

AMERICAN CANALS

BULLETIN OF
THE AMERICAN CANAL SOCIETY

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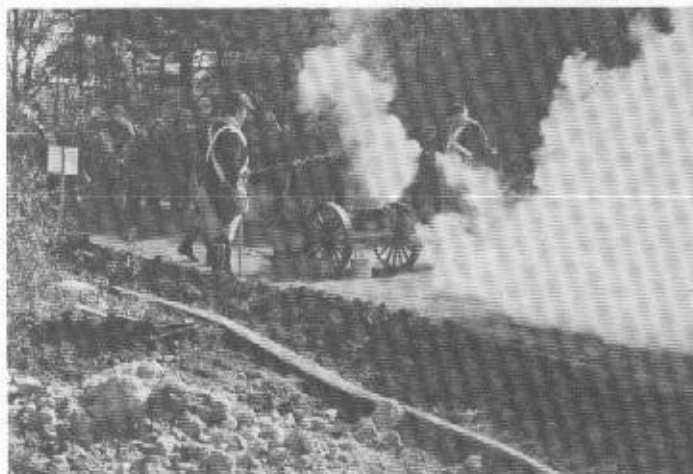
MIDDLESEX CANAL RESTORATION



New canal bridge, built by Massachusetts Dept. of Public Works for route #129. Towpath will be at left.



Canal barge and "Skipper" during Middlesex Restoration ceremonies, October 19th, 1974. Note Sail.



The starting gun is fired, to open the Middlesex Canal restoration dedication, October 19th.



View of the restored section of canal from the new bridge. Much work still to be done.

This was the day — one long awaited along the Old Middlesex Canal (1793-1853). The crowd had assembled. A bright sun lighted and warmed the narrow ribbon of water and the even canal banks, newly 'puddled two inches deep in clay' (as was prescribed by Loammi Baldwin in the 1790's for specifications on the canal banks).

The Middlesex Canal was honored in a public ceremony in Wilmington, Massachusetts dedicating a 1220' section of canal being restored and the completion of the new bridge over the canal, necessitated by the re-routing of Route #129.

The opening address was made by Lt. Col. Wilbar M. Hoxie, President of the Middlesex Canal Association and a Director of the American Canal Society. Col. Hoxie introduced several guests, all of whom expressed opinions as to the historical and recreational value of the restoration, hoping that further sections of the 27½ mile canal between Boston and Lowell would be restored.

The main feature of the program was the unveiling of the Canal Arch (of the new bridge). At the salvo fired by the Lexington Minute Men at the cannon, the arch was

unveiled and down the canal came a miniature canal barge pulled by a mounted horse — a thing hard to believe in 1974.

A new book was released as a part of the celebration — **The Old Middlesex Canal** by Mary Stetson Clarke. The Middlesex Canal Association was responsible for much of the impetus behind the restoration. Membership in the association is available at \$4 per year, which includes a subscription to **Towpath Topics**. Write Middlesex Canal Association.

(From information submitted from local newspapers by Col. Hoxie using photos taken by ACS Director Alden Gould.)

American Canals

BULLETIN OF THE AMERICAN CANAL SOCIETY

AMERICAN CANALS is issued quarterly by the American Canal Society, with headquarters at Lockhouse #6, Chesapeake and Ohio Canal, P.O. Box 638, Glen Echo, Maryland 20768. Objectives of the Society are to encourage the preservation, restoration, interpretation and use of the historic canals of the Americas; save threatened canals; and to provide an exchange of canal information.

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

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

PIONEER AMERICA SOCIETY

A couple of issues ago we included a brochure on the Pioneer America Society, Inc., whose purpose is: To Discover, Record, and to Promote Preservation of Our Pioneer Heritage." We didn't realize until we had received several queries, that the brochure neglected to state their address, which is: 626 South Washington St., Falls Church, VA 22046.

PANAMA CANAL LANDSLIDE

The Panama Canal's Gaillard Cut was nearly closed October 10, 1974 by the waterway's worst landslide in 40 years. About 250,000 cubic yards of material oozed into the 500' wide channel to within 50' of the centerline as a result of heavy rains in the area. It is estimated that one million yards of material will have to be moved and stabilized to restore fully the cut and its channel. The major slide occurred on the east bank of the canal about a mile north of Gold Hill, and extends about 1500' along the bank. This is probably the largest slide since November 1931 when the bank adjacent and south of this area broke out in a similar manner and closed the channel which was then 300' wide.

(Submitted by Bob Felsburg, from 15 October Journal of Commerce.)

Indiana Central Canal Park Plans



Shown here is the section of the Indiana Central Canal (also known as the Indianapolis Water Company Canal) in downtown Indianapolis, being considered for a canal park.

Indianapolis seems to be on its way toward an excellent canal park through the city even though they had to reject the first engineering study because of the high cost and because the plan would have considerably altered the nature of the historic canal. The study explored the development of the Indiana Central Canal in a way similar to the highly successful San Antonio River Walkway in San Antonio, Texas, called "The Venice of America" by Ernie Pyle. Unfortunately, just the lower section of the canal through downtown Indianapolis would have cost \$20 million, the recommendation being to lower that part of the canal about 16 feet to provide a pedestrian and boat corridor free of automobile traffic. Now a less ambitious and costly project is being devised, still with the intention of completion by that magical date of July 4, 1976. The Greater Indianapolis Progress Committee and its Waterways Task Force chaired by Mr. James Dora, are to be commended for persevering in their task to put the Indiana Central Canal to good use in the revitalization of Indianapolis. (From information supplied by the Greater Indianapolis Progress Committee).

CANAL T-SHIRTS

The Peak Forest Canal Society (c/o Mr. Mike Matthews, 4 Bridgelea Road, Withington, Manchester M20 9FB, England) has for sale T-shirts emblazoned with GO TO WORK ON A CANAL, GIVE ME A HAND or I'M A DIRTY WEEK-ENDER, sizes medium or large, 2 for £3 postpaid (a £ is about \$2.50). Proceeds to support the Peak Forest Canal Society. Specify motto and size.

