PRESIDENT'S MESSAGE

The concern of a President of any organization is with the financial stability of his operation. Since the early years of the American Canal Society when Tom Hahn, Bill Trout and I dug down into our own pockets to provide printing and mailing costs for our newsletter until the next dues statement went out! Since we depend solely upon membership dues for our operating income, and are committed to a non-profit policy, we are still spending for printing and mailing costs almost 100% of what we take in each year in regular dues.

For special projects, such as Bill Trout’s American Canal Guides, we have, on occasion, approached various federal agencies for financial assistance. They have either turned us down cold or offered us 50% funding with so many regulations that we would have lost complete control of the project! Hence, we have had to turn to industry and other sources for aid. Reynolds Metal Company of Richmond, Virginia, for instance, has been most generous in assisting us with such projects as “The East from American Canals” and “American Canal Guide, Part 3.” Another extra source of income for us has been donations made by our thirty Life Members (listed elsewhere in this issue). With our minimum annual membership dues now at $10, the life membership donation of $100 becomes a real bargain for our younger members. It has been suggested that future Life Membership donations should be raised to $150, which would probably be changed at the close of this fiscal year—September 30, 1983. In the meantime we will hold the $100 option open for any of our members who wish to take advantage of it.

One governmental agency which has been kind to us is the U.S. Postal Service, which several years ago recognized us officially as a Non-Profit Organization, making low domestic bulk mailing rates available to us. We thank them for that.

Other future income possibilities for us are ESTATE BEQUESTS. One such recent bequest was the $1000 received from the Estate of Ted Sherman. Our members are reminded that such bequests are not subject to Estate Inheritance Taxes.

In the meantime, we have been able to provide a multi-page quarterly newsletter to you on an unceasingly regular basis, due to the diligence of Editor Tom Hahn, and our many members who continue to flood him with worthwhile editorial and pictorial contributions. Also, occasional “extras” are sent you, like the enclosed “St. Lawrence River Canal Vessels” reprint, directed to our attention by member Jim Wilson.

Bill Shank

I. & M. NATIONAL HERITAGE CORRIDOR

Stone-cutter continues the restoration process for Lock 14 near the terminus of I & M Canal in LaSalle. This $226,000 project, funded by the Illinois Department of Conservation and a National Park Service Maritime Grant, will restore the lock to historically accurate working order. Site restoration and interpretive signage are being planned. (Courtesy Upper Illinois Valley Assn., photo by LaSalle Daily News Tribune).

(Publisher’s Note: From ACS Life Members John and Jane Anderson of Champaign, Illinois we had received the following brief history of the I. M. Canal and plans for the new National Corridor, as published in the “Illinois Bell Teletel” for November, 1982. However, as we were ready to go to press, we received in the mail Volume 1, Number 1 of a well illustrated newsletter published by the Upper Illinois Valley Association telling all about the plans for the new Illinois and Michigan Canal National Heritage Corridor. It is too lengthy to reproduce here, but we urge all interested canal buffs in the area to write for it: Upper Illinois Valley Association, 53 West Jackson Boulevard, Room 850, Chicago, Illinois 60604).

The Illinois & Michigan Canal National Heritage Corridor will extend 100 miles from Navy Pier in Chicago to LaSalle/Peru, Illinois. (Courtesy Upper Illinois Valley Assn.).

One of the most historic waterways in America stretches between Chicago and LaSalle/Peru—the Illinois-Michigan Canal. Completed in 1848, the I&M Canal linked the Mississippi River system with the Great Lakes and made it possible to ship goods cheaply between New York and New Orleans. The canal was largely responsible for the rise of Page Two
I. & M. NATIONAL HERITAGE CORRIDOR

The lock-tender’s house overlooks a well-maintained lock on the I. & M. Canal at Channahon, Illinois. (Courtesy Illinois Bell “Alabrieta”)

(Continued from Page One)

Chicago and for the growth of industry in towns like Joliet, Lockport, Ottawa and Sycamore.

Even though the canal’s commercial importance to the region is long gone, it remains a treasure trove of Illinois history, with limestone quarries, archaeological sites, and 19th century examples of headquarters, bridges, steel mills and grain elevators lining its banks. In addition, there are areas rich in natural beauty which are home to rare plants, varied wildlife and the state’s largest tree — a 120 ft. cottonwood near Morris.

Rich as the canal’s past is, its future might be even more promising. Congress is considering bills that would designate the canal and its environs a 90-mile National Heritage Corridor, the first in the nation. Such a designation could increase tourism in the area and create new jobs.

But you don’t have to wait until then to enjoy the I&M Canal. A trail along the section west of Joliet is under development, with completed portions running from Channahon to Morris and from Utica to LaSalle/Pekin. Campers, skiers and fishing are also available. And several state parks either border the canal or are within easy driving distance.

(For further information on the Illinois Canals, see page nine, AMERICAN CANALS No. 42.)

POTOMAC CANAL NAMED HISTORICAL LANDMARK

Congressman Frank R. Wolf (R-VA) announced recently that Secretary of Interior James Watt has approved the designation of the Potomac Canal, located in the 10th District of Virginia which Wolf represents, as a National Historic Landmark.

"The Potomac Canal in Great Falls National Park is an extraordinary pioneer engineering achievement and stands as a reminder of our early 1800s experiences in trade and commerce," the Congressman said. "I am pleased that the Secretary and the National Park System Advisory Board have recognized the historical significance of this canal which was planned and designed by America’s first president, George Washington.

Congressman Wolf had joined in the efforts of the Great Falls Historical Society and the Virginia Canal and Navigations Society, Inc. to have the canal included in the National Historic Landmark program. Wolf had recommended earlier in a letter to the Deputy Director of the National Park Service that the canal be designated as a National Historic Landmark.

(Submitted by Earl Minderman)
UNITED KINGDOM-UNITED STATES FILM EXCHANGE

Dr. Roger W. Squires, ACS Director in the United Kingdom and William H. Shank, P.E., ACS President, have discovered that they have much in common. In addition to their ardent interest in the history and preservation of canals and inland waterways in both countries, they are also avid writers and authors of books and other tracts on the subject. They have both lectured extensively on canals of the two countries. Both are semi-professional photographers, and between them have made thousands of color-slides of defunct and operating canals. Both are fully knowledgeable on the effective use of audio-visual equipment.

Bill has recently provided Roger with an extensive series of color-slides from his own collection, showing canal relics and inland waterways travel in the United States, which the latter will be using for a series of lectures on American Canals in the U.K. The first of these lectures is to be held at Sutton College of Liberal Arts, March 2, 1983. There will be others. Interested persons in the U.K. are advised to contact Dr. Roger Squires, Bulky's Court, Manor Way, Beckenham, Kent BR3 3LJ or phone him at 01-648-3339.

Over the past several years, Roger has provided Bill Shank with two excellent tape-slide lectures which have already been used by various canal historical groups in the U.S.A. The first (made in 1978) is entitled "The Old Barge Canal Revived in Great Britain" and consists of fifty slides (with accompanying tape) designed to show how the emphasis on voluntary work has restored the defunct canals of England. The second tape (made in 1982) is titled "Maritime England 1982" and is a 50-slide talk directed toward American canal buffs who travel to England, from the time they get off the plane at Heathrow Airport until they arrive at their first canal (or take a canal boat ride) out of London, or into the English Midlands. It is fully detailed, with maps and other information of great assistance to English visitors.

In both presentations, Roger's broad English accent enriches the entire program. Highly recommended for canal society program directors here in the U.S.A. All that is needed is a small cassette-tape recorder and a slide projector. For further information write American Canal Society, 808 Rhaton Road, York, PA, or phone (717) 843-4035.

