat, operating on a restored section of the Juniata Division Canal. As a result they have been busy, running a regular schedule of rides, weekdays and weekends all summer, in an area known as "The Locust" several miles southwest of Lewistown, Pa. Canal boat tours may be arranged by phoning (717) 248-3973 or (717) 242-1768.

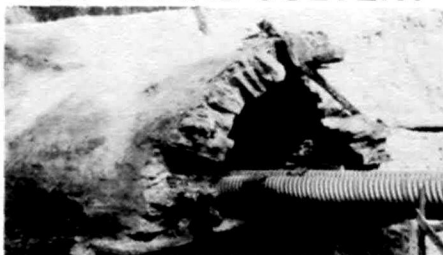
A Lock in the Back Yard

Not long ago we noticed that a family by the name of Gamble had its own lock on the West Branch Division of the Pennsylvania Canal system near Jersey Shore, Pa., so we asked how it was they acquired it and if they knew anything about its history. Marion E. Gamble replied (in part) as follows:

"We purchased Lock No. 30 in 1956. It was on land we bought for a summer place on the river. At that time one side of it was in good shape. The other side had been torn out by the farmer who owned it, as in 1936 the flood washed his farm badly and he used the stones to fill in along the river. In the last five years one corner fell in and part of the side. . ."

"A friend of ours told us this story. A canal boat captain stopped at the blacksmith shop on Thompson Street in Jersey Shore (the building still standing) and asked the blacksmith to shoe his mule. The Captain said the mule was mean but to shoe him any way he could. The blacksmith hit the mule over the head with a hammer and shod him. When the Captain came back the mule was shod but dead."

C&O CANAL CULVERT



We very seldom have the opportunity of seeing the way a culvert was built, but recently we had such opportunity at Culvert #200 (Woodmont), Section #260, 10' span, on the Chesapeake and Ohio Canal, mileage 135.10. The photo shows the barrel of the culvert near where it goes under the berm dike of the canal. Note the original wooden planking of the flooring of the culvert, the tapering of the walls of the barrel and the parging of the outside of the barrel. The modern metal pipes have been inserted to carry water through the culvert during restoration.

CANAL INDEX COMPUTERIZED

The American Canal Society listing of over 300 canals of the Americas (mostly U.S. and Canada) has been punched on IBM cards to make corrections and additions possible without typing up a new list each time. This also makes the data available for an information retrieval system in the future; volunteers and grants for this work are eagerly awaited; (for either, write W. E. Trout, III, PhD, 1932 Cinco Robles Drive, Duarte, CA 91010 who has arranged the present system.)

Copies of the index, now almost six feet long, are available @ \$1 from Bill Trout. Those who ordered copies of the original list in A/C #13 will be sent this one as well. Members are urged to make corrections and additions so that we will not be too long in approaching a complete inventory of American canals. Computer facilities at present are generously provided by the City of Hope Medical Center.

RESTORATION INFO SOUGHT

ACS Member Roger W. Squires, Bailiffs Cottage, 4 Manor Way, Beckenham, Kent BR3 3LJ, England is undertaking a study showing comparisons between English and U.S. canal restorations. He asks that persons having information concerning U.S. restorations provide him with the following information: Starting date; extent of scheme planned; sponsor (federal, state, local, private or an educational/museum project, and sponsor address; progress made in broad terms; completion date.

CAPTAIN'S CORNER

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passed to the proper organization or museum so that material will not be lost or misappropriated.

Thanks largely to the efforts of Bill Naftel, Alden Gould and Bev Morant we have added 15 new canal index forms and 20 new canal structure forms to our inventory of publications now available to the public. ACS Publications List #4 which accompanies this issue of A/C contains about 40 new items available since the last listing.

Tom Hahn

THE GUARD LOCKS AT GREAT BRIDGE

by ALEXANDER CROSBY BROWN

The Albemarle and Chesapeake Canal which connects the waters of the Elizabeth River with those of Albemarle Sound in North Carolina, is a comparative newcomer among Virginia's artificial waterways. Though preliminary surveys were made in colonial days, the canal was not opened to navigation until just before the Civil War. Most of the route used natural watercourses, but it was necessary to dig two land canals, one connecting the headwaters of the Elizabeth and North Landing rivers and another across the Currituck Peninsula at Coinjock.

Construction of the first of these cuts posed a problem. The Elizabeth River is subject to Chesapeake Bay tides, which have a mean range of three to four feet. At the other end of the "Virginia Cut" is the North Landing River, a fresh water tributary of Currituck Sound. The water level in the sound and river is usually unaffected by the winds; however, sometimes strong southerly winds raise the water level in the North Landing River to above normal. Realizing that tides or winds might cause water to range back and forth in the canal, company officials decided to build a water gate or guard lock at the western end of the Virginia Cut, at historic Great Bridge.