Canal Boat Committee

Though there have been several reconstructions of canal boats in the United States and others in the offing, there has not been one single place where one could obtain information on canal boat plans, models, restorations, photos, historical information about canal boats, etc. This lack became more apparent as we received more and more requests from those requiring assistance. To fill this gap, President Tom Hahn appointed Carroll M. Gantz, President FIDSA, as Chairman of a Canal Boat Committee. Carroll has had much experience in the field of canal design and is known to many canal enthusiasts as the designer and builder of *St. Helena II* at Canal Fulton, Ohio on the Ohio & Erie Canal. His address is: 7100 Oxford Road, Baltimore, MD 21212. Other committee members at this time are: Charles Derr of Freemansburg, PA; Gale Martel, of Canal Fulton, OH; and John Lamb of Lockport, IL. The purpose of the committee is to collect all available sources and information to aid community efforts in re-constructing authentic canal boats and for the use of canal historians and canal enthusiasts. As a start, the committee is preparing a tentative list of available material. Anyone having information on canal boat plans, photos, diagrams, historical references, boat builders, boat houses or anything pertaining to the building and use of canal craft is requested to provide this information to Carroll Gantz.

PART OF OHIO & ERIE CANAL NOW A NATIONAL PARK

On 28 December, President Ford signed the bill creating Ohio's first national park, including a 30 mile section of the Ohio and Erie Canal. Under the bill, the federal government will spend \$35 million in the next six years to preserve the natural beauty and historic value of the Cuyahoga Valley between Cleveland and Akron. Officially designated the Cuyahoga Valley National Recreation area, the park will be the third urban national park in the country. The others are in San Francisco and New York. "The establishment of this area paves the way for the preservation of thousands of acres of unspoiled land for the enjoyment of present and future generations," the President said. The next step is for Congress to appropriate \$500,000 authorized for planning and the first installment of the \$34.5 million authorized for land purchase and acquisition of scenic easement.

(From The Cleveland Plain Dealer, contributed by Terry Woods, ACS.)

CANAL GUIDE CORRECTION FOR CALIFORNIA'S GOLD COUNTRY

It turns out that the Gas Co. does not have enough maps of the Tuolumne water system to send out on request, and that local residents don't want to have their drinking water supply advertised too much. Therefore we hope that ACS members interested in the hydraulic canals of the gold country will concentrate on the miles of dry canals in the region, and their future, while keeping a protective eye on the still used ones. (Bill Trout).

CANADIAN CANALS - NOW USED FOR RECREATION

(Third of a three part article)

The **Montreal, Ottawa and Kingston water route**, was originally built on the recommendation of the Duke of Wellington to provide safer lines of communication between Montreal and the new settlements on Lake Ontario in the event of resumption of war with the United States. Happily, that purpose never materialized and instead the route became of considerable commercial usefulness for many years. With development of highway competition on a motorized basis, the commercial usefulness of the canals waned. However, the whole route, particularly between Ottawa and Kingston, has grown in importance from a tourist and recreational standpoint.

Starting from Lake St. Louis on the **Seaway** above Montreal, this waterway passes into the **Ottawa River** at the western tip of the Island of Montreal, by-passing the **St. Anne Rapids** by means of the one-lock **St. Anne Canal**. This lock overcomes a three-foot rise in the river and provides nine feet of water at the sills. The original canal to overcome these rapids was built in the western channel at Vaudreuil in 1816 by the St. Andrew Steam Forwarding Co. providing a 5-foot depth. In the years 1840 to 1843 the first **St. Anne Canal** was built in the eastern channel by the Board of Works to provide 6-foot depth. This was enlarged to its present 9 feet in 1886.

The Royal Staff Corps was responsible for building the first **Carillon Canal** in the years 1825-33 and the first **Grenville Canal** in 1825 to 1829. Both these canals provided 6-foot depth and were enlarged to 9 feet by 1882. The first name canal overcame the Carillon Rapids at the head of Lake of Two Mountains and a dam which raises the water level of the river, making it navigable to the foot of Long Sault Rapids which were overcome by the Grenville Canal.

It is claimed that it was near the site of the present Carillon Canal that, in 1660, Dollard Des Ormeaux and his 16 companions perished in their heroic and successful attempt to turn back some 700 Iroquois bent on attacking the young settlement of Montreal.

A new power development was built at Carillon by Quebec Hydro which necessitated remodeling the **Ottawa Canal System**. The present Carillon Canal, with one lock with a lift of 65 feet, replaces the old Carillon and Grenville Canals and was completed in 1963. The 123-mile long **Rideau Canal**, likewise built by the Royal Engineers, took six years to construct and was completed in 1832. Utilizing the Rideau and Cataraqui Rivers and a chain of scenic lakes, the Rideau Canal forms one connected waterway from the Ottawa River to Lake Ontario and has not been materially changed in the 134 years of its existence. Between 30% and 40% of the old stonework still remains at the locks and dams. Ascending the Rideau Canal, the rise from the Ottawa River to the summit level on the Upper Rideau Lakes is 277 feet, requiring a total of 33 locks. From the summit level to Kingston, the descent is 162 feet for a distance of 40 miles and by means of 14 locks.

The Rideau Canal adds greatly to the natural beauty of the Federal Capital of Canada. It commences in a narrow natural



Historic etching of the Ottawa River from the "Flight of Locks" entrance to the Rideau Canal at Ottawa. (Courtesy A. C. Brown and W. D. Naftel.)

valley flanking the Parliament Buildings at Ottawa where eight locks in flight rise from the Ottawa River. Thence it passes through the heart of the city between walls flanked by boulevarded driveways and past the wide expanses of the Dominion Experimental Farm. At the other end of this scenic canal lies the City of Kingston where the canal drops into the natural channel of the Cataraqui River and into Lake Ontario.