Canal society program directors are also reminded of two professional 16-mm sound-color movie films made available to us by the British Waterways Board. They are: "Waterways--Our Heritage"--a 35-minute film showing typical vacation travel on the English Canals in 1960. The other was sent to us several years earlier and is about the same length, entitled simply "Inland Waterways." Either of these movies would be an excellent base around which to build your next canal society meeting. They are available at ACS headquarters.

In all cases, whether you order slide films, or movies, there is no rental charge. We ask only that you send along a check for $5 to cover shipping costs, and also that you return the film promptly after your "showing," so that other groups may enjoy them also.

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THE SIX CLARK’S FERRY BRIDGES

This drawing of the second Clark’s Ferry Bridge (near Duncannon, PA) was made in 1840 by an unknown artist. It shows the bridge from Duncan’s Island, with the entrance to Benvenu Lock in the left foreground, looking east across the Susquehanna River toward Patric’s Mountain. It clearly shows the “two galleries, one above the other” mentioned by Charles Dickens in his travels along the Pennsylvania Main Line Canal. The “galleries” were used to permit the mule or horse teams to proceed in both directions simultaneously on the downstream side of the bridge. 

A dam, out of the picture to the right, provided slackwater for the river crossing of the heavily-laden canal boats. (Courtesy of Dr. Ernest Coleman).

By Ernest H. Coleman, M.D.

No history of Pennsylvania’s Main Line in its so-called “System of Internal Improvements” could be complete without consideration of the five spectacular, consecutive wooden bridges of canal importance that once spanned the Susquehanna River about 18 miles above Harrisburg. These so-called “Clark’s Ferry Bridges” were almost a half-mile long and, collectively, served the public for almost a century. Perhaps they were named in honor of their namesake, “Clark’s Ferry.”

Said to be approximately one mile downstream, as was a more level fording area for men and their wagons. However, the name “Clark’s Ferry” has stuck and is still in use to this day.

After a site review by a joint commission of men from five interested counties west of the Susquehanna, and with the concurrence of Pennsylvania’s Canal Commission, it was decided to span the Susquehanna from its east bank to Duncan’s Island from where a network of improved roads, north, south, and west was envisioned, plus canals north and west.

The first of these covered bridges was erected 1827-1828, as a combination vehicular, pedestrian, animal transport and general utility structure with a towpath gallery attached, for men and horses or mules to use in towing canal boats across the river. But, let us use writer Philip Nicklin’s description to tell us what it was like to be on the river and walking in 1838: “It was a wonder of wooden bridge over a deep river, here converted into a lake by an immense dam. As the boat entered the river, the horses ascended to a gallery high in air, attached to the side of a great bridge of timber, which here extended its numerous and expanded arches across the river, and thus drew us across the wide expanse of water. Having passed the river, the boat entered the canal on the downstream side of Duncan’s Island, through a superb lock of solid masonry.”

Harriet Martineau, travelling eastward about two years later, left a similar but less detailed description of the bridge and its towpath gallery. The life span of this bridge was less than ten years. It was carried away in its entirety by "a remarkable freshet", most likely one of the Susquehanna River’s devastating floods, of which there have been many!

Bridge No. 2 was commenced in 1837 and completed in 1838. Fortunately for covered bridge and canal "buffs" a painting of this bridge was made by an unknown visiting artist abroad. A copy of the painting existed in the home of the late Grace Hawley Duncan of Duncannon, PA, who permitted this writer to photograph it, with the results shown here. This painting supports its description by the great English novelist, Charles Dickens, in his book, “American Notes” (1842). He writes: "When we crossed the Susquehanna River—over which there is an extraordinary bridge with two galleries, one above the other, so that, even there, two boat-teams meeting may pass without confusion—it was wild and grand!"

This bridge also had its hardships! During construction in 1837, one section fell during an "ice flood" and became lodged on a pier. Since it could not be returned to its former moorings it was set on fire and floated downstream, later to be replaced. Bridge No. 2 finally met with total disaster, but in stages. In mid-March of 1846, its eastern span was carried away during a flood and two months later the remainder was totally destroyed by fire, attributed to an arsonist.

Bridge No. 3 was promptly rebuilt, 1846-1847, in time for Philip Hone, (erstwhile Mayor of New York City), to describe it: "We came to the junction of the Juniata River (where the boat crosses a dam, the towpath being conveyed across a long bridge of light and delicate construction, on piles of solid masonry.)" On September 10 and 11, 1850, it was destroyed by fire, this time of uncertain origin.

Bridge No. 4 came into existence in 1851-52 but became the property of the Pennsylvania Railroad Company in 1857 when, for seven and one-half million dollars it was acquired from the Commonwealth of Pennsylvania its entire, financially-inefficient Main Line, consisting of a railroad from Philadelphia to Columbia on the Susquehanna River; the canal from Columbia to Hollidaysburg, PA; the unique Allegheny Portage Inclined-Plane Railroad (of world-wide fame in its day) and the Western Division Canal from Johnstown, PA to Pittsburgh. At the time P.R.R. Chief Engineer noted that the Clark’s Ferry Bridge required immediate and expensive repairs to prevent its total loss, and moreover, "that it had been built in an insufficienly and unworkman-like manner."

Despite improvements, nature remained defiant. In March, 1866, a violent windstorm destroyed nine of the bridge’s ten sections, all of which were replaced later that year (presumably with improvement) to the remnant of bridge No. 4. Hence, a virtually new bridge—No. 5. Whatever else, this bridge seems to have endured everything man and nature had to offer of a destructive nature until 1924-1925 when it was dismantled in favor of a superstructure vehicular bridge—modern for its day—but now being considered for replacement. Its successor (known as Clark’s Ferry Bridge No. 7) is not now on the drawing board, it is at least in the thinking stage.

Bridge No. 6 remains in the memories of the older generation of human beings who used it, and survived it. It was well-photographed both before and after it lost its towing path gallery, perhaps before 1915, the year it was sold to an organization known as Clark’s Ferry Bridge Company—a decade or more after the P.R.R. had gone out of the canal business. There is abundant proof that it was a toll bridge, as its predecessors probably were, and

In 1925, Clark’s Ferry Covered Bridge Number Five gave way to the new, reinforced, concrete-arch bridge designed by Modjeski and Masters of Harrisburg, a two-lane bridge which is still in use today. (Courtesy Dr. Ernest H. Coleman).

(Continued on Page Five)
PENNSYLVANIA EASTERN DIVISION CANAL TOUR

The Canal Society of New Jersey will be teaming up with the Pennsylvania Canal Society for the POS Spring Tour, which is planned for the week-end of May 6, 7 and 8th, 1983 along the Eastern Division of the Pennsylvania Main Line Canal, from Dunmore’s Island to Columbia.

The Eastern Division ran 43 miles from the Clark’s Ferry Locks to the Susquehanna River at Dunmore Island. The Susquehanna River was to be a gateway to the west. The Susquehanna River was to be a gateway to the west. The Susquehanna River was to be a gateway to the west.

At Dunmore’s Island, the Eastern Division joined the Juniata Division, westbound to Pittsburg, and the Susquehanna Division, northbound to the Erie Canal in New York State. At Clark’s Ferry, the Susquehanna River was to be a gateway to the west.

The Eastern Division was served by the Philadelphia-Columbus Railroad, operated by the Canal Commissioners at Harrisburg as part of the State-owned canal system between Philadelphia and Pittsburgh. The Eastern Division was thus an extremely important transportation link in south-central Pennsylvania in the 1833-1850 period.

The headquarters for the affair is the Pennsylvania Railroad Museum in Camp Hill, PA with a series of slides shown Friday evening and a Saturday morning address by ACS Past-President Larry Tait, who was recently named Director of the Pennsylvania Historical and Museum Commission. The Canal Tour, with twelve stops, will be for the first time Saturday, May 7th. Four buses have been reserved by the Tour Committee, which includes Ernest Coleman, Bob Mayo, Earl Hensler, and Jim Batch. Contact Bill at 899 Washington Road, York, PA 17403 for registration details.

