PRESIDENT'S MESSAGE

Since our last issue we have sadly said "Goodbye" to two old stalwarts of canal days-C. Howard Hester of Reading, Pa. (September 26th, 1980) and Theodore A. Sherman, of Lathton, Pa. (October 30th, 1980). We have been fortunate to have them with us so long - Howard, with his canal-boat-building yard, canal memorabilia and his many tales of meetings of the Pennsylvania Canaliers Society at Port Treanton, Talk, with interesting stories of his days as a canal boatman and the great canal ballads which he sang personally at many a canal-ball meeting.

Our members will be pleased to know that Ted was sufficiently concerned about the future of the American Canal Society to make a $1000 bequest to ACS in his will, which I have already gratefully acknowledged to his estate attorney. A thought for all of us!

Since my last message, too, our appeal for help with the Canal Index Committee has borne fruit! The new Chairman of this Committee is Terry K. Woods, (6939 Eastham Circle, Canton, Ohio 44706) former President of the Canal Society of Ohio and author of many canal articles and booklets on Ohio Canals. As Assistant Chairman we are fortunate in securing the services of Bradley L. Halls (4232 Herbier Street, Annapolis, Virginia 22403) an ardent canal buff and writer. Also, we have heard from J. Hayward Madden (5474 Dock Road, Lorton, Va.) a canal researcher who has offered to fill us in on New York State. We are looking in detailed information on the historic canals of New England, Canada, New Jersey, Maryland, and Louisiana. Any of our members who wish to help in this important project are invited to contact the above Committee.

Another important project which we are about to undertake is the publishing of an ACS-sponsored book which will probably be entitled "CANAL ENGINEERS OF THE 1800's". In connection we have an editorial team consisting of T. Gibson Hults, Jr., Lynchburg, Virginia; Robert B. Mayo, P.E., of Luzerne, Pa.; and Thomas F. Hahn of Shepherdstown, W. Virginia. Your help will be sought at the ACS meetings. Any ACS members wishing to be associated with this project are invited to contact me.

As we enter our new fiscal year, Treasurer Charlie Derr reports that, instead of our usual very low balance just before dues time, we have a net of $2779 on hand (without considering Ted Sherman's bequest). Our healthy situation is due to extensive sales of "BEST" as well as an overage from our Wolfand Canal Tour. With your help, we look forward to a busy and meaningful series of activities in the year 1981.

At this time permit me to extend my personal best wishes for a Happy Holiday Season, and a Great Year in 1981!

Bill Shank

C. & O. Canal Becomes ASCE "Historic Landmark"

A portion of the group which assembled for the ASCE Historic Landmark Ceremony at Great Falls Tavern, being entertained by a young musician (seated, center) playing and singing canal ballads, using an old string instrument.

At ceremonies Saturday, September 5, 1980, attended by approximately sixty people and held at Great Falls, Maryland, the Chesapeake and Ohio Canal was officially designated as an "Historic Civil Engineering Landmark" by the local chapters of the American Society of Civil Engineers.

The principal shown in the accompanying photograph. A handsome, bronze plaque was presented by the National Capital and Maryland Sections of ASCE to Manus J. Fish, of the National Park Service, which maintains the canal route as a National Park. The plaque will be installed on one of the Great Falls Tavern (now C. & O. Canal Museum) behind which the ceremonies were held. Bill Shank and Tom Hahn represented the American Canal Society.

The ASCE Civil Engineering Landmarks Program 'identifies historic civil engineering works that have made a significant contribution to the development of the United States and to the profession of civil engineering, and encourages preservation of (each) landmark.' The citation, in this instance, reads as follows:

"The Chesapeake and Ohio Canal has been designated a Historical Civil Engineering Landmark by the National Capital Section and the Maryland Section of the American Society of Civil Engineers. The C. & O. Canal, which was constructed between 1828 and 1850, was an (Continued on Page Two)
C. & O. Canal Becomes ASCE "Historic Landmark"

Following the ASCE program at Great Falls, the entire group enjoyed watching the "Canal Clipper" locking through the Tavern Lock to unload its passengers at a dock below. There are six locks, in excellent condition, in less than a mile of canal below the Tavern, to overcome the drop of Great Falls of the Potomac.

(Continued from Page One)

Welland Canal Activities

In view of success of the Welland Canal 150th Anniversary Program last year, a continuing organization, the Welland Canal Heritage Foundation Inc., has been established to coordinate and promote the work of various organizations in the Niagara region dedicated to the economic, historical and tourism advantages of the four canals. ACS Director for Canada, Lou Cahill of the Ontario Editorial Bureau, will serve as the consultant for public relations.