The **Trent Canal** system, extending 240 miles from Lake Ontario to the Georgian Bay, follows in the main the historic Iroquois Trail, the pathway used by the Iroquois in their deadly descent on the Hurons. It was the route followed by Champlain when he discovered Lake Ontario in 1618 and it also was the route suggested by the Duke of Wellington to provide water transportation to the Upper Lakes. From Lake Ontario to the summit level at Balsam Lake, the rise of water is 598 feet while the descent to Georgian Bay is 262 feet.

The canal began in a small way in 1833 with the construction of a few locks in order to connect the small pioneer settlements along the banks and shores of rivers and lakes. Good roads and motor traffic made inroads in the freight carrying traffic during the 1920's and 1930's but they have also brought about a very extensive development of the route as a holiday and tourist playground in which the canal facilities play no inconsiderable part.

One of the features of this waterway is the world's highest hydraulic lift lock, providing a vertical rise of 65 feet in about seven minutes. Two chambers, 175 feet long and 33 feet wide, are balanced on two huge plungers working in deep press-wells in such a manner that when one chamber is up and opening into the upper reach of the canal, the other is down and opening into the lower reach. Other features of this waterway are the two marine railways overcoming water levels of 47 feet and 58 feet respectively at Swift

Rapids and Big Chute on the Severn River between Lake Simcoe and Georgian Bay.

The **Richelieu River, Lake Champlain and Hudson River** route between Montreal and New York follows the war path of the early Iroquois and of the early whites. Still standing are the well preserved walls and some of the buildings of Fort Chambly, built in those early days of warfare. During the French regime "portage" roads were built through the dense forests to circumnavigate the rapids on the Richelieu.

The **Chambly Canal** was built to overcome the long series of rapids which extend from the Chambly Basin to St. Johns. The **St. Ours Canal** overcomes a retaining dam which provides 7-foot navigation to the lower entrance of Chambly Canal. Water borne traffic on this route is limited by the dimensions of the Chambly Canal locks to vessels not greater than 112 feet long and 22½ feet wide. The depth of water is 6 feet 6 inches at the sills. Lake Champlain provides deep water navigation to the northern terminus of the **Champlain Canal** in the United States with its 12-foot depth and which connects with the Hudson River and at sea level Troy, N.Y., the eastern terminus of the Erie Canal, and thence by deep water to New York City.

Canada possesses two salt water canals on the Atlantic Coast. The **St. Peters Canal**, built between 1854 and 1869 for vessels with a 13-foot draught and later deepened to 18 feet, connects St. Peters Bay on the southerly side of Cape Breton with the Bras d'Or Lakes, the northerly end of which is open to the sea. This route is used chiefly by vessels to and from Sydney, N.S., seeking a more protected passage than is afforded by the open sea. It proved particularly valuable during World War II.

The other canal in the Maritimes, pierces the Canso Causeway which was built in 1955 to provide highway and railway pas-

(Concluded on Page Four)

Old Welland Canal at Port Maitland



The summit of the Welland Canal as originally constructed was higher than Lake Erie, according to Harlan Hatcher's "Great Lakes Reader". To supply the summit, The Grand River was dammed at Dunnville and a feeder canal ran from there to the summit. Access from the feeder canal to Lake Erie was made by a short branch to Port Maitland with a lock to the lake level.

According to a Dunnville historian, the

Canadian Canals

(Concluded from Page Three)

sage between Cape Breton Island and the mainland of Nova Scotia. The **Canso Canal** provides navigation for vessels with a draught not greater than 28 feet and a length not greater than 715 feet. The canal is mainly used by coastwise shipping and by fishing vessels.

Three other canals in Canada were built during the last century by the Department of Public Works and are operated by them in connection with other works. One of these cuts through a piece of low land which partly separates Burlington Bay from Lake Ontario and enables shipping to reach the Port of Hamilton. This canal was complete in 1832 and deepened in 1850.

The Department of Public Works also maintains and operates a dam and lock on the **Red River** at St. Andrews, near Selkirk, Manitoba, by means of which vessels from Lake Winnipeg are enabled to proceed up to Red River as far as Fargo, North Dakota, in the United States. This department also operates and maintains a lock at Poupre, Quebec, which connects two stretches of navigation on the **Lievre River**. This is mainly used for lumbering purposes.

The Ontario Department of Public Works which built parts of the Trent Canal and which operated them before their being taken into the Trent system, also built and still operates three locks which are independent of the Trent system. Two of these are for tourist purposes, one at Port Carling on the Muskoka Lakes and the other at Huntsville. The third lock is on the Magnetawan River and is for the assistance of lumbering operations in the district. There is also a lock in the Arrow Dam in British Columbia.

(Thanks to the Canadian Division of Transport.)

(Part One was in the August 73 and Part Two in the August 74 issue of **American Canals**.)

lock was built in 1829. The first commercial barges passed through the feeder in 1830 bound for Hamilton loaded with flour. The last boat on the feeder carried a load of stone in 1892. The lock walls are built of dazzling white limestone and are in excellent condition, with some of the iron work still in place.

(Submitted by Frank Trevorrow, ACS, S. Pleasant St., Apt. 410, Oberlin, OH 44074.)

CANAL CALENDAR

March 29 — Chesapeake & Ohio Canal History & Wildflower Hike, Sycamore Landing to Ft. Harrison & return. Meet Sycamore Landing parking area, 9:30 a.m. Bring lunch & binoculars.

April 9-13 — Canals as Living History II. International Symposium at the Canal Museum in Syracuse, NY sponsored by the museum and the American Canal Society, with working sessions and a Special Program honoring 150th Anniversary of the Completion of the Erie Canal. Write: Director Frank Thomson, Canal Museum, Weighlock Bldg., Erie Blvd. East, Syracuse, NY 13202.