Construction began in the fall of 1857. By November, John Lathrop, the company's chief engineer, reported that the lock pit, located about a half a mile west of the village of Great Bridge, was completed and that the piles for the foundation of the lock were being driven. Steam power was used for this purpose, while a steam-driven pump kept the excavation dry. Stone blocks for the lock walls were cut at the granite quarries at Port Deposit, Maryland, and were transported by barge down the Chesapeake Bay to the construction site. When it was completed in 1859, the Great Lock measured 220 feet in length, 40 feet in width, and was deep enough to pass vessels drawing up to 9 feet of water. It was larger than any lock on the Atlantic coast; indeed the only lock in North America that exceeded it in size had been completed in 1855 at Sault Saint Marie between Lake Superior and Lake Huron.

The water gate at Great Bridge was not only the largest lock on the east coast but it also had a



The steamer COMET in the Great Bridge lock in 1895. This rare photograph shows the original gate arrangement and stone work.

system of gates which made it unique. There were two pairs of mitre gates at each end of the lock, but to swing in opposite directions depending on the direction of the head of water. Each gate measured twenty-five by eight feet and was, of necessity, quite heavy. When closed, the two pairs of gates would meet at an oblique angle, the point of the angle facing the prevailing direction of water pressure. If there was high tide in the river and low water in the canal, for example, the gates facing the river would be used.

The canal was used extensively during the Civil War, first by the Confederates and then, after the fall of Norfolk, by the Union Forces. The waterway suffered greatly from hard usage and a great deal of work was required to restore the canal to service after the war. The Great Bridge lock was still in workable condition, but by the autumn of 1866 a serious leak developed in the floor. Because the leak threatened the entire structure, earth dams were built at both ends of the chamber. The water was then pumped out so that workmen could get at the trouble. The com-

pany "spared no expense to do the work quickly" and imported costly labor from New York to complete the project. The lock was closed for more than two months while the leaks were located and stopped.

By 1868 the company's officers realized that the gates, then ten years old, would soon have to be replaced and that it would "be true economy to make them of galvanized iron." There were then no iron gates on any canal in the United States, and company officials were intrigued by the possibility that "if we introduce them . . . we shall be the pioneer in this as we have been so in many other improvements." They therefore invited estimates, but the new gates were not ordered until 1872. Two pairs of iron gates and one pair of new wooden ones were procured at a cost of \$4,800. These were installed the next year.

By the 1900s the canal and its lock, built in 1859, could no longer adequately meet the demands put upon them. Because the company lacked the funds needed to improve the facilities, its directors persuaded the federal government to take over the waterway. In 1912 the United States purchased the Albemarle and Chesapeake Canal, its lock, and all the company's other properties. Ever since, the canal has been operated by the Corps of Engineers, United States Army. It is a vital link in the Atlantic Intracoastal Waterway, providing a protected route for small craft from Maine to Florida.

For the first five years after the government took over, the lock at Great Bridge continued in operation. By 1917, however, the army engineers decided to do without the lock, and on April 1 of that year they opened the lock gates. As expected, tidal water from the Chesapeake surged into the Virginia Cut, but the flow was not strong enough to impede traffic. Once the lock gates went out of operation, the engineers decided to remove the lock entirely - gates, sills, and floors. Only the stone north wall, 220 feet long, was kept for use as a wharf where passing vessels could moor. A side cut was dug farther up the Elizabeth River, making it possible to bypass the lock entirely.

Criticism of the new arrangement was not long coming. Finally the Corps of Engineers bowed to the pressure brought by the property owners and the duck hunters and recommended the construction of a new tidal lock, six hundred feet



The Albemarle and Chesapeake Canal Guard Lock at Great Bridge, Virginia. Looking west toward the 600-foot chamber. In the foreground is the east end of the lock leading to the Virginia Cut. In the distance can be seen the west end gate opening on the Southern Branch of the Elizabeth River. Note the reversible head double gates in the foreground. The lock is being closed by inside gates, showing the water lighter at that moment in the Elizabeth River. The outside gates are folded back in recesses in the walls. (Photograph, A.C. Brown.)

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Landsford Canal Park, Catawba, S.C.



Looking south, with Lock Two in the foreground, Lock Three in the distance, a two-lock combination. Note bridge of lower end of Lock Three. (Gould photo.)

Alden Gould is becoming one of the best field reporters and photographers of our volunteer editorial staff for "American Canals". He has a habit of turning up almost any place in the country where there is a canal restoration (or destruction) project, and sending us full details, with excellent photos, most of which he makes personally. The accompanying pictures were sent to us by Alden as a result of a recent visit he made to the Landsford Canal State Park at Catawba, South Carolina.

Alden says that the entire 200-acre site has been turned into a beautiful park during the past year or so. All trees have been removed from Locks Number One, Two and Three, and the lock areas are being completely cleared of underbrush. The area above the three locks is also in excellent condition. The hiking trails are wide and mowed. He rates the park "A-1" and reports the canal structures to be in very good condition.

GREAT BRIDGE GUARD LOCKS

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long, at Great Bridge. In 1930 Congress appropriated half a million dollars to build it. They covered the floor of the lock with loose gravel rather than masonry, and they used interlocking steel sheets for the walls instead of stone or concrete. However, they cut no corners in building the gates. These were substantial steel structures, vertically framed for rigidity and weighing forty-five tons each.