THE SIX CLARK’S FERRY BRIDGES
(Continued from Page Four)

as its concrete successor was until a few deeds ago.

With the demise of this covered wooden bridge and others of similar construction in interesting chapter in early Pennsylvania bridge building near by the end. Organic wood was surrendering to inorganic concrete and steel. The Susquehanna River, however, has not forgotten! At times of low water the vegetation covered bases of the old Clark’s Ferry Bridge piles become exposed, like giant stepping stones, perhaps showing a way to a promising future in either direction.

Downstream, a long line of ripples reveals where the enormous canal dam was located and where, undoubtedly, some knowledge in the field of hydraulic engineering would have been acquired.

It has been stated that “The old order changeth,” also, however, that “The past is prologue!” Certainly these Clark’s Ferry bridges deserve a respectable place in the history and development of transportation in Pennsylvania.

1983 DUES

We now have close to 800 members in the United States, Canada and the United Kingdom. Of these 800 we are happy to report that all but approximately 100 members have indicated their approval of our activities by sending Secretary Charlie Dorr their dues checks for 1983 (with the exception, of course, of our LIFE MEMBERS). Charlie will be sending a final "reminder" to those members who have not sent in their dues. Those who do not respond to this second notice by May 1, 1983 will be removed (reluctantly) from our mailing list.
3 1/2 MARATHONS IN 3 1/2 DAYS

This is the same towpath that the marathon bikers used, but conditions have changed greatly since the early 1900s when this photograph was taken. (Mr. John Collection)

By Terry K. Woods

The Chesapeake & Ohio Canal ran 184.5 miles from Washington D.C. to Cumberland, Maryland and, from 1850 till 1925, it carried coal and numerous other items of freight upon its piedest surface. Today it's dry, but as administered by the National Park Service, it offers nearly 185 miles of a hiking and biking trail through an historic and picturesque setting.

When two Akron, Ohio men first learned of the C. & O. Canal, however, it's doubtful if they were thinking either of the history or the scenery. They viewed it, instead, as a challenge. It was, in effect, seven 26.2 Marathons. For Mike Smith and Don Morris are long distance runners; both are members of the GOODYEAR WINGFOOT RUNNERS, of Akron, Ohio. Mike is currently President of that organization.

They first read of this trail in a 1979 issue of a running magazine which carried an article describing how a College Student ran the entire 164.5 miles in 5 days, carrying everything he needed with him in a back pack.

The idea of duplicating the feat appealed to Mike and Don, but neither felt they could spare 5 days away from their busy schedule, plus the time it would take to get to the C. & O. and back. With a bit of planning, though, they thought it could be done in less time - perhaps 3 days of running would be a good goal to shoot for. It soon became apparent that two men were not going to be able to run 60 miles a day for 3 days with everything they were going to need they planned to spend at least one of the nights at one of the many campgrounds that were strung out along the route. A bicycle was therefore added and a basic change made to the plan.

A bicycle would be used as a pack animal to carry items too bulky and/or too heavy for the runners. The two men would then alternate between running and biking. This would cut their "event" to 3 1/2 Marathons in three days, plus an equal distance on the bike, but still could be considered quite an accomplishment.

September 1st, 2nd and 3rd, 1982 were picked for the big event. A great deal of thought and planning had gone into this trip. The bike, a 12 speed light-weight model, was loaded down with one 6 ft. tent, two hammocks, foam sheet mattresses, several changes of clothing, vitamins, a tool kit, water bottle, flashlight and a fluorescent carry light. An important item in their planning was the Towpath Guide to the C. & O. Canal, a four volume set published by the American Canal & Transportation Center. Largely through the use of the Guide, they were able to set up their schedule - daily mileage, meal breaks, stopping points for each night, etc. - to coincide with one of the formal campgrounds, water supplies or canal-side stores along the route.

The first day's journey began at 7:00 A.M. (at Cumberland, Maryland), with Mike starting off on the loaded bike and Don going the initial running. After that first day, Don, who is a morning person, and preferred to get as much running in as possible during the early daylight hours, would start off while Mike cleaned up the campsite, then catch him with the bike. With the runner attempting to eat a pace of one of the trail's mile markers every 8 minutes (7.1 miles an hour), he would usually be overtaken by the bicyclist within 16 to 20 miles which was just about a planned "shift".

It soon became apparent that the bike had the roughest time. The C.O. Towpath is a cleared and maintained hiker-biker trail, but over the years, roots of trees growing alongside the trail have forced their way up above the surface of the Towpath giving a bike ride that Mike Smith has described as "not smooth". Usually, the runner had little trouble with these three obstructions. Once, however, on the morning of the first day, Mike caught a shoe tip on one of these roots and took a fall that badly cut up his right knee. The man were traveling fairly close together at that point. They both stopped at a Towpath Bar, Bill's Place, near Little Orleans, where the proprietor graciously allowed Mike to "use the facilities" to clean up.

Even with this accident delaying them a bit, the duo were able to maintain their first day's schedule and managed to reach their planned overnight stop at Hancock - 123.5 miles from Washington - by 7:00 P.M. This first night was spent in a Motel as neither man knew what 60 miles of running and biking would do to their muscles.

Though the Towpath is 184.5 miles long, there were several sections where it was impossible to take a bike. The bike, therefore, traveled a total of 198 miles including detours. It was during a 6 1/2 mile detour that a minor disaster struck. As luck would have it, Mike was astride the bike around 4:00 P.M. the second day, when five spokes on the rear wheel failed. He wasn't even on the same trail and the thought of being stuck at the halfway point was enough to send Don back for a new set of spokes and a new wheel. Fortunately, they had carried one meal of freeze-dried food for emergencies and that's what they used after the bike Emergency ruined their schedule.

One minor accident did occur to Don, but fortunately did no damage to man or equipment and, in retrospect, can be considered humorous. One of the more well-known features of the C. & O. Canal is the Paw-Paw Tunnel, a long shaft bored through solid rock. Don was on the bike when they arrived at the entrance, and it looked mighty dark inside. The expedition's lone flashlight had somehow been jarred "on" during its rough ride in the bike pack and the battery was dead and useless. Still, the other and of the tunnel shone brilliantly in the distance so Don had few qualms about getting through, until, less than 60 yards inside, he rode smack into a solid rock wall! More surprised than hurt, he reamed out of his back pack and with a bit of squeezing along the guidebox, pushed the bike through the remainder of the tunnel.

With all their "incidents" behind them, and only miles ahead, Don and Mike managed to make 3 of 3 them on Friday. The last camp ground was 28.2 miles from Washington too far to go before dark and impossible to travel in the dark with the root tangled lying in wait. So their time at the state line totalled by half a day and Washington was reached at 11:30 A.M. on Saturday, September 4th, 3 1/2 Marathons in 3 1/2 days!

On reflection, Mike and Don are pleased at accepting the challenge of the C. & O. run and enjoy a sense of accomplishment in attaining their goal. The minor problems they encountered only served to make their "victory" just a little bit sweeter.

Both men consider their run quite an experience. Don visited the C. & O. again later in the fall to take a more leisurely look at some of the sights.

AMERICAN CANALS, NO. 44 - February 1983
BOATS ON THE PORTAGE CANAL

By Frederica Klaist

In May of 1851, the steamer, the JOHN MITCHELL, tried to pass from the Fox River through the Portage Canal to the Wisconsin River. The steamer, the ENTERPRISE, was coming from the Wisconsin River. Neither would yield, so neither went through the canal. In 1856 a small steamer, the ACUILLA, coming from Pottsville by the way of the Ohio and Mississippi Rivers, ascended the Wisconsin River to Portage, entered the Fox River, and descended the river to Green Bay. This marked period is the beginning of the steamboat navigation.