April 25-26 — Annual Justice Douglas Reunion Hike on the Chesapeake & Ohio Canal. Harpers Ferry to Point of Rocks HQ at Harpers Ferry. Write: Secy, C & O Canal Association, Box 666, Glen Echo, MD 20768.

May 17 — Chesapeake & Ohio Canal Natural Study Hike in Dam 4 slackwater area. Meet McMahon's Mill at 9:30 a.m. Bring lunch & binoculars.

May 16-18 — Canal Society of Ohio, Spring Field Trip with Canal Society of New York State and Pennsylvania Canal Society on the Ohio & Erie Canal in Ohio between the original terminus near Cleveland and Peninsula. HQ at Cleveland. Write: Corresponding Secy, Frank Trevorrow, 36 S. Pleasant St., Oberlin OH 44074.

June 15 — Chesapeake & Ohio History Study Hike — Antietam Aqueduct to Snyders Landing plus Antietam Battlefield. Meet 9:30 a.m. Antietam (C & O Canal) Camp Area. Bring lunch.

CHRONOLOGY OF HISTORIC CANADIAN CANALS

By William Drummond Naftel, ACS

Baillie-Grohman Canal — Constructed 1887-89, abandoned 1902.

Chambly Canal — Commenced 1831, suspended 1835, completed 1840-43.

Chats Canal — Commenced 1854, abandoned, unfinished 1856.

Chignecto Marine Railway — Commenced 1886, abandoned, unfinished 1892.

Culbute Lock — Constructed 1873-76, abandoned 1912.

Desjardins Canal — Constructed 1826-37, abandoned 1874.

Fort Francis Lock — Commenced 1875, abandoned, unfinished 1879.

Lachine Canal — Constructed 1821-24, enlarged 1843-48, 1870s, 1894-99, abandoned 1959.

Murray Canal — Constructed 1885-89.

Old Beauharnois Canal — Constructed 1842-45, enlarged 1870's, abandoned 1899, canal used as a feeder for Canadian Light and Power Company from 1908-49.

Ottawa River Canals — (Carillon, Chute-a-Blondeau, Grenville) — Constructed 1819-34, enlarged 1879-86, abandoned 1965.

Rideau Canal — Constructed 1826-32, first Tay Branch constructed 1832-34 and rebuilt 1883-1889 on new alignment.

St. Andrews Lock — Constructed 1910.

St. Francis River Lock — Little is known of this 19th century canal.

St. Ours Lock — Constructed 1844-49, new lock constructed 1930-33.

St. Peters Canal — Constructed 1854-69, enlarged 1876-80, 1912-17.

Shubenacadie Canal — Commenced 1827, certified complete 1862, abandoned by 1870's.

Trent Severn Navigation — Commenced 1833, completed in stages by 1919.

(Bill Naftel, 306 Holmwood Ave., Ottawa, Ontario K1S 2R3, Canada is the Canadian Director of the American Canal Society. He would appreciate hearing from anyone having corrections, additions or information on the above canals.) A map of the Historic Canals of Canada is available from: ACS Treasurer, Dr. Bill Trout, 1932 Cinco Robles Drive, Duarte, CA 91010 for 25¢ plus 10¢ mailing, 35¢ total.)

C. of E. and NATIONAL REGISTER

According to Corps of Engineers Regulation No. 1105-2-11, on the Historic and Cultural Environment, section 6b, "District Engineer will prepare nomination forms for sites, structures, districts, and objects located on Corps Civil Works project areas under his jurisdiction or control when such places appear to qualify for listing in the National Register of Historic Places." So if you know of any canal, lock or other work controlled by the Corps which ought to go on the Register, let them know about it, and about ER 1105-2-11 section 6b. If you don't know the address of the District Engineer, send your letter to Department of the Army, Office of the Chief of Engineers, Washington, DC 20314.

THE DELAWARE & SUSQUEHANNA CANAL

The canal that never got off the drawing boards

by MANVILLE B. WAKEFIELD

The 108-mile Delaware and Hudson Canal was under construction in October and November, 1826 when a survey was made and maps drawn for the virtually unknown 83-mile Delaware and Susquehanna Canal.

The route, as delineated on the plans recently uncovered in the dusty archives of the Delaware and Hudson Railway Company in Albany, commenced just above the point where the Delaware River and Hudson Canal crossed the Delaware River at Minisink Ford for the Lackawaxen River run to Honesdale, Pennsylvania. The waterway followed the New York shore of the Delaware River, the West Branch of the Delaware, the Oquago Creek, over the drainage divide between the Delaware and Susquehanna Rivers down the valley of Johnson's Brook to Bettsburg on the Susquehanna River.

This obscure canal project would indeed have been one of significant engineering merit were it ever built. It consisted of 58 locks, 56 of which individually lifted the canal boats 10 foot vertically while Lock #29 at mile 49 lifted 11 feet and Lock #39 had a minimal lift of 6 feet.

More unusual was the use of five inclined planes for the elevation of the boats over the 1479 foot watershed summit between the Delaware and Susquehanna Rivers.

Perhaps most unique was the inclusion of a mile-long tunnel that carried the boats under the watershed ridge at an elevation of 1362 feet, its approaches through deep rock cuts.

These early 19th Century survey maps reveal some interesting geographical facts.

For example at today's lonely Tusten Stone Arch bridge crossing of the Ten Mile River a sizeable community existed when the surveyors and their linemen went through. Known as Ten Mile Village it consisted of the Ferguson homestead, barns, a store, saw mill, grist mill, a church, and a pottery on a dead end road running out along the canal.