The new lock was formally opened on June 16, 1932. The lock is six hundred feet long and seventy-five feet wide and is sixteen feet deep over the mitre sills. Like its predecessor, it is equipped with a reversible double gate system. Extensive repairs were undertaken in 1973, further improving the lock's usefulness. At that time a new north wall of precast concrete panel was installed, and a floor of concrete slabs was laid over the original gravel bottom.

The present lock has an enormous chamber, in comparison to the original 220-foot lock, and remains the largest one on the Atlantic seaboard. The guard lock at Great Bridge is a monument to both the ingenuity and wisdom of Virginia's nineteenth-century civil engineers.

(This article is a condensation of a 10-page article, fully illustrated, from the Autumn 1974 issue of *Virginia Cavalcade*, available for 75c from the Virginia State Library, Richmond, VA 23219. Alexander Brown is an ACS director and the authority on both the Dismal Swamp Canal and the Albemarle and Chesapeake Canal. Editor)



The masonry of Lock Number Two is in excellent condition. In the foreground is the unusual, curved breastwork of Lock Number Three. (Gould photo.)



Guard Lock near the dam and river at Landsford Canal, looking north, during a flood 3/22/75 which completely filled the lock. (Photo by Jim Work, Park Superintendent.)

Americana, a publication of the American Heritage Society, features "Canals of Ohio" in its July, 1975 edition, and includes a listing of places in the Northeast where one can still ride a boat, back of mules or horses, along historic canals.

CANAL GUIDE #2 NOW AVAILABLE

The *American Canal Guide Part 2* is now available from Bill Trout, 1932 Cinco Robles Drive, Duarte, CA 91010 @ \$1 ppd., a bargain, with 12 pages full of photos and maps. Part 2 will not be free with membership since we want the Guide to pay for itself, so order your copies using the enclosed order form and get a few for your friends. Part 2 covers the forgotten but re-emerging southern canals, in North and South Carolina, Georgia and Florida, which have been neglected so long by canal enthusiasts. Much of the work on Part 2 was done by Alden Gould and Lew Richardson, pioneers in the systematic study of the southern canals.

We need co-editors for future sections of the guide. Let us know if you would like to help work up your part of the country. Meanwhile Bill Trout will continue to work on the neglected areas and would like to be in contact with anyone who may have a chance to visit abandoned locks in Texas, Alabama or Kentucky.

WEST VIRGINIA NAVIGATIONS

(The following is a letter written by ACS V. P. Dr. Bill Trout to Mr. John Hauptman, Asst. Reg. Dir. NE Bur. of Outdoor Recreation.)

I have just learned about your study of the *New River* gorge in West Virginia. I hope that this study will not neglect the usefulness of the remains of any early navigation improvements in the river bed such as sluices, wing dams, hauling paths and eye bolts used by batteaux traffic during the last century. Unfortunately, I have not had the chance to do a study of navigation on the *New River* and have not learned of any such study, so I am unable to supply you with any reliable information, other than recent navigation improvements for batteaux and steamboats above Hinton, constructed by the Corps of Engineers in the 1870's and 1880's. If there were any navigation improvements below Hinton they probably would have been of the type discussed in these Corps of Engineers reports. Batteaux went in surprisingly rough places so it should be worthwhile keeping an eye out for possible cultural remains of this type, which are usually overlooked, but which would be particularly valuable in a park where they would be genuine historical points of interest and data for the interpretation of the river's cultural history. Most of these improvements would have been simple shott wing dams and sluices, illustrated by the enclosed copy of a drawing in the 1878 Corps of Engineers Report; this site is near Radford.

I'm sure you won't neglect the James River & Kanawha Turnpike, constructed by the James River Company in the 1820's and superseded by U.S. 60 and now Interstate 64. I suspect that there are some relatively undisturbed stretches of the turnpike along the north rim of the gorge, but someone should investigate this more thoroughly. The route based on a plan in 1821 is shown on the enclosed working map but the route could have been changed. It would be worthwhile to search for an original stretch to use as an historic roadside park.

Lastly, I suggest that you do not neglect the historical value of the plans of the James River and Kanawha Canal Company (which as the James River Company built the turnpike) to complete the canal across the mountains, and down the *New River* Gorge. This is not only a usefully romantic story of man's ambition but it also has left us some useful maps of the gorge made by the surveyors of the canal route. If you need them there are some in the Virginia State Library.

CUMBERLAND AND OXFORD CANAL HISTORY

(This is part two of a three-part article)
by JOEL W. EASTMAN

Reprinted from *Maine Life*, October 1973.

Then, Irish laborers were brought in to do the excavation work with picks, shovels, and wheelbarrows; they and their families lived in rude "shanties" along the route while the work was underway. As the canal neared completion in 1829, the company's capital was exhausted, and officials once more went to the Legislature for aid, this time requesting authorization which would permit the Canal Corporation to borrow money for the completion of the work if it could not "otherwise be obtained" and to pay in excess of 6 per cent if necessary. With permission granted, the canal borrowed \$30,000 from the Canal Bank, (the only source which would lend the amounts needed,) in July, 1829, another \$30,000 in August, and finally \$15,000 in October, which was apparently enough to get the canal completed so that it could open the following year.