"Merritt Day," sponsored by the St. Catharines Historical Museum on 26 November, featured a bus trip up the Grand River. It was the "Grand" which made possible the first Welland Canal when it was dammed at Dunnville to provide the additional water necessary to overcome the high area of land in the Deep Cut section of the Welland Canal. William Hamilton Merritt was also involved with the Grand River Navigation which built a series of locks along the Grand River.

The trip included the Feeder Control Lock and the Royal Navy Dockyard at Port Maitland, plus a full dinner.

Squires Plans ACS English Canals Study Tour

Our very active ACS Director in the United Kingdom, Dr. Roger Squares, reports that the October 15th American Canals film showing was a great success! Over forty people showed up for the event, to see six different films on the Mississippi Waterway, Panama Canal, St. Lawrence Seaway, Rideau Canal and Trent-Severn Waterway.

Included with this issue of American Canals, you will find a general information sheet, which Dr. Squares has sent us, for a three-part Study-Tour of the English Canals, extending from August 1st through August 15th, 1981. Parts of the program may be booked separately, or "en bloc." We are deeply appreciative of the time and effort which Dr. Squares has spent on the details of this program and hope that all ACS members who are interested will communicate with him as soon as possible.

Correction to the item about the rental of the English lock cottage and canal narrow boat owned by the Greg Rives family (ACS), the address is Box 4952, APO, New York, N.Y. 09194.

November 1980
THE TRENT-SEVERN WATERWAY

By Roger Squires

The Trent-Severn Waterway is a vast canal system which extends some 240 miles across the Province of Ontario from Trenton in the East, on the Bay of Quinte, which is part of Lake Ontario, to Port Severn, in the West, on Georgian Bay, which is part of the Great Lake Huron. The system comprises of 43 locks, 2 Marine Railways and some 44 miles of river and canal channel connecting original rivers and lakes and by-pass waterfalls. There are 17 large lakes, with over 1000 miles of shoreline and 60 large islands, in the system and the remainder of the route consists of improved river paths and lock flights to overcome the falls, where earlier portages had to be made around the rapids.

The waterway can be neatly divided into two parts. The southern catchment area and the more northerly Severn river system, which rises near Lake Simcoe and empties into Georgian Bay. A man-made river unites the two river basins near Kirkfield. The summit of the canal being 814 ft. above sea level at Balsam Lake. When used as an extension of the Rideau Canal, which can be reached by a sheltered passage through the Bay of Quinte, the network offers some 425 miles of inland cruising from Ottawa through to Georgian Bay.

The origin of the Trent-Severn Waterway lies in the need for access to the sparsely populated interior of Upper Canada and facility to link the Great Lakes with protected routes entirely under Canadian control. Much of the route was originally used as an Indian trade route. It was first surveyed by the French explorer Champlain in 1616, when the French explored the area for its fur. At this time the interior lands were Indian domain.

The future of the whole of Upper Canada changed when Wolfe captured Quebec in 1759 and opened the route to the Province of Upper Canada, part of which is now Ontario. The early immigrants, for the most part, became farmers and used the existing waterways as access to the remote areas. As the land was surveyed, the terms of the lumbermen arrived to exploit the rich reserves of timber. Unfortunately it did not work out as planned. The major forest of prime timber and used the existing waterways as access to the remote areas. As the land was surveyed, the terms of the lumbermen arrived to exploit the rich reserves of maple, oak and pine. They used the rivers and lakes as conveyors of logs to their log ships. During the 18th Century the Empire Loyalists founded their first settlement at Trenton, on the Bay of Quinte, in 1794 and the first saw mill opened in the town in 1795. This established the Trent River as a prime outlet for the new whole land.

The first real plan to link Lake Ontario with Georgian Bay and Lake Huron was promoted by N. H. Baird, a civil engineer, in 1812, though earlier plans to make the Trent navigable had been suggested as early as 1795. In 1820 the British Government proposed that the Trent Canal should be built as a combined military and colonization scheme. Unfortunately it did not work out as planned. Even so more and more lumbermen had started to build saw mills along the water route at Frankford, Glen Ross, Peterborough, Bobcaygeon, and elsewhere. A series of new towns sprung up along these mills and also on Rice Lake, where small communities were established at Beldyville and Gore's Lerring and transmission ports, where goods could be loaded for export to Peterborough and beyond.

In 1828 John W. Bannister suggested a novel method of building the Trent Canal. He had the idea that the unemployed men from Britain and Ireland should be employed to work on the canal for a year in return for the necessities of life and some canal shares. Needless to say the plan did not proceed.

Peterborough Lift Lock on the Trent-Severn Waterway. With a lift of 65 feet it is the highest hydraulic lift in the world. Each chamber is 140 feet long by 33 feet wide and weighs 1700 tons when filled with water. (See also A.C. #19, Nov. 1976) Photo by R. Squires.