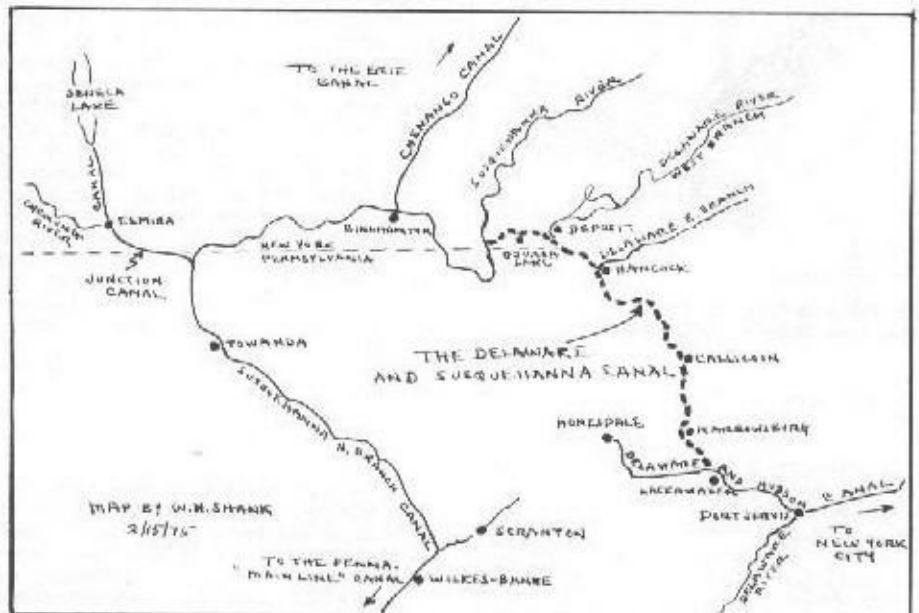
At Narrowsburg, location of Lock #11, the canal was surveyed through a deep cut in about the same location as the one used today by the tracks of the Erie-Lackawanna.

The village of Cochection marking the western terminus of the Newburgh-Cochection Turnpike also boasted the only bridge crossing of the Delaware. The sharp bend of the canal at this point was punctuated by Lock #14. The intersection of the canal and the earliest of Sullivan's turnpikes would most certainly have made Cochection a canal town of considerable stature.

Today's Callicoon was marked by Joseph Craft's home, a mill, canal lock #18 and, of course, the confluence of "Kalacoon" Creek with the Delaware, nothing more.

Upstream from Callicoon "signs of coal" was noted on the Pennsylvania side as well as reference near locks 19 and 20 of a Sycamore tree 33' in circumference.

At Hancock, known then as Shehocking Village, the canal crossed the East Branch of the Delaware via slack water navigation,



ie: stilled water in the river created by a small dam, and thence through locks 30, 31 and 32, said locks in very close proximity to one another much as lock 16, 17, 18 and 19 at High Falls on the Delaware and Hudson Canal. The canal then proceeded through a rather deep cut through what today would be the heart of Hancock.

The waterway then proceeded up the valley of the West Branch of the Delaware to Deposit where it passed through a guard lock for the slack water crossing of the Delaware West Branch to follow Oquago Creek to the first inclined plane. Lock numbering sequence was started anew at Deposit for the Oquago section much as the Lackawaxen section of the Delaware and Hudson Canal started back at the digit "one" for the locks from the Delaware to Honesdale. The canals routing through Deposit parallels almost exactly the right-of-way of today's Erie-Lackawanna Railway.

The highest density of lockage occurred on the Oquago section due to the increase of the gradient along the small meandering creek. In fact, within the first 6 miles there was a concentration of thirteen locks—a total of a 130 foot verticle lift.

At Lock #17 the canal crossed Oquago Creek on an aqueduct, then to pass through locks 18 and 19 before encountering the first inclined plane with a lift of 100 feet. These planes would doubtlessly have been patterned after the plane principle used on the Pennsylvania Main Line canal between Hollidaysburg and Johnstown, over the Appalachian Mountain ridge. Here the boats were pulled horizontally upon inclined rail cars and hoisted level to the top of the incline by a stationery engine at which point the canal boat was deposited back into the canal trunk.

On the Delaware and Susquehanna the boats moved out onto a "Summit Level". This lock free level which included a vital feeder stream from the Oquago ended with the second plane with a lift of 85 feet. At

the end of this plane the boats immediately entered a deep cut leading to the east portal of the mile long tunnel.

Tunnels on canals are not totally unheard of. One of the nation's earliest, the Union Canal in Pennsylvania had a 729 ft. bore opened to traffic June 12, 1827 and the venerable Chesapeake and Ohio Canal had a 3,118 ft. unit built in the 1850's. Certainly had this mile long entry ever been built it would undoubtedly have put the town of Sanford in Broome County on the map of engineering marvels.

Emerging from the west portal and associated deep rock cut, the boats were lowered down three inclined planes of 80 ft, 130 ft. and 100 ft. respectfully to Bettsburg on the Susquehanna, here the river current was stilled by a dam below the confluence of the river and the canal.

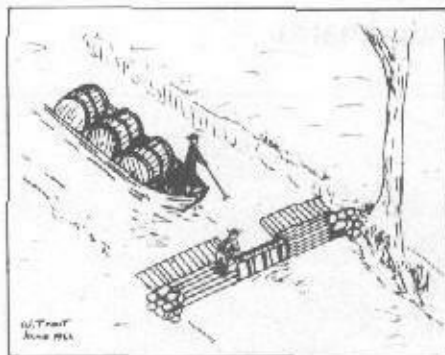
There can be little doubt that the boats would then be towed north to Binghamton at which point the Chenango Canal would be entered for the haul to The Mohawk Valley and the pioneer of them all, the Erie Canal.

Most assuredly this projected canal did not get past the imaginative managers of the Delaware and Hudson Canal Company. In fact so little is known about this waterway that indeed it might have been a quietly executed periphery project of the Delaware and Hudson Canal founders. It was obvious that a connection of this type would open up the market heartland of New York State to the benefits of anthracite coal.

Who can prophesy what the fortunes of the Delaware and Hudson Canal Company, (now in 1973 celebrating their Sesquicentennial), might have been had they not only tapped the markets of New York City, but also the Central and Western New York State markets.

(Manville B. Wakefield, Box 999, Grahamsville, NY 12740 — "Wake" to his many friends, the Historian, Sullivan County, NY and author of COAL BOATS TO TIDEWATER.)