If it is not difficult to understand why costs escalated as the actual digging of the twenty mile canal began. There was a lot of earth to be moved even though the canal was only 18 feet wide at the bottom, 34 feet wide at the top and designed to carry just four feet of water. The workers often ran into ledge and large boulders, and on the upper reaches of the Presumpscot, the canal bed had to be blasted out of solid rock. The few hills and ridges which could not be avoided, required laborious digging to get the route through.

The actual excavation was only part of the job, for twenty-eight locks had to be built to lift the canal from tidewater to the level of Sebago and Long ponds, 280 feet above sea level. A 100 foot aqueduct had to be built to carry the canal across the Little River in Gorham and culverts constructed to allow smaller streams to pass under the waterway.

The builders took as many cost-saving steps in the construction of the canal as possible. The route was well surveyed, eliminating the need for any locks merely to raise the canal over obstacles. The route followed the contours of the land, using high ground as the berm as much as possible so that one wouldn't have to be built in addition to the towpath. From Saccarappa to Sebago the canal, for the most part, stayed on the level flood plain of the Presumpscot River – sometimes running along the river bank and at others taking a more direct route some distance away if the terrain permitted.

Economy also was the watchword in the construction of the locks. The ends of the upper and lower guard locks were built of cut granite blocks, but the remainder of the locks were built of wood with "necessary stone walls." Once the lock pits were sunk, the sides were lined and the ends built up with field stone or rough granite slabs – whichever was readily available. Then high, upright timbers were sunk along the sides to which plank siding was attached with wooden pegs. The twin lock gates at either end were also built of wood and fitted with small iron sluice gates mounted on a long metal rod which was turned by means of a lever at the top of the lock to open the small gates and let the water in or out of the lock.

Lack of capital made necessary the deletion of the section of the canal from Harrison to Thomas Pond in Waterford – and an extension through Painter and Great Rattlesnake ponds overland to Thompson's Pond which the survey engineer had suggested – so the canal never physically entered Oxford County, though it drew much traffic from Oxford County towns and villages.

If the Canal Corporation had attempted to build the canal boats, as well as the waterway, the

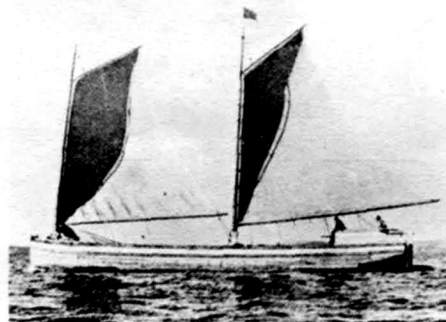


An abandoned C. & O. canal boat, with masts still standing, on the Standish shore, east of Sebago Lake Station, about 1915.

canal probably would never have opened at all, but this was left to private enterprise, as was the practice with most canals. A great number of enterprising businessmen and individuals in the area responded, building scores of boats by the time the canal opened in 1830; there were 100 in operation by 1831 and 150 in use in the peak years of the waterway. The opening of the canal created a whole generation of inland shipbuilders, captains and sailors out of farmers and lumbermen along the route of the canal and around the lakes – many of whom continued to navigate the lakes after the canal closed.

It is not clear who designed the prototype C & O canal boat, but all of them seem to have been built along the same general lines on a plan dictated by the physical dimensions of the canal and its locks and by the other waters in which the boats had to navigate. The depth of the canal – about three and a half feet – required that the boats be flat bottomed and of very shallow draft, and the internal dimensions of the locks – about 10 by 70 feet – fixed the maximum external size of the craft, most of which were 10 by 60 to 65 feet, varying in capacity from 20 to 30 tons. And yet, unlike most canal boats, C & O craft were not merely horse-drawn barges, for when they left the canal and entered Sebago – or Portland harbor – they had to navigate like any other boat, and so they were equipped with twin masts and sails and twin centerboards for sailing. The masts had to be set in a pivot so that they could be lowered to clear low bridges along the canal, and the centerboards could, of course, be raised to clear the shallow bottom of the waterway. Finally, the use of the twisty Songo River on the way to Harrison determined another feature of the canal boats – a walkway along each side for use when poling the craft like a keel boat.