In 1876 the canal was completed by the Army Corps of Engineers. On June 30th of that year, the steamer, the BOSCOBEL, was the first boat to go through the canal. The BOSCOBEL was one of the most powerful tugboats of the day. It had 600 horsepower engines, and was as large as any of the freighters of the time. In 1901, a wrecking company bought the boat and it was used for salvage work. On November 29, 1909 the BOSCOBEL caught on fire. It was towed into Red Cliff Bay, in Lake Superior, where it sank.

Excerpts from the Portage Daily Register May 8th and 10th, 1869 indicate the following shipping activity: "The boats, the GRAND and the RAPIDS passed through Packwaukee on May 7th at six o'clock. From that place to Portage is the most difficult as there are many rapids, and the government has neglected to keep the river navigable." A message to W. C. Reimer this afternoon, May 8th, stated that the boats had reached the Point where eight miles below Portage and that the tug HOLLISTER, which was towing the boats, was stuck in the mud. Mr. Reimer communicated with the Portage Boat and Engine Company, and in a short time five Portage boats were off to assist the stranded craft. The Portage craft were commanded by Messrs. W. C. Gautt, H. Zastrow, Chas. Kirzke, N. H. Behrke and F. H. Runkel.

May 10th excerpts: "The larger steamers, the GRAND and the RAPIDS, arrived in Portage on Sunday night. The approach of the canal was watched with interest by many people and some boarded the boats when they reached the Ft. Winnebago lock and had an excellent view of the steamers. It took three hours from that point to the Wisconsin River lock. The steamer, RAPIDS, passed the DeWitt Street Bridge at 6 o'clock in tow of W. C. Gautt's yacht, MAY. The RAPIDS made clean work of the wires crossing the canal at Ketchum Point. Twenty lines of the Portage Telephone Company were torn down. At Adams Street near the York elevator four of the main wires of the Portage Electric Light Company caught on the smoke stack of the steamer and as the pole on the south side of the canal was about to break, electrician H. J. Forbes mounted the "Hurricane deck" and quickly cut the wires, which put the first ward in darkness Sunday night. As the RAPIDS was passing the DeWitt Street Bridge the stacks caught the wires of the local telephone company and ten of the wires were 4 feet above the water line and had to be cut in order to allow the boats to pass. The Wisconsin Telephone Company lines at DeWitt Street Bridge as well as the Western Union Telegraph Company lines were not melted as they were at least 50 feet above the water's edge.

The BOSCOBEL, the first vessel to use the Portage Canal in 1876. (Courtesy of Henry C. Abraham)

"As the RAPIDS was pulling into the Wisconsin River lock, its sister boat the GRAND could be seen approaching the Ketchum Point. The GRAND was in tow of the three yachts, one being that of N. P. Graham. The GRAND having no problem with the wires pulled into the Wisconsin River lock a half an hour after the steamer RAPIDS had arrived." According to the lock tender's book (still in existence), it recorded that the ELLEN HARDY, a large stern-wheel steamer which pried between Sauk City and Portage, carried loads of wheat, salt, etc., to the wharf located near the residence of George Clemmons in the First Ward. Such boat names as GRANITE STATE, BOSCOBEL, WINNECONNE, CITY OF PORTAGE, DEKOKHA, GUSSIE GIRDON, CITY OF BERLIN and the SHELDON and many others pried the canal in its heyday.

The boats, the GRAND and the RAPIDS, were piloted down the Wisconsin River by Liberty Cross and Jerry Hannafin.

Negotiations are in progress by Messrs. Ingram and Young to purchase the canals. For Winnebago Records: July 1665 Steamboat PORTAGE damaged the fleet bridge in the amount of $300. $10.00 was assessed to the Bear and $200.00 assessed to operator W. T. Barden. (Canal was not completed but still allowed navigation.) 1884 Steamboat the ELLEN HARDY damaged the Portage River Bridge. According to old timers, after 1910 they were mostly pleasure boats on the canal. In 1951 the Wisconsin River Locks were welded shut and the Port Winnebago Locks bulldozed in. Now, all that travels on this once busy, historic waterway are the present day canoes.

THAMES BARRIER

In American Canals #43 (Nov. 1982), p. 11 was an article "The Thames Barrier is Working!" Those wishing more information are referred to The Smithsonian (Aug. 1982), p. 78.

To: President Andrew Jackson.

The canal system of this country is being threatened by the spread of a new form of transportation known as "railroads." The federal government must preserve the canals for the following reasons:

One, if canal boats are supplanted by the "railroads" serious unemployment will result. Captains, cooks, drivers, hosts, repairmen and lock tenders will be left without means of livelihood, not to mention the numerous farmers now employed in growing hay for horses.

Two. Boat builders would suffer and tow- line, whip and harness makers would be left destitute.

Three. Canal boats are absolutely essential to the defense of the United States. In the event of the expected trouble with England, the Erie Canal would be the only means by which we could ever move the supplies so vital to waging modern war.

For the above-mentioned reasons the government should create an Interstate Commerce Commission to protect the American people from the evils of "railroads" and to preserve the canals for posterity.

As you may well know, Mr. President, "railroad" carriage is pulled at the enormous speed of 15 miles per hour by engines which, in addition to endangering life and limb of passengers, rear and snort their way through the countryside, setting fire to crops, scaring the livestock and frightening woman and children. The Almighty certainly never intended that people should travel at such breakneck speed.

Martin Van Buren
Governor of New York
January 31, 1828

(From Dun's Review, July 1980, submitted by Kay Sheldon.)
MIGRATING SOUTH ON THE DELAWARE AND RARITAN


By Diane James Slinsky

(This article first appeared in Time Off, the magazine supplement to the Princeton Packet, November 3, 1961.)

When days shorten and temperatures drop, the promise of winter prompts certain northeasterners to begin their seasonal migration to more temperate climates. Today most of these travelers bound for Florida and points south via metropolitan airports or head for the turnpikes and interstates.

But during the early decades of this century many southward bound travelers hired a crew or piloted their own pleasure boats along the inland North-South water route, a series of canals from New England to Florida. The Delaware and Raritan Canal, originally a 44-mile long artery from New Brunswick to Bordentown, formed an important part of the migratory route.

After 1900 and especially in the 1920s, when commercial navigation on the canal had slowed to a trickle, gasoline-powered yachts displaced barges and cargo vessels on the waterway. Although the canal was in decline after nearly a century of service and despite the fact it was poorly maintained and inefficiently operated, pleasure boat traffic nearly doubled between 1923 and 1929. Boat owners persevered because the D and R was an essential link between two major centers of pleasure boating, Long Island Sound and the Chesapeake Bay. In addition, the canal cut off nearly 200 miles from the more hazardous ocean route around Cape May.

In the autumn yachts sailed out of New England and New York harbors, around Staten Island to Perth Amboy and up the Raritan River to New Brunswick where they entered the lock and the first level of the canal. Here a toll was paid to the lock tender who issued a permit for passage through all 14 locks.

Small conventional craft joined large awesome vessels with liveried crews and captains on this semi-annual navigational ritual. Since the canal did not operate between 6 p.m. and 6 a.m., boats often tied up for a night at one of the quaint villages or towns along the canal banks—perhaps in Bound Brook or

Griggstown or Princeton. Sometimes the owners or crew invited spectators to board for a tour. There are those today who recall the familiar "see you in spring" salutation of affable passengers who would make good their promise the next spring with the added gift of an orange or grapefruit tossed ashore.