FLASH LOCKS ON THE WILLIS'S RIVER



Sketch of a lock on the Willis's River as it may have been in early 1800's.

Much attention has been given Josiah White's ingenious "Bear Trap Lock" designed for coal boats descending the Lehigh Navigation in the 1820's. However, nothing seems to have been said about more primitive locks of this type in the U.S., variously called flash locks, staunches, or water gates in England (See "Flash Locks on English Waterways", *Industrial Archaeology*, August, 1969). These are barricades in a dam or across a stream, and are normally closed to maintain the water level; when opened the flood of water is used by boats ascending or descending. They are generally referred to as "locks" in the record so are confused with the more familiar pound locks which essentially consist of two flash locks with a boat-sized chamber or pound in between.

In Virginia, flash locks were in use on the Willis's River Navigation, beginning some time between 1790 and 1820, and were probably also used on other small rivers in the state. The sole description of a Willis's River flash lock comes from a Virginia Board of Public Works report in 1826, when a stream was being considered for similar "improvement": The Willis's River locks consisted of "jetties extending from both shores towards each other, leav-

ing between them a sluice of suitable size and construction to be closed by a gate turning round horizontal hinges: this being raised to hold up the water of the stream, is let down for the passage of boats, which are either carried down by the rush of the current; or, if ascending, must be pushed up against it, when the first impetuosity has somewhat diminished. This mode of improvement suits only rivers which afford but a small body of water, such as can flow from a sluice that may be closed by a light gate. The scarcity of water in such streams requires, that several boats should be held ready to rush at the same time through the sluices, during the temporary flood and swell produced by the water that had been accumulated while the gates were up. This system of navigation is evidently applicable only to a descending trade; and it seems to be the most expedient that can be adopted for the present on Buffalo River, which is well calculated for it; and where it promises to be as advantageous as it has proved on Willis's River."

These flash locks were maintained in a manner similar to the public roads, by the citizens of Cumberland County, for poled bateaux about 60 feet long and 8 feet wide carrying tobacco, hogsheads and other farm products downstream to market. It continued in use late into the last century. Some signs of one of the flash locks has been found, but they have not been studied. Surely Virginia was not the only state to have flash locks. Are there any records or signs of any elsewhere?

COMMENTS FROM OUR READERS

Just a note to let you know that we have been working hard on the last 3 mile stretch of the Illinois-Michigan Canal and have shut down for the winter. We have this stretch pretty well cleared and after the spring flood damages are repaired, plan to start the filling and open it for public use. (R. F. Whalen, DVM ACS)

I'm sure you will share my feeling of delight on recently being commissioned to write an historical trilogy of canal fiction on reflecting the conception, growth and demise of both the UK and the USA canals. The three books are set against the background of a family saga, similar to Galsworthy's Forsythe Saga but totally committed to canals. May I add further that whilst I have accomplished a great deal of historical research on the birth of UK and European inland navigations, my knowledge of the growth of the American networks is scanty indeed. I will be in your debt if I may be allowed to appeal to your members for advice and guidance perhaps through the medium of your newsletter. (Michael Colmer, Bell House, Bell Yard, London WC2 A2LX England)

I would be interested in a complete map of the American Canals, which have existed, their present state, lock size, water depth, bridge clearances, etc. (Timothy McG Millhiser, Paris, France)

"A trip for me to America!" (Sheila Doeg, Editor, *Waterways News*, London, England)

UNUSUAL VIRGINIA CANAL LOCK FOUND



The Cartersville Connection may sound like a slow moving version of the fast moving movie. The recently "rediscovered" link between the James River and the Kanawha Canal in Virginia has been called one of the most unusual locks in the country because of its double chamber construction by its "discoverer", William E. Trout, a PhD geneticist in Duarte, California. The lock, over 100' long, is still in excellent condition, located beside the James, a short distance below the historic Cartersville Bridge. (Photo by Michael Bagkin)

Work on the Cartersville Connection began in August 1849 and was completed in October 1851. Five months later the James River & Kanawha Canal Company was informed, to its embarrassment, that the lock

was too short to take a canal boat. To rectify this "rare engineering mistake", the company spent \$1,500 to lengthen the lock. When extending the walls of the lock chamber, the contractor constructed a new pair of gate recesses, giving the lock three places for gates instead of the usual two. Trout presumes the center pair of gate recesses was never used after 1852, when the connection was used for the last time.

When the canal was sold to the Richmond and Allegheny Railroad Company, now the Chesapeake and Ohio, in 1880, and tracks were laid on the towpath, the canal ceased operation but the Cartersville connection was left untouched, except by the overgrowth of nature and muddy silt of ravaging floods. (The Farmville Herald)

EARLY IRRIGATION CANALS IN ARIZONA

Archaeological work in the Salt and Gila Valleys in Arizona indicates that the Hohokam irrigation canal system, basis for the modern distribution system of the Salt River Project today, was much more advanced than was thought earlier. Dr. Emil Haury, the original organizer of the highway salvage work financed by the Department of Highways and operated by the University of Arizona, says that the latest explorations, located one-half mile east of Rural Road on the Superstition Highway corridor, reveal that the secondary and tertiary canal system was every bit as extensive as the main canal system. Dr. Haury says that 250 miles of major canals and 250 miles of secondary and tertiary canals were constructed, some as early as 300 BC. The Superstition Project covering a village of five acres revealed five canal structures; one major and the others distribution canals. The main canal is 12' wide while the four lateral canals are 3' wide. Estimated main canal depth is 4-6' and secondary canal depth 18"-2'.