The resultant canal boat was of a unique design which came to be called a "Portland Boat" –



A Cumberland and Oxford canal boat, under sail, probably in Sebago Lake.

perhaps by those who saw them up and down the Maine coast – or a "Long Pond Boat" – by those in the area who knew the reason for the peculiar construction. The canal boats have often been described as awkward, clumsy affairs; but this is only true in comparison to the handsome sloops and schooners which plied the coastal waters of the State. When matched against the fat, boxy, horse-drawn barges which operated on most American canals, Long Pond boats were sharp, racy craft, especially under full sail. The canal boats are also often labeled as poor sailers, but one Portland resident stated in 1859 that the boats were noted for their speed, especially against the wind because of their ability to sail nearer to it than other craft. This observer also reported, after a ride in one, that in "going about" the crew raised one of the centerboards and "she turns as quickly as though on a pivot." The canal boats often ventured up and down the Maine coast and to Boston and beyond – there is one report of one traveling all the way to Bermuda. However, a canal boat captain stated that the practice was very dangerous because the boats' long, narrow design was not suited to rough seas.

The backwoods owners and captains were very proud of their boats, and during the first two decades of the canal's operation, at least, they kept the craft brightly painted and decorated. The names chosen for the boats were often just as colorful, including such dignified labels as *Columbia*, *Legislator*, *Republican*, *Leader*, *Independence*, and *Chancellor*, plus the more mundane choices of *Bluebird*, *Peacock*, *Reindeer*, and *Water Witch*. The captains and crews were also a colorful lot – apparently as susceptible to alcoholic beverages, Biblical language and brawling as their saltwater counterparts.

The most elaborate of the canal boats was the *George Washington*, built as a fancy passenger boat and even featuring a bar. It was this craft which was chosen to carry the official party up the canal from Portland to Sebago when it finally opened, with great celebration, on June 1, 1830. Three days later, the first freight boat arrived in Portland carrying 20,000 feet of lumber, ushering in a twenty year period of heavy freight traffic on the canal as the boats moved cargoes of lumber, shooks, staves, cordwood and farm products down the waterway to market, and provisions, furniture, manufactured goods and liquor into the interior. By 1831 there were 100 canal boats in operation, and at the peak of traffic 150 plied the waterway, with tolls on their cargoes going to pay off the interest of the loans which had made the canal possible.

(To be concluded in the next issue)

C.&D. Canal Project

"The Chesapeake & Delaware Canal is a necessary facility in the movement of ships and cargos between Baltimore and the Delaware River Ports. The enlarged canal permitting greater movement of shipping is an important contribution to increased use of the new port facilities accessible in the Delaware River. To date approximately \$98.5 million dollars have been spent on modernizing the Chesapeake & Delaware Canal and that the work is about 88 percent complete.

"This project should be pursued with the utmost effort in order to provide the maximum use as soon as possible. The Delaware Valley Council recommends the appropriation of the \$8.6 million additional funds required to bring the project to fruition."

(John J. McGarry, "Delaware Valley Industry", June 1975)

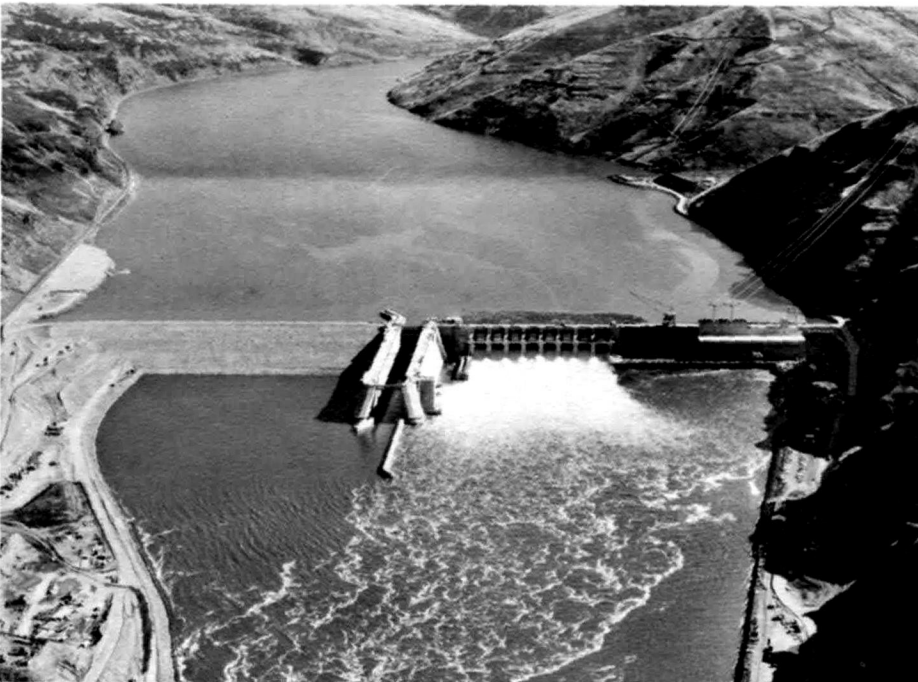
Idaho's Only Seaport



One of the four lock and dam sites dedicated June 18-20, 1975 on the Snake River part of the Columbia and Snake River Transportation System. This "Ice Harbor" dam-lock combination is quite similar to the "Lower Monumental" and "Little Goose" dam-locks, except that the locks are at the opposite end of the dams.