The more spectacular vessels carried some of America's socially prominent, who could be seen on dock rocking in wicker furniture and attended by white coated stewards. The undisputed queen of these vessels was the streamlined black Corsair owned by J. P. Morgan. The finest private yacht afloat, she sported gold-plated bathroom fixtures and dining service as well as wood burning fireplaces. Although local residents recall seeing this oversized yacht struggling through the locks, canal buffs have not yet located a photograph of the event.

A propitious departure time for the trip south was imperative as the following two turn of the century accounts indicate. An early October journey by the 30-foot sloop Ramallah from Fall River, Mass., provided hours of pleasant sightseeing for those on board. Having heard "terrible stories of the way these iron-bound canal boats ram into yachts," the RAMALLAH had taken precautions: extra cork fenders and long wooden oars also and an extra dollar slipped to the mule driver to "poke along his old mules lively and to be careful of us in the locks."

In the 10-Mile lock area at Zarephath the party was "charmed with the scenery along the route which was diversified with farms and broad meadow lands and groves of trees."

In the vicinity of Griggstown "one could look back as far as the eye could reach and see the tall and graceful willow trees on each side of the bank with their branches almost meeting, and making a nearly perfect archway, while underneath lay the smooth water of the canal."

A few years later on Thanksgiving Day the crew of the 28-foot yawl LOTUS from City Island, N.Y., passed through the D and R Canal and described a very different kind of journey. After a harrowing experience dodging the ice floes of the Raritan River and a

A handsome steam yacht passes through the D. & R. Canal.

(Continued on Page Nine)

United States Navy Submarine Chaser #252 motors south in the Delaware and Raritan Canal through Griggstown, New Jersey in 1927. Bow view of the sister ship #440 appears on p. 113, top, in Bill McKeiey's THE DELAWARE AND RARITAN CANAL: A PICTORIAL HISTORY. (Photo courtesy of George Rightmire.)
single lock keeper takes his own time about opening and closing the necessary lock gates.”

Also, there was much public criticism about the low water level, a craft of four to five feet instead of the claimed seven feet; many a yacht was marooned on a dry mud bank in the center of the canal. Consumers called for proper dredging and competent supervision to keep the canal bed clear of stones and sand bars.

Finally, shipping and pleasure boat interest groups lobbied for 24-hour service as a means of expediting existing canal traffic and attracting new business.

These requests were met by recurrent threats of abandonment. Finally citing lack of use as the main factor in the decision, the Canal Company failed to open the D and R after the winter of 1933. In protest, persistent marine organizations waged a spirited battle to save the waterway. Attempts to revitalize the canal continued until 1937 when the Canal Commission launched its final effort. Before a meeting with the Army Corps of Engineers in Newark, canal proponents averred that 3,000 tons of shipping craft had pledged to use the canal annually and that boat builders had promised to build the canal extensively for boat deliveries.

Despite this optimism, the federal government elected not to revive the waterway. Portions of the canal were filled in and permanent bridges were constructed. Yet the D and R Canal remains essentially intact. Today it provides water to local municipalities and serves as a recreational source for canoists.

The photographs on these pages are reproduced courtesy of William J. McKeay, Jr., and are taken from his book *The Delaware & Raritan Canal, Canal Press Inc., 1976*. Many of the photographs are from private collectors.

THE DELAWARE AND RARITAN CANAL TODAY

This photo recently taken by Mitchell Dakeim of Highland Park, New Jersey, shows Outlet Lock Number 14 of the Delaware and Raritan Canal, New Brunswick, N.J. being reactivated for restoration. This is part of a two-year project of New Jersey DOT to re-build a 600-foot section of the old canal. Cofferdams have been erected at both ends of this section to enable workers to get at the canal and lock walls below the level of the Raritan River. We are indebted also to Bill McKeay for giving us the details of this operation.
RENOVATION FOR 180 YEAR OLD CANAL TUNNEL

(Though the item from "TUNNELS AND TUNNELING" for January 1983, was submit-
ted to us by ACS Director Robert S. Mayo.)

One of the oldest and most important tun-
nels on the British canal system, the
2612-meter (approximately 1 3/4-mile) long
Briggswath Tunnel built in 1797, is to be
repaired. The tunnel is situated near Stoke
Briggin on the main line of the Grand Union
Canal between London and the Midlands.

The failed brick lining in the canal part of
the tunnel is to be completely replaced with
a precast concrete segmental lining installed
behind a shield of the type made by Groenveld
Steel. Briggswath Tunnel, the longest navigable
tunnel in Britain, has a long history of
maintenance problems and has several times
in its 180 year history required repairs ranging
from replacing the brick floor to totally relining
sections.

Because no plans were left by the Engineer
constructing the tunnel, the British Water
ways Board (the owner) has had to make its
own records and put together all the known
information. A contract for the repairs has been awarded by BWB to John Mowlem.
The shield is expected to arrive in April 1983
and the programme is expected to take up to
90 weeks to complete. An enlarged chamber
will be built inside the tunnel so that the shield
be assembled ready for its drive. Chacron
rings 18.5 feet inside diameter are expected
to be used and these will be filled with concrete on those segments that will eventually be under water in the re-opened

The canal has already been drained and
the northern two-thirds of the tunnel emptied
of water. The road, including a concrete road
on the bed of the northern one-third of the tun-
nel to provide access to the start of the
reconstruction, have been completed by John
Mowlem under a preliminary contract, now

Concrete tunnels are the oldest tunnel
structures in the UK, and pre-date the
railways by at least 50 years, the major
sewers of London by 90 years, and the Lon-
don underground railway tunnels by one hun-
dred years. The restoration work in disturbed
ground that has been worked before could
prove difficult because it is not the same as
constructing a new tunnel in virgin ground.
Changes in stress patterns in the ground have
occurred during the last 180 years.

The operation of breaking out the old lining
and constructing new concrete rings will take
place with the work force protected and the
orth supported by the shield with a forepol-
ing facility, which will be progressively jacked
forward to complete the lining of the mi-


OHIO CANAL SEMINAR

The Canal Society of Ohio is having a Canal
History Seminar instead of their usual Spring
Tour. It will be held on April 15 and 16, 1983,
at Roscoe Canal Village and will include talks
by Dr. Bill Trout, President of the Virginia
Canals and Navigations Society, on "Canals
on Computers" and projects of the American
Canal Society; and "The Canals of Virginia." 
Vann Will of the Ohio Historical Society will speak on "Location, Indexing and
Preservation of Historic Canal Photographs".

There will be visits to interesting sites in
Roscoe Village, inspection of the Triple
Locks at Cohocton; and slide shows and
anecdotes of canal life in Ohio and elsewhere.
Contact: Donnie Dolick, Roscoe Village
Foundation, Whiteside Street, Cohocton, Ohio
44412; or John Droge, 2937 Neil Avenue,
Columbus, Ohio 43202.

MIAMI-ERIE CANAL
BOAT A-BUILDING

From Captain Robert H. Brooker we have
learned that he and his associates are in the process of building a full-scale
Canal Boat to be used on the Maumee
River at Grand Rapids, Ohio. Their con-
struction is being revised upon the St.
Helena Canal Boat, and will conform to the
Coast Guard Regulations. They are hoping to have the new boat in operation
(out of their present dock in Providence
Metro Park) by July 1, 1983. They presently operate the only steam-
powered stern-wheeler in Ohio. For further
details write Capt. Robert H. Brooker,
2614 Middlesex Drive, Toledo, Ohio 43606.

AUTHOR ABOARD DURING DELTA QUEEN MISHAP

Leslie C. Swanson of Moline, Ill., author of
the two books, Canals of Mid-America, and
Steamboat Capades, had an unscheduled "brush" with the Mississippian River Day-
Rovers on a recent trip of the famed passenger
ship, the Delta Queen.