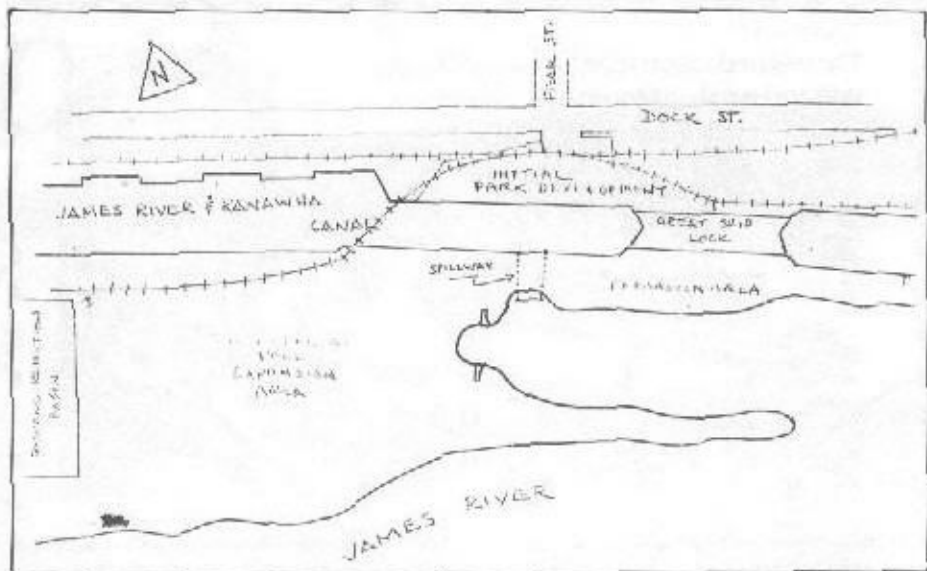
(Submitted by ACS Director Lt. Col. Hoxie from the May 1974 Newsletter of the American Society of Civil Engineers.)

BEAN SHOALS CANAL

Three cheers to the state and county Bicentennial commissions in North Carolina, which are seeing to it that old canals are regaining their rightful place in society. One of these canals is at Bean Shoals in Pilot Mountain State Park, part of the Yadkin River Navigation. Here there was a canal two miles long, following the north bank of the Yadkin. Much of the canal itself, built between 1820 and 1825, has been covered by a railway bed, but what remains is most of the stone buttress wall between the canal and the river, originally up to 15 feet high, and almost a quarter of a mile long. The wall cost so much that the company ran out of money, and it is still not known if they ever completed the intended flight of three wooden locks at the lower end of the canal, or in fact if the canal was ever used at all. The canal played its part in the August 3-11 Yadkin River Extravaganza #1, intended to focus attention on the Yadkin River as an irreplaceable historical, recreational, and environmental resource. Contact the Yadkin River Association, c/o Northwest North Carolina Historical Association, Government Center, Winston-Salem, NC 27101.

(From information supplied by the North Carolina Bicentennial Commission.)

RICHMOND BICENTENNIAL CANAL PARK



The city of Richmond is proceeding with the design and development of a Bicentennial Park on the historic James River and Kanawha Canal. The park is to be located at the Great Ship Lock at the downstream entry to the canal. With luck, the park could be open to the public by July 1975. The Great Ship Lock is operable and may some day have a canal boat 'locking through' it.

PHOTOS NEEDED

We urgently need photos (particularly historic ones) of every canal in North America. It would be very useful to have prints which we could keep or negatives from which we could make prints. Also needed is someone who has the ability to donate his time to making prints for the American Canal Society Library when we have the opportunity to borrow a print or a negative.

Virginia River Navigations

(The following are excerpts from letters written by ACS V.P. Dr. Bill Trout on behalf of ACS.)

Rivanna River Navigation—"The Rivanna is of special interest to me and the canal society because of the extremely well preserved locks and canals which are scattered along its length through Fluvanna County. In fact, the Fluvanna River Navigation is the best preserved of all the canals and river navigations in Virginia, every lock being in almost perfect condition. Efforts are being made to use of the canals,

called the Rivanna Connection, as the focus for a park; and this canal is being written up for the National Register of Historic Places, to represent the whole navigation. Scenic River status for the Rivanna would neatly supplement and support this park project."

"The Rivanna is Thomas Jefferson's river. One of his early projects was to begin navigation improvements on the Rivanna. Now the river has returned to its natural state . . . but the stone locks are still there. I urge you to see that the Rivanna through Fluvanna County is declared a Scenic River while it is still ideally suited for such a role. The American Canal Society is willing to help in any way it can."

Staunton Scenic River Proposal—"The section of the Staunton under consideration for Scenic River Status between Long Island and Brookneal is not only scenic but unusually historic as well, with as far as I can determine the best remaining wing-wall and sluice network in Virginia, and surely among the best in the U.S., and worthy of nomination to the National Register of Historic Places. These navigation improvements were constructed about 1827 by the Roanoke Navigation Company, for wooden batteaux operating as far up the Staunton as Salem, and on the Dam at least to Madison. This was an important chapter in the settlement of Virginia, and important people were involved."

Rappahannock River Navigation—"On behalf of the American Canal Society, I would like to offer our assistance and encouragement in your study of the future of the Rappahannock River. This river is no longer threatened by the Salem Church Dam, but is now endangered by urban sprawl and development. Please act soon to assure its preservation as a scenic river or park. We would be glad to assist in the exploration and evaluation of the many locks and canals still remaining of the historic Rappahannock Navigation."

ON THE ERIE CANAL IN 1916



This picture was taken at Durham Vile, N.Y. on the Erie Canal in 1916 of my wife before we were married, which was 1917 here in Brooklyn. She is standing on the dock alongside the Steam Canal Boat MASSAGA whom her father owned. There was a dry dock and boat place there. It was owned by W. Doran. (Submitted by Frank Baker, ACS.)

NEW CANADIAN CANAL STAMP ISSUED



The Canada Post Office honored William Hamilton Merritt (1793-1862) "the father of Canadian transportation" on the 150th anniversary of the start of construction of his greatest project, the Welland Canal, with this stamp, issued on 29 November 1974. This "First-day-of-Issue" stamp was sent to ACS with the compliments of Robert F. Legget, author of the "Rideau Canal", Ottawa.