By the 1830s the earlier settlers and the lumbermen had joined forces to advocate the building of a reliable water route between Lake Huron and Lake Ontario to stimulate trade. Showered with petitions, the Government finally agreed that the Trent Canal should be developed, but on a piecemeal basis. The first lock that was constructed was a small wooden structure at Bobcaygeon that opened in 1835. Others quickly followed at Glen Ross, Hastings, Whitakers Rapids (near Peterborough) and Lindsay over the ensuing decade. These enabled Lake Simcoe, Rice Lake and Pigeon Lakes, and Rice Lake to be joined to Peterborough. They did not, however, offer a through water route to Lake Ontario from the hinterland.

As this work proceeded in an uncoordinated and piecemeal fashion a full survey was conducted of the Trent River through Rice Lake by N. H. Baird. He suggested that some 37 locks, 134 ft. long and built wide, together with 17 dams and 6 miles of side cuts were needed to link Trenton with Bewdley, on Rice Lake. A second survey suggested that a further 27 locks, 10 dams and 14 miles of canals would be needed if Rice Lake were to be linked with Lake Simcoe. The whole scheme would cost over $1,300,000 and take several years to build.

The Big Chute, showing the new carriage and twin, offset tracks. This photo (by R. Squires) was clear up to 1960 and resulted from our Big Chute diagram in A.C. #32, Feb. 1980.

The Big Chute was a major obstacle to the waterway and took much time and money. The Government decided to make the Big Chute too costly and unnecessary in 1841. They decided that only a few log chutes were required to enable the timber rafts to move downstream. Even so, work proceeded at Chisholm's Rapids, Percy Boom and Crooks Rapids, with the completion of further locks and dams.

The 1850s were boom years for the lumber industry. Favourable trade legislation opened up new markets. Smaller Government projects, such as the Chippewa River waterway for building materials to Canadian suppliers. The saw mills rapidly expanded and the population of the associated towns swelled to twice their original size and bounds. However, at the same time the railway started to expand and the growth of numerous branch lines seemed to scorn a future hope for the through water route.

The gradual influx of more and more settlers to the north allowed the government to promote and develop the piecemeal development of the waterway. But for the most part, the period between 1849 and 1870 work was restricted to periodic maintenance and some upgrading of existing structures. During this time the original lock at Bobcaygeon was rebuilt, but by 1859 it was the only operational lock on the Upper Lakes. Regular annual construction was established between Lakefield, Fenelon Falls, Bobcaygeon, Lindsay and Port Perry by 1867. Between 1856 and 1907 the outstanding sections of the waterway between Peterborough and Lakefield, Balsam Lake to Lake Simcoe, were finished with the construction of seven hydraulic lock lifts at Peterborough and Kirkfield.

The two hydraulic lift locks at Kirkfield and Peterborough were spectacular engineering projects in their own right and visitors came to see them from all around. The one at Peterborough, with a lift of 65 ft, is still claimed to be the highest of its kind in the world. Both lift locks have twin chambers of 140 ft. in length and 33 ft. wide, with normal water levels of 8' over each lock and 15' of lock chamber is 1700 tons. The raising of the lock chamber is completed by the simple transfer of water between the two chambers. The upper chamber is overlaid with an extra foot of water and when the valves are opened between the two chambers the water flows out of lock chamber. This fills the lower lock chamber and allows the lock to rise.

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HAWAIIAN CANAL

Bill and Ruth Shank have just returned from a visit to our Fiftieth State and were surprised to discover the above canal just north of Waikiki Beach. It is a tide-water canal, built in 1925 to take "run-off" from the mountains and eliminate a former swamp. It is known as the Ali Wai Canal and runs nearly two miles to empty into the Ali‘i Wai Boat Harbor, on the Ocean at Honolulu. The Manoa-Palolo Drainage Canal feeds it from the mountains, north of University of Hawaii. There is a park and small Marina on its north bank. It provides an attractive addition to the heavily populated area east of Honolulu.

Who Said the Irish Built the Erie?

By Todd S. Weasek

(From The Canal Packet, the Newsletter of the Canal Museum Association, Syracuse, N.Y., Vol. III No. 2)

"Just the facts, ma’am. All I want are the facts.
- So spoke Sgt. Joe Friday each week on Dragnet. The historian is in that same situation in trying to relate the past though the printed word. The facts of history are not easily found in many cases, as the historian has to work through hearsay, tall tales, folklore, and myths to get to the truth. Try though he might, the historian still relates some of the myths as fact when his history is finally written.

One of the prevailing myths of New York history has been that the Irish built the Erie Canal. Everyone knows that it was a truth, they had heard it over and over again, and even read it in novels and histories of the Erie Canal. The story had charm, was pleasing and made a dam good tale. One problem, it isn't true.