A seaport in Idaho? Surprising as it sounds, Idaho has indeed become a seaport state, with the formal dedication June 18-20th of the 464-mile-long **Columbia & Snake River Navigation system**, from Lewiston, Idaho to the mouth of the Columbia River at Astoria, Oregon, on the Pacific Ocean northwest of Portland, making it the West's longest navigable waterway. Historically, navigation began on the Columbia and Snake Rivers before the white man came. Lewis and Clark used both rivers for their downstream passage in 1805. When settlers came to the area, cargo was carried first by canoe, then by bateaux, later by stern-wheel steam boat, and finally by steel-hulled tugs and barges.

There are eight Corps of Engineers' dams on the Columbia and Snake Rivers between Portland and Lewiston. All of the dams are multi-purpose projects with navigation locks, electric power generation, and fish passage facilities as integral features. The project navigation channel has an authorized depth of 14 feet and a minimum width of 250 feet. The first portion of the navigation system was completed in 1938 when Bonneville Dam was constructed at River Mile 145. The Columbia River below Bonneville is free-flowing to the Pacific Ocean with an authorized 40-foot deep commercial navigation channel from the ocean to the Portland-Vancouver area and an authorized 27-foot deep



Bird's eye view of the "Lower Granite" Lock and Dam on the Snake River. Note that this Corps of Engineers' project differs from the other Snake River structures in that the lock is at the center.

channel to Bonneville Dam which is presently maintained at 17-feet. The slack water created by Bonneville Dam flooded over the early obstructions to navigation at Cascade Rapids where locks were constructed by the Corps of Engineers in 1896.

The Dalles Dam, located at River Mile 193, just upstream of Dalles, Oregon, was completed in 1957. The lake behind The Dalles Dam flooded out the second major historical obstruction to navigation, Celilo Falls. In 1915 the Corps of Engineers completed the **Celilo Canal** around this 10-mile obstruction. Prior to that time, beginning in 1863, a portage railroad had been used to transport passengers and commerce around the falls. Prior to 1863, a wagon road served this purpose. The other two Columbia River dams are: John Day Dam (John Day Lock is one of the highest lift locks in the world - 113 feet) and McNary Dam. The Snake River Dams are: Ice Harbor, Lower Monumental, Little Goose and Lower Granite. While the authorized navigation channel upstream from Bonneville Dam is 14 feet deep by 250 feet wide, there are no navigation canals as such, in the waterway system.

(Submitted by ACS Director Alden Gould from information sent by Duane M. Downing, Chief, Operations Division, Walla Walla District, Corps of Engineers. Sportsmen and other environmentalists have complained about the loss of steelhead trout and salmon fishing while Indian leaders have objected to the waterway project as a violation of ancestral lands. Editor)

ACS SALES CHAIRMAN NEEDED

We sorely need a member with access to a Xerox or copying machine (free on low cost use) who can take over the volunteer job of handling sales of back issues, canal guides, bumper stickers, etc. and also copy on request by members, canal index sheets, the ACS canal listing, and other materials of a preliminary nature which would be available for a reasonable fee to ACS. The copying service would be a most valuable contribution to canal work in the U.S. for it would put to good use some of the unpublished material which members have sent to us, such as Alden Gould's detailed guide to the Cross-Florida Barge Canal; preliminary information from ACS committees, such as the Canal Boat Construction Index, the American Canal Index, preliminary sections of the American Canal Guide, etc.; and information sent to us by agencies such as the Corps of Engineers, which should be generally available. The work of the Sales Chairman can be as valuable as he cares to make it. Anyone interested?

Special Award for British Waterways Board

The British Waterways Board has been presented by HRH the Duke of Edinburgh with a Special Heritage Year Award for Continuing Contribution to Conservation. The presentation took place at Windsor Castle on June 27th.

On the waterways much survives from the 18th century. British Waterways Board has been making a conscious effort to conserve the treasures of which they are custodians. 1974 saw the restoration to navigation of the derelict Ashton, Caldon and lower Peak Forest Canals; in May of this year work was completed on the improvement of a length of the Grand Union Canal near Tring in Hertfordshire. As a contribution to European Architectural Heritage Year, the rehabilitation has been undertaken of several old canal maintenance yards, Brindley's bridge at Great Haywood in Staffordshire, Thomas Telford's aqueduct which carries the Shropshire Union Canal across the A5 Trunk Road, and locks at Bingley in West Yorkshire and at Bratch on the Staffordshire and Worcestershire Canal.

Historic Sites in Stream Beds

by WILLIAM E. TROUT III

Of all the historic features along rivers and streams, those most likely to be affected by channelization, river bed improvement, or emergency flood repairs, are structures in the stream bed itself, such as wing dams, fish dams, sluices, hauling walls, and navigation and mill dam remains. These structures can be found on virtually all of the rivers and streams in Virginia and are important historical remnants of an earlier era in our history, when civilization was oriented toward water transport and water power. These structures are important for our understanding of that era and in addition are of great value as points of interest along canoe trails, scenic rivers, and fishermen's streams. It is important that those who are involved with stream bed projects, learn to recognize historic sites in stream beds, in order to avoid unnecessary and inadvertent damage and destruction. The major types of stream bed sites are described below, using Virginia as an example.