CANAL ARTICLES

The National Park Service publishes the following preservation program folders: **The Historic American Engineering Record**, **The Historic American Buildings Survey**, **The National Register of Historic Places**, **National Park Service Archaeological Program**, **The National Historic Landmarks Program** and **The National Landmarks Program**. These publications are available in packet form (National Park Service Preservation Programs, 50¢) from the Superintendent of Documents, U.S. Govt. Printing Office, Washington, DC 20402.

Two canal feature articles published in national magazines are worthy of reading and saving: One is "How They Built the Erie Canal" in **THE AMERICAN LEGION MAGAZINE**, June 1974. Every member of the American Legion receives this magazine and would very likely share it with you; the other article is "Exploring England's Canals" in the July 1974 issue of **NATIONAL GEOGRAPHIC**.

The Autumn 1974 issue of the Goochland County Historical Society Magazine has two articles of interest to canallers: "Memories of the James River & Kanawha Canal" by Joseph J. Houchins and "The Tuckahoe Creek Navigation" by Bill Trout. This issue is available at \$2 ppd from the Goochland County Historical Society, Goochland, VA 23063.

TOWPATHS (Canal Society of Ohio) Table of Contents 25¢ and the Columbus Tour Book (used for the 1974 CSO Spring Tour) \$1 are still available from **TOWPATHS**, 2416 Clarendon N. W., Canton, OH 44708. As 1975 marks the 150th anniversary of the beginning of Ohio's Canal System, the four issues of **TOWPATHS FOR 1975** will become a special "Sesqui" commemorative Volume, including the pertinent data and a short history of every major and minor canal ever built in Ohio. This is a great opportunity to become a member of CSO and receive these and other benefits. Send \$6 dues for 1975 to: CSO, Box 364, Canal Fulton, OH 44614.

Wisconsin Then and Now, published by the State Historical Society of Wisconsin has in its September 1974 issue "Milwaukee and Rock River Canal Unlocked Little But Controversy" by Kathryn Lamboley. Single copies available from the Society at 818 State St., Madison, WI 53706. 25¢.

MANVILLE B. WAKEFIELD

Sullivan County (N.Y.) Historian
1924 - 1975

Just as we were going to press, we received, (via Dorothy H. Sanderson) the shocking news that our good friend Manville Wakefield had died of a blood clot on the brain in Hamilton Avenue Hospital, Monticello, N.Y. on February 5th. "Wake" had written me last March to say that he was grateful to be alive after delicate "open heart" surgery on February 12, 1974. Apparently trouble recently developed in one of the heart valves, which caused him to re-enter the hospital about a week prior to his death.

"Wake" will be sorely missed by his many friends in the American Canal Society, the Delaware and Hudson Canal Historical Society, and many other historical and community organizations in which he was active. In his book, "Coal Boats to Tidewater" he combined his extremely gifted talents as an artist, with his equivalent talents as an historian and writer, to produce the finest documentary on any canal now extant, anywhere. Second only to "Coal Boats" is his excellent self-illustrated history of the New York, Ontario and Western Railroad, entitled "To the Mountains by Rail". We call your attention to the fine article on page 5 written by "Wake". It is typical of the careful research he has always done on any historical project.

Our heartfelt sympathy to his wife, Barbara, and three children — Andrew, Lisa and Deborah.

Bill Shank

CLASSIFIED ADVERTISEMENTS

Chesapeake & Ohio Canal Commemorative Bottle, limited edition of 200, blown green glass embossed with boat passing through Harpers Ferry Lock. \$9 each, postpaid, 3 for \$25. J. Chris Ramsey, 1206 Oak Hill Ave, Hagerstown, MD 21740.

Mechanical design engineer with 21 years experience seeks to combine fascination with research, historical documentation, railroads, steam locomotives, steam engines and canals with his M. E. knowledge in a new gratifying position with some measure of job security. D. Mordell, 106 Cora Ave., N. Syracuse, NY 13212. Tel. (315) 458-6565.

AMERICAN CANAL AND TRANSPORTATION CENTER

LEHIGH COAL AND NAVIGATION COMPANY COMMON STOCK CERTIFICATES. Imprinted seal. Green or Orange. Excellent condition. \$4.00.

THE CINCINNATI WASHINGTON AND BALTIMORE RAILROAD COMPANY COMMON STOCK CERTIFICATES. Unused. Dated 1888. Beautiful engraving of locomotive. Outstanding condition. Blue or orange. \$2.50.

WATERWAYS WORLD. International canal magazine, published in UK. 48 pages. Featuring:

September: Thames Bywater, Journey into the Thirties, Coals on the Calder \$1.00.

October: Vive la Navigation (French Canals) Roundhouse, Caldon Cruise \$1.00.

November: Shadow over Shardlow, The Long Haul, The Wilts & Berks Canal \$1.00.

December: Impressions of the Past, Lockhouse, Huddersfield Narrows \$1.00.

CHESAPEAKE AND OHIO CANAL CALENDAR 1975. Beautiful B & W photos by Dave & Marta Kelsey. \$2.00.

BRITISH CANALS (Hadfield) Master Volume in Canals of the British Isles Series. Now in paperback edition, 356 pages. \$6.95.



CANAL COIN (1975)

1 1/4" diameter bronze. Commemorative Canal Coin. Brief history of canal era. reverse side \$1.75.

FLOWER OF GLOSTER. Canal classic first published in 1911 of a leisurely voyage of a narrow boat in England. Now in paperback, 244 pages, illustrated. \$3.95.

THE OLD MIDDLESEX CANAL (Clarke). Newly published. Many maps, illustrations, reference notes, index, appendix, 192 pages. Soft covers. \$5.00.

(Make checks for any of the above items payable to American Canal & Transportation Center, 809 Rathton Rd., York, Pa. 17403. Pennsylvanians please add six % for sales tax.)