Swanson said the crew handled the situation
in a very admirable and professional man-
nar. After leaving the boat the passengers had
dinner at a Hannibal motel and were later transported to St. Louis in a fleet of buses.
The ship resumed its schedule shortly after at New Orleans.
The St. Lawrence River Canals Vessel

BY JAMES GILMORE

As a special service to members of the AMERICAN CANAL SOCIETY, we are distributing this reprint of an article published in the 1956 TRANSACTIONS of the Society of Naval Architects and Marine Engineers. We are indebted to James Wilson, ACS member and long-time member of the Steamship Historical Society of America, for calling it to our attention.

James Gilmore's article is significant because it was published a few years before the formal opening of the St. Lawrence Seaway, by Queen Elizabeth and President Eisenhower in June of 1959. In it Gilmore covers the past history of navigational canals along the lower St. Lawrence and the vessels used on them — all soon to become obsolete. The tremendous size of the Seaway permitted full-size ocean-going vessels to travel, for the first time, into the heartland of North America.

For further information on the Seaway, read AMERICAN CANALS, Issue No. 30 (August 1979); BEST FROM AMERICAN CANALS (March 1980); or TOWPATHS TO TUGBOATS (May 1982).

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February 1983
The St. Lawrence River Canals Vessel

By James Gilmore, M. Memr.

Introduction

When the St. Lawrence Seaway project is opened to shipping, a type of ship, long familiar on the St. Lawrence River and in the Great Lakes, to all intents and purposes, will become obsolete. These are presently in existence about 150 Canadian registered St. Lawrence River canal vessels or “Canaliers” as they are familiarly known from the Gulf of St. Lawrence to the Head of the Lakes, and the history and development of this type of ship are closely related to the development of Canada.

It is, therefore, appropriate on the eve of their relegation to a minor role in Canadian shipping that a survey of these interesting vessels should be made. The specialized type of ship known as the “Canalier” is, of course, the result of the difficult geographical features of the St. Lawrence River and the limitations of the canals built to overcome these difficulties and the first part of this paper will deal with the development of these canals and the corresponding types of vessels leading to the emergence of the present day “full” Canalier.

The water route from the head of the open sea is divided into three main parts: open water navigation on the lakes themselves, river and canal navigation on the upper St. Lawrence River between Kingston and Montreal, and almost unrestricted navigation on the lower St. Lawrence and the Gulf. The upper St. Lawrence section is, of course, the portion most closely associated with the canal and the part which has restricted free navigation since Canada was first visited by Europeans.

When Jacques Cartier was exploring the St. Lawrence in 1535, he arrived on what is now the Island of Montreal after more than 1000 miles of fairly easy river navigation which, he believed, would eventually lead him to the middle of the then newly discovered continent. He hoped suffered a setback however, when he climbed Mount Royal and saw the Lachine Rapids blocking his path to the west.

These rapids are the first of a series between Montreal and Lake Ontario which have seriously hindered navigation ever since the days of Jacques Cartier and although a succession of canals has been built over the past 230 years the rapids will not be completely overcome until the Seaway is opened.

(Maps of the Great Lakes and St. Lawrence River, and the rapids and canals from Lake St. Francis to Lake St. Louis, are shown, respectively as Figs. 1 and 2.)

The Sulpicians’ Canal

The first attack on the problem was made by the Sulpician Order of Montreal. A member of the order, Father Pépin, made a survey of a route for a canal to by-pass the Lachine Rapids and, in 1800, his report was submitted to the government of the colony.

The proposed canal would enable canoes to ascend the river into Lake St. Louis which would in turn give access to the Ottawa and upper St. Lawrence rivers. The proposal required the excavation of a channel about one mile long commencing at Lachine, above the rapids, to Little Lake St. Peter. This lake was later filled in and no trace of it now remains. From the lake to Montreal the Little St. Peter River was to be deepened to make a channel 12 ft. wide with a minimum depth of 18 in. when the St. Lawrence was at its lowest level. The deepening of the river was carried out but official support was apparently lacking and no work was done on the canal. A few years later Dollier de Casson, Superior of the Sulpicians, who was also an engineer of some repute, proposed that the work be done by the settlers at Lachine on a communal basis. Preparations for this were completed in the Summer of 1808 but in August of that year most of the settlers at Lachine were massacred on an Indian raid.

In 1780 the Sulpicians arranged a contract for the work with a Montreal contractor named Godin de Cadagahme for the then large sum of £2000 with the stipulation that the work was to be completed by June of 1791. However, the contractor ran into difficulties and in February of 1791, when the work was about three-quarters finished, the money was exhausted.

The reprieving work was never completed although many attempts were made to revive interest during the next 30 years and at one point Louis XIV of France became personally interested in the scheme. It is probable, however, that at periods of high water canoes were able to use the partially finished channel.

In spite of these handicaps, traffic on the river increased rapidly, the cargoes of trade goods to and from the West, being carried mainly in canoes. The barks canoes were light enough to be portaged around the impassable parts of the river. The canoes had, of course, a very small carrying capacity.

One reference suggests that during the French regime, some small wooden locks were built at Cascades, Coteau and Long Sault in an attempt to improve the route when bateaux appeared on the scene. No authentic records have, however, been found to substantiate this.

The Military Canals

No real progress in improving navigation was made until the United States War of Independence (1775-1783) made better transport along the river a military necessity for the British Government who were then in control of Canada.

The building of canals and other improvements were undertaken by the Royal Engineer during the period 1779-1785.

At this time the main type of boat in use was the bateau which had displaced the canoe. The bateau was a fairly heavily built boat much stronger than a canoe and having a shape somewhat similar to the present East Coast dory although a good deal larger. The common type of bateau was about 35 ft. long with a relatively narrow beam of about 5 ft 6 in. The boat had a flat bottom and heavily raked stern and stern with fairly close sides. Construction was quite simple and the boat were built with whatever lumber came to hand, tamarack being a common material.

Thawns were provided for the crew of about 15. These boats were rugged and could run the rapids.

1 Mr. H. D. M. Philp, of the American Steamboat Museum, gives the following dates for the building of the canals: 1779-1783, by the Royal Engineer during the period 1779-1785.
A few years later, in 1890, the need for improvement became urgent and, in addition, the "La Faucille" and "Tou" du Moulin" canals had proved to be prone to severe damage by ice each spring. A survey was undertaken by Colonel Mann and in 1894 reconstruction was begun.

The old shoreline channel at Lachine was abandoned, enlarged and made continuous along the line of the rapids. The "La Faucille" and "Tou du Moulin" were abandoned and a new canal, the "Cascades," was built across the Cascades Point. This canal was about 1,600 ft. long and had two locks each 100 ft. by 20 ft. at the lower entrance and guard gates at the upper entrance. This canal lay in a north-south direction crossing the line of the present Soulanges canal at about lock No. 2. During the same period the Split Rock and Coteau canals were enlarged and the main construction was completed in 1898 (2, 3).