General: Watch out for piles or rows of river stone; for timbers spiked to bedrock, or standing vertically; for metal spikes in bedrock; for stone walls; and for channels cut through ledges or through islands. Most of these structures may be visible only at low water, and may be uncovered or noticed only during work on the stream bed. It is important to be constantly aware of the possibility of damaging an historic site.

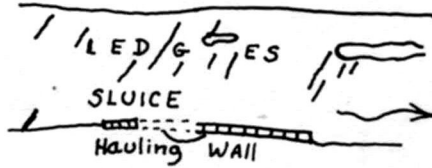


A set of Wing Dams at Eppes Falls on the Appomattox, as drawn by John Couty in 1834.

Wing Dams are long, low piles of river stones or sometimes blasted rock, as large as a man can carry, constructed at an angle to the stream so as to deflect it into a navigable channel 10 to 20 feet wide. In a long rapid there could be a series of such wing dams to produce a continuous channel. In many cases wing dams are in pairs like the arms of a V, pointing downstream with the channel at the point. Such pairs are quite similar and probably not always distinguishable from Indian (or later) *FISH DAMS*, designed to direct fish to the point of the V where they could be caught in a wicker basket. Many fish dams were undoubtedly later used by river batteaux (the typical rough-water craft) for navigation. A representative fish-dam, in Martinsville, Va. has been placed on the National Register of Historic Places (Contact the Virginia Historic Landmarks Commission, 221 Governor St., Richmond, Va. 23219). For a discussion of wing and fish dams on the Potomac, see articles by Horace P. Hobbs, Jr. in the March 1964, June and December 1965, and September 1966 issues of the Quarterly Bulletin of the Archeological Society of Virginia. Few wing dams in Virginia have been investigated although maps are available for some rivers.

Sluices are channels about 10 to 20 feet wide, blasted through rock ledges. In some cases blasting holes can be seen on the rock face.

Hauling Walls are stone walls parallel to sluices, which enabled the boatmen poling upstream to get out and pull their boats up the sluice. Found on only a few sluices, especially on the Staunton between Long Island and Brookneal.



The Hauling Path (or Wall) on the Staunton River at Long Island, constructed by Samuel Pannill in 1827, from rough field observations in 1975.

Stone Dams, such as on the Maury, are quite evident today; however, *CRIB DAMS*, the most common, sometimes leave few traces. These dams were constructed of timber cribbing, like a log cabin, extending across the river, filled with loose stone and planked watertight. There is usually a small ripple at these sites, sometimes large boulders, and occasionally a few timbers still spiked to the bedrock, or the spikes themselves. Some dams had stone abutments on one or both banks. Navigation dams had a lock, of either stone or wood, or a canal and lock, of either stone or wood, or a canal and lock, on one bank, and mill dams had mills. Most of the navigation dam and canal sites are known and have been mapped. There were mill dams on almost every stream in Virginia; many of these sites have been mapped.

(Contact Donald W. Martin, Society for the Preservation of Old Mills, P.O. Box 435, Wiscasset, Maine 04578).

"SERIAL NO. 775"

As we go to press, we have just signed up Member Serial Number 775 in the AMERICAN CANAL SOCIETY. Our membership continues to grow in the United States. We now also have twenty-one active members in England, nine in Canada and a sprinkling of members in various other countries.

"CANAL TOWN DAYS" AT CANASTOTA



This peaceful scene showing the Erie Canal to the left and the Canal Town Museum to the right at Canastota, NY belies the busy scene in July when Canastota Canal Town Days were held once again. For those who missed the event, there is always another year. The Canastota Canal Town Days Committee (122 Canal Street, Canastota, NY 13032) welcomes inquiries and seeks demonstrations or exhibits with a canal or old-time theme for next year's event.

Schuylkill Canal Lock Saved from Destruction



This lock at Schuylkill Haven, Penna., on the Schuylkill Navigation was recently threatened with destruction. Thanks to the efforts of a number of the citizens of the town, the lock has been saved. Steps are now being taken for its registry and preservation, through the Borough and the Schuylkill Haven 225th Anniversary Group, headed by Mrs. June Brubeck, 109 East Main Street, Schuylkill Haven, PA 17972. The Borough is interested in securing land at the lock area, and may place some benches and a foot bridge there for safe viewing. The American Canal Society had earlier recommended that a contractor be brought in to make a cost estimate for the preservation of the lock, following correspondence between ACS President Tom Hahn and ACS member Robert S. Purdy, RD#1, Box 81, Pottsville, PA 17901, who originally alerted us to the possible loss of the lock.

FIRST SUEZ CANAL TRANSIT

(Even though this news is a bit old, we should record for future canal enthusiasts the first passing of ships through the Suez canal since 1967.)