With the enlargement of the canals, trade rapidly increased but even after the improvement, transporting a cargo from Montreal to Kingston was a major undertaking. The bateaux and Durham boats, a later type of boat, illustrated in Fig. 3 were usually taken upstream in "brigades" of five or more to keep the rivers open and to assist each other. The brigades were sometimes assembled at Lachine, their cargoes having been brought from Montreal by road and at other times towed and rowed through the Lachine channel. At Cascades Point near the mouth of the St. Lawrence, the boats were unloaded and swung to the head of the Cedars rapids. The boat was then locked through the Cascades and Split Rock canals and dragged up the Cedars rapids where the cargo was reloaded. The boat then passed through the Coteau lock and into Lake St. Pierre. At the Long Sault rapids above Cornwall the process was repeated after which the boat could be sailed to Kingston. After 1818 a steam tugboat was used in this section but unfortunately no details of this vessel can be found. On the average it took 73 days to transport the 8-ton cargo of a Durham boat from Montreal to Kingston and the following items show this expensive process:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll charges, Cedars lock</td>
<td>$4.00</td>
</tr>
<tr>
<td>Toll charges, Coteau locks</td>
<td>$4.00</td>
</tr>
<tr>
<td>Towing costs at rapids</td>
<td>$5.00</td>
</tr>
<tr>
<td>Land carriage 8 ft. from Cedars to Cornwall</td>
<td>$2.00</td>
</tr>
<tr>
<td>and at Cornwall</td>
<td>$3.00</td>
</tr>
<tr>
<td>Towing Prescott to Kingston</td>
<td>$3.50</td>
</tr>
<tr>
<td>Wages   8 men, 12 days, at $0.95 per day</td>
<td>$12.12</td>
</tr>
<tr>
<td>(approx. $2,000 U.S.)</td>
<td></td>
</tr>
</tbody>
</table>

In addition, about one boat in eight stemmed the rapids at Coteau on the total number of boats going upstream was quite considerable and about 5,000 long tons were transported annually.

During the War of 1812 traffic along the canal was heavy, most of the military stores for the British regiments being shipped via the canal. Being so close to the border, vessels in the canals were in constant danger of attack from the U.S. side and a convoy system was adopted. Armed luggers were stationed at various points along the river, Lake St. Francis, in particular, and the Dur- ham boats were escorted through the various sections in convoys of fifteen to twenty.

During 1814 and 1815 naval building was going on at a furious pace on both sides. All the guns and rigging equipment for the vessels built for the Royal Navy at Kingston were transported by barge and Durham boat from Montreal and complete sets of forgers for the 32-gun frigates were made in England and shipped via the canals from Montreal to Kingston. The transportation of these heavy items was a difficult and enormously expensive undertaking costing over $50,000 per ship set (4).

(1)
The First Commercial Canal

During this period many efforts were made to obtain a better canal at Lachine, mainly because of the obvious inefficiency of the system then existing and also because of the dissatisfactions which were growing day by day for the building of the New York State Barge Canal system. The building of this canal would be a serious threat to the trade and rapidly expanding cities on the Canadian side of the border and the Government of Lower Canada decided to introduce legislation for the building of a proper canal at Lachine. This was a joint stock company with a capital of $600,000, was authorized, but this also was repealed in 1821. The government decided to undertake the building on its own account and to reimburse the stockholders in the joint stock company.

The construction of the canal across the southwest corner of the Island of Montreal, following fairly closely the route of the Sulphur springs, was completed in 1826. The completed canal was 13 miles long with the canal point at 48 ft at the waterline and 28 ft at the bottom. Seven locks each 100 ft X 20 ft X 5 ft depth were built to overcome the lift of about 45 ft between the harbor at Montreal and the level at Lake St. Louis. The total cost of the project was $438,000 of which $250,000 was contributed by the British Government on condition that government shares were allowed to pass free of tolls. The canal system annual some of the worst rapids on the route was therefore in existence in 1826 and the effect on the traffic was considerable. By 1881, the average traffic per season was 700 Durham boats and 1500 lumber barges. The westbound traffic having increased to 21,000 tons annually—almost four times as much as in 1824. Much of the downstream traffic was still being carried in lumber scoops—shout the rapids, the downstream boat cokers increasing only slightly to 56,000 tons per year.

The year 1832, however, saw a marked reduction in the number of vessels using the Canals and Lake Canals. This was due to the opening of new routes by steamboats between the United States and Canada. The system proved to be easier for westbound traffic than the shorter St. Lawrence route and the arrangements made with one company, Messrs. McPherson & Crease, were typical of many. This company owned a fleet of thirteen steamers together with many barges and tugs which were towed the Ottawa and Rideau rivers to Kingston, returning via the St. Lawrence.

In November 1839 the first Welland canal connecting Lake Erie with Lake Ontario was completed, thus opening a continuous waterway from the Gulf of St. Lawrence to Georgian Bay. The lock dimensions of this canal were 119 ft X 22 ft X 8 ft (3, 5). Steam-powered vessels had been in use on the lower part of Lake Ontario since 1816 when the SS Frontenac (the old name for Kingston, Ontario) was a three-masted side wheel, went into service. It was, however, several years before machinery was developed which was sufficiently powerful to enable steamers to attack the rapids.

After about 1833 vessels were able to ascend as far as Dickerson's Landing, named after Horace Dickerson the owner of the Cornwall stage, and were able to steam the rapids on the return trip.

The Delfina, typical of many vessels of the period, sailed every morning from Prescott to Dickerson's Landing at the head of the Long Sault rapids, where the passengers disembarked and were taken by stage to the village of Cornwall. From there they went by steamers through Lake St. Francis to Coteau du Lac where another stage was required to by-pass the Coteau du Cascades rapids section. Another steamer plied on Lake St. Louis, the passengers finally reaching Montreal by stage coach from Lachine.

It is interesting to note that in 1838 the Delfina descended as far as Cornwall, whether by accident or design is not known, but getting the ship back up the Long Sault to Dickerson's Landing was a mammoth task involving 4 weeks' labor with twenty yoke of oxen used to the ship's engine and an unknown number of men and many horses (1).

Also in 1838 a large sternwheeler, the Enterprise, was built to run on the same route between Prescott and Dickerson's Landing but the vessel had so much difficulty at the Rapide Flat rapids that ports had to be sunk into the bank at intervals to which the ship could be moored for "breathing" for both crew and engines.

Another ship, the Ontario was built in 1840 and was intended to be powerful enough to navigate all the rapids. However, on its first return voyage from Montreal it was unable to ascend the Long Sault rapids. The ship returned to Montreal and was eventually sold, later operating successfully on the Montreal-Lake Michigan trade.

In 1841 the Vondale was built at Oswego, N.Y. and fitted with an Ericsson screw propeller, the first propeller driven ship to be built in North America. The introduction of the propeller had a marked effect on the canal traffic as, for the first time, steam-powered vessels could be built to the full lock dimensions, having previously been severely restricted in hull width by the overhang of the side paddle wheel boxes. The Vondale had another novel feature which is now commonplace—the machinery was placed aft leaving a long clear hold available for cargo.
The Second Commercial Canal

In 1823, government commissions were appointed to investigate navigational conditions on the river and to make recommendations as to the most effective improvements. Their reports recommended a uniform system of locks all 200 ft. × 45 ft with 9 ft of water over the sills be constructed along the entire route.

The Cornwall canal was the first of the new canals to be undertaken but was not completed until 1843. A lack of co-ordination seems to have existed in this period as the Second Welland canal, begun in 1841, was built to much smaller dimensions, 150 ft. × 36.5 ft × 8 ft and had to be completely rebuilt a few years later, in 1850, when the entire system was enlarged to 270 ft × 45 ft × 14 ft.

The Cornwall canal, overcoming one of the river's worst rapids, the Long Sault, was built on the site of the present canal which is, in fact, simply an enlargement of the first. The canal is 11 miles long with 6 locks and has guard gates at the west end at Dickson's Landing.

The second stage of this development was the Beauharnois canal. This canal was built to bypass the Coteau to Cascades rapids section and connect Lake St. Francis and Lake St. Louis. Many surveys, reports and questions were made before the Board of Public Works finally decided to abandon the old canals on the north shore and this new canal was commenced on the south shore immediately following the set of Union between Upper and Lower Canals in 1841. The canal, which is still in existence though now disused, commences near the town of Valleyfield and swoops in an arc to enter Lake St. Louis near the village of Beauharnois. This route is shown in Fig. 2. When the canal was completed in 1845, it was found that the depth of water at the upper entrance was insufficient and two dams eventually were built across the main channel of the St. Lawrence just below Valleyfield with a dyke about the low lying south shore of Lake St. Francis. These dams raised the water to a satisfactory level and the canal was operated until the completion of the Welland in 1890.