With an assist from tugs, four Egyptian vessels on Nov. 20th, 1974 completed the first commercial navigation through the Suez Canal since it was closed by Arab-Israeli fighting seven and a half years ago. The four ships, which left Port Said on Nov. 16th, docked in Suez Harbor at the southern end of the 100-mile waterway to pick up pilgrims for holy places in Saudi Arabia. The passage took only 16 hours of actual navigation by the passenger ships Syria, Misr and El Sudan and the freighter Aswan Star, but the ships had to stop at Ismailia and in Lake Timsah to await removal of obstructions.

OLD CANAL BOAT?



These photos of what appears to be an abandoned canal boat were taken at Pea Patch Island in the Delaware River at the site of Fort Delaware by Robert J. Purdy, RD#1, Box 81, Pottsville, PA 17901. Mr. Purdy says that pilings held the boat in place, seemingly as a breakwater to protect the nearby dock. Any information on this boat or type would be welcomed by the Editor, AMERICAN CANALS and Mr. Purdy.

Susquehanna and Tidewater Canal Visited by Three Groups



Bill Shank (with bull horn) explains the wooden lining of Lock #12, on the S. & T. Canal, to part of a Smithsonian tour group. This was one of three historically-oriented tours originating in the Maryland area recently, totaling sixty people. (Photo by Lancaster Sunday News)

The old Susquehanna and Tidewater Canal in York County, Pennsylvania, has come in for more than its normal share of attention lately from historians and canal buffs in Maryland. During the past month three different groups have toured its ruined locks and levels, from the Mary-

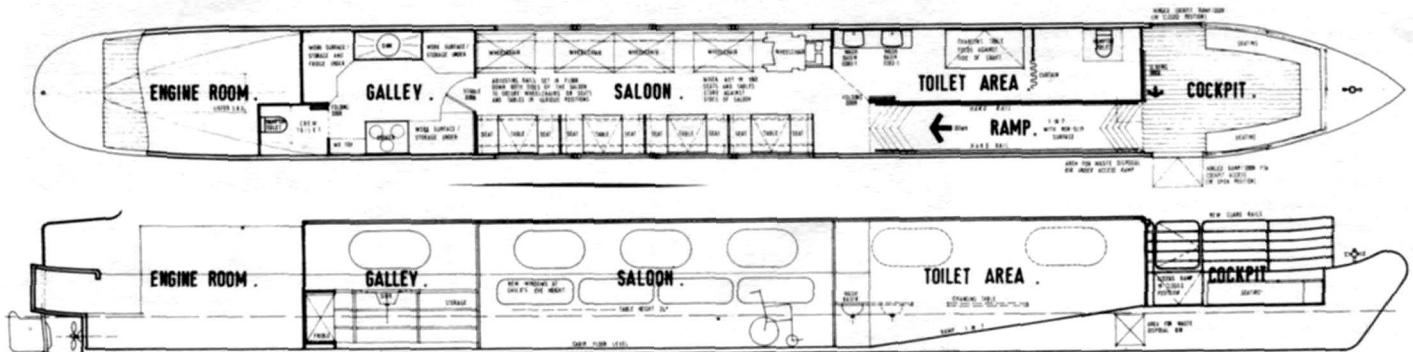
MORRIS CANAL 150 YEARS "OF AGE"

On July 12th the Canal Society of New Jersey and the Roxbury Township Historical Society commemorated the start of excavation for the Morris Canal 150 years ago, with the erection of a monument very close to the spot where the first spadeful of earth was turned. The monument is within sight of the canal near the remains of Lock No. 1 East, and adjacent to a canal store, still standing. The Morris Canal was placed on the National Register of Historic Places on October 1st, 1974.

land line north to the inlet basin at Wrightsville. On July 26th and August 10th two separate bus loads of Smithsonian Resident Associates met Bill Shank at the Lock Twelve recreational park, below Holtwood Dam and spent the day enjoying the old S. & T. canal freight route, operated in its latter days by the Reading Railroad, and drinking in the beauty of the Lake Clark and Lake Aldred areas, above the two dams of the lower Susquehanna River.

On August 14th, Bill Shank was again host to a group from the C. & O. Canal Park at Sharpsburg, Maryland who reversed the tour, north to south. Moya King, Program Coordinator for the Smithsonian Resident Associates arranged the two tours from Washington, and Lee Stuble of the C. & O. Canal Park personally escorted her group to York County. Dr. Ernest Coleman, of State College, Pa., assisted with the July 26th tour, and Robert Mayo, P.E., of Lancaster, Pa., acted as an advisor and "stand-by" guide.

HANDICAPPED CHILDREN'S CANAL BOAT PLANNED IN ENGLAND



Seven Miles of the Montgomery Canal are being restored by the Prince of Wales Committee and the Variety Club of Great Britain. It is the desire of those groups that handicapped children should be able to enjoy the beauty and peace of the canal. To this end the Ladies of the Inland Waterways Association have said they will raise £ 5000 for a boat. This drawing shows the draft plan of the boat. Send donations to: Mrs. Joan Heap, Chairman of the Appeal Committee, 37 Parkway, Wilmslow, Cheshire, England. John Heap is Chairman of the Inland Waterways Association. Both are ACS Members.