In 1848 work was started on the enlargement of the existing Lachine canal to new dimensions, three of the old lower entrance locks being combined into two in the process. These two locks, with much modification, now form part of the present system. The lower locks were arranged for a depth of 16 ft enabling ocean-going vessels to reach the industrial sites which were then developing along the line of the canal. The cost of this enlargement was $3,149,000 part of which was again contributed by the British Government.

Further upstream a completely new series of canals was begun in 1849. These canals, now known as the Williamstown canals, were built to overcome a series of rapids extending for about 30 miles. Boats were at that time able to ascend these rapids but, as in the case of the Beaver, it was a difficult operation for river ships and seriously depleted their cargo capacities when bound upstream.

The first of the series (the most easterly) was the Farman Point canal just over 1 mile long and with one lock. Ten miles farther upstream the Rapid Platte canal, 4 miles long and with two locks, overcomes the Rapid Platte, a large stretch of rapids, after which a 4-mile stretch of navigable river leads to the Gale Canal. This is the largest of the Williamstown canals and is 7½ miles long and has 8 locks. The canal was originally built in two sections, one at Cardinal and one at Aragon but was subsequently made continuous by the Junction canal along the river back (2, 3).

By 1846 all of these improvements were completed and a continuous waterway existed with canals around all the difficult sections. The effect on the traffic on the canal was immediate and the figures given in Table 1 for the years 1846-1849 indicate the volume of westbound cargoes through the Lachine canal.

The completion of the chain of canals around all the important rapids signalled the beginning of a period of furious activity along the river and
large numbers of ships were built to ply between the
main seaports. The design of the
Canadiens were, at this time, vessels of about
170 ft maximum over-all length, with a beam of
35 ft and drawing about 8 ft. Those intended for
carrying passengers, the "steamers" as they were
called, were restricted to about 135 ft in length to pass through the
locks of the Welland Canal which was completed in 1829.

These ships were mainly sailing vessels, wood
built and generally rigged as 3 or 4 masted schooners
with a square rigged bowsprit, brigantine or
barquentine. These ships became almost standard in the lakes
and canals after many years of experimenting.
Square-rigged vessels proved to be unwieldy in the narrow
channels and the variable wind conditions of the lakes. The crew requirements of the square rigged vessel were usually greater than
that of schooner rig, and this was an important factor
for the higher competitive trade of the canals.
The topsail schooner and brigantine represented
a compromise between the two extremes. The square
sails being of great value when running downstream under the prevailing westerly winds. In addition the schooner-type rig enabled the
boats to be swung well out of the way when docking and discharging, whereas the more stays of the square rigger seriously hindered
cargo handling. The bow spirit of these ships was frequently inclined upwards at a steep angle to clear the lock head. This feature may be
depicted in Fig. 4, the forward vessel being a regular canal type with barquentine rig (see Fig. 5).

They were almost square fore and aft and, with almost vertical sides and a small bow, the stern was
being cut up to a square-ended deck. The bow was
made more nearly vertical than the occurring
vessels of the period in order to obtain the
maximum displacement on the length available
between the lock gates.

The one of the unusual features of these vessels was the
appearance of drop keels, similar to those fitted on modern sailing dinghies. Two types were in
use, the pivoted and vertical types, both being raised and lowered by a tackle
running from the upper deck down to the
keel, to prevent the relatively shallow draft vessels making way
in the open water. Lifeboats, such as were common in the sailing vessel operating in similar conditions on the Dutch coasts were tried without being found to be impracticable for ships using the locks.

The tonnage capacity of these vessels was about
16% of that of their modern counterpart and averaged about 350 long tons.

When canalizing, these vessels were towed by
tugs. Many of the canal barges were
carried in the foredeck, others being hauled as
required from neighboring farmers.
Steam vessels were gradually being introduced
to the canals but it was not until about 1880 that they outnumbered the sailing vessels.

Many of the old sailing ships survived until the
1900's when, with their topsmasts struck, they
were used as barges, towed by the steamers.

As far as can be determined the last sailing
vessel built was the wooden Miamico built at
Kingston in 1852 and sunk in a storm on Lake
Huron in 1893 while being towed by the steamer
Windward.

During these and the following years, railway
building was going ahead rapidly—much of the material being shipped west via the canals can be
seen from the figures in Table 1, over 11,000 tons of iron being transported in 1849.

The completion of the Great Trunk railway in 1853 between
Montreal and Toronto—will doom the
rapids; caused a recession in the canal trade.

The railway quickly absorbed much of the
interlake traffic and the down bound floor cargoes, but the
upbound traffic retained the bulk of the grain trade—ships having a great advantage then, as
now, in the carriage of bulk cargoes.

The total traffic continued to keep pace with the
growth of the settlements in the mid-west, westbound cargoes being generally supplied of all
kinds for the settlers and railroad materials. The
figures in Table 2 for 1864 give some indication of the
increase over that in the previous year (7).
The number of vessels engaged in the canal trade during this year can be seen from the
passage figures given in Table 2.

The steamer listed in Table 3 were generally

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The size of the vessels was of great value when running downstream under the prevailing westerly winds. In addition the schooner-type rig enabled the boats to be swung well out of the way when docking and discharging, whereas the more stays of the square rigger seriously hindered cargo handling. The bow spirit of these ships was frequently inclined upwards at a steep angle to clear the lock head. This feature may be depicted in Fig. 4, the forward vessel being a regular canal type with barquentine rig (see Fig. 5).

The total traffic continued to keep pace with the growth of the settlements in the mid-west, westbound cargoes being generally supplied of all kinds for the settlers and railroad materials. The figures in Table 2 for 1864 give some indication of the increase over that in the previous year. The number of vessels engaged in the canal trade during this year can be seen from the passage figures given in Table 2.

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The Third Anti-Confederal Canals
Immediately following the Act of Confederation in 1867, the Federal Government decided to
institute a new program for the improvement of the canals. The object was to provide a continuous
system from the St. Lawrence Superior with locks 370 ft by 45 ft with a 14 ft draft. This
involved major reconstruction of the Lachine Canal, especially at the lower end, where new locks
were built alongside the old. The old locks were later enlarged to the new dimensions so that a double
channel with a draft of 17 ft on one side and 15 ft on the other was obtained. These locks were later
equipped with a large number of workmen from the navigation channel and close to the city of
Montreal. As in the earlier developments the federal government, in 1867, decided to provide a double channel for
sailing ships, one of which may be seen in Fig. 4.

Work on the Cornwall-Williamsburg canal, overcoming what was now generally known as the International Boundary question, was commenced in 1876. The 300 ft locks of the old canals were enlarged and deepened in steps, the canal being opened for traffic in 1861, although some work was not completed until 1873.

The Coote's-Point section again proved difficult and, as in the improvements of 1841, many
tugs were made of this portion of the river before it was finally decided to abandon the
Beaumont Canal and build a new canal on the north shore. The main reason was that since 9 ft
draft had been difficult to obtain in the Beaumont Canal and to obtain a draft of 14 ft it was
necessary to have the canal cut further west which was possible only on the north side. The
new canal, the Selkirk, is shown on the map, Fig. 2 and was commenced in 1892 and completed in 1899.

The neighboring development, Fig. 7, of the St.
Lawrence River canal system as we know it now was
thus completed by 1901, 20 years after the Sulpician Fathers made the first attempt
to break the rapids.

BIBLIOGRAPHY
12. "Canal Construction", Dominion Bureau of Statistics, Canada, 1904; also for general reference