The true facts came to light recently when Mr. Richard Wright, Director of the Onondaga Historical Association, gave a talk on the early settlement of Onondaga County for Onondaga History Week. He had heard that the county was settled mostly by people of New England stock, and those were the people who built the original Erie Canal. He stated that he had known that the Irish had built the Erie. Surely he had heard that time and time again. He had no more of questioning Nelson's "fact" than he would that Washington was our first president, until he was asked to prove it by the U.S. Immigration Service. They were doing an exhibition on Irish immigration and wanted the proof for that odd character who would come along and challenge known facts. Knowing that the Irish had dug the Erie, Wright went to find the proof.

But things were not as they seemed. He said, "I would tell you here and now that four Irishmen worked on the original canal, but I haven't been able to find that fourth Irishman." After exhaustive research he had found only three Irish who worked on the original ditch.

It really makes sense when looked at objectively. The Erie was built from 1817 to 1825 and the waves of Irish immigration didn't begin until the 1830's. Contracts on the original (1817-1825) Erie were let to farmers and business men who were primarily of New England origin.

How then did the myth get started? There is a simple explanation. The Irish immigration began in earnest in the 1830's and turned to a flood in the 1840's. In 1836 the first enlargement of the Erie began and the contractors used the abundant cheap Irish labor. The newspapers of the enlargement period are full of stories of the brawling Irishmen who worked along the canal. The Irish worker spurned many colorful stories and legends of work on the canal which sought the public's imagination. Many of those who worked on the enlargement could have told their children how they dug the Erie Canal, not specifying that it was the enlargements and not the original ditch. Thus the story passed from father to son that the Irish built the Erie and became an established fact in the minds of all.

Laborers on the Barge Canal (1905-1918). They were predominantly of Southern and South Eastern European origin as the low-paying canal work was historically done by the newly arrived immigrants to the United States.

SCIOTO VALLEY CANAL SOCIETY

We call the attention of our readers to a new canal society, the Scioto Valley Canal Society, inc., of Portsmouth, Ohio. Their objectives are to promote interest and awareness of the public to the historic significance of the old Ohio and Erie Canal in the southern portion of Ohio. They have already published three booklets: "Memories Along the Old Canal" (1978); "Life Along the Towpath" (1979); and "Union Mills, circa 1856" (1980). Current officers are: Robert A. Delabar, President; Wilma Jarrells, Vice President; Rosalia Levine, Treasurer; Beverly McCall, Recording Secretary; Charlotte Schaefer, Corresponding Secretary, and Truman C. Thrash, Public Relations. For further information on the Society and its publications, write Mr. Thrash at 1051 Galena Pike, West Portsmouth, Ohio 45691.

CANAL RESTORATION PLANNED

Scott McCaffrey, Director of the Johnstown-Highspire (Pa.) Recreation Commission, is shown here at the north end of a watered section of the "Pennsylvania Main Line Canal" in Highspire. There is a well-preserved section of the canal running between two borough recreational parks, which McCaffrey proposes to clean up as a linear park area, with hiking and biking trails, possibly with volunteer help from the community.

Theodore A. Sherman
1899-1980

"Ted" Sherman, an active member of both the American Canal Society and the Pennsylvania Canal Society, died at age eighty-one in the Gnaden-Huegel Hospital, Lehighton, Pa., October 30th, 1980.

Ted was a canal boatman, working for the Lehigh Coal and Navigation Company, 1911 to 1920. Leaving the Canal, he joined the former Central Railroad of New Jersey as brakeman, conductor and yardmaster, before retiring in 1960. Since that time, he has been giving slide lectures on the Lehigh and Delaware Canals, often regaling his audiences with canal-day ballads.

He will include monetary bequests to both the American Canal Society and the Pennsylvania Canal Society.

Born in the Coalport area of Mauch Chunk (now Jim Thorpe) he was the son of the late Emanuel and Sarah (Walsh) Sherman, and the husband of Helen (Beers) Sherman, who died in 1977.
"You who enjoy a stroll in the country these crisp winter days can find no more interesting and enjoyable tramp than that along the old canal which was built over 100 years ago to connect the New Meadows and Kennebec Rivers."

By William F. Gerber

The Bath Independent in 1811, almost seventy years ago, noted the evidence that a long-forgotten feature of the landscape north of Bath had survived in a quite recognizable form at least until then. The reporter described the canal a few days prior and had walked its course from end to end. Tidal flow, unconstrained by causeways, had kept this waterway open from the time of its construction, about 120 years. In addition to describing the beauty of his own crisp winter stroll and recounting a little of the history, the reporter speculated about what an asset it would be to small boats if the canal could be reopened.

Faire, aided by man, was not to be so constructive. In subsequent years, causeways were built across the Kennebec end of the canal to carry the North Bath and Lover's Retreat Roads. Likewise, a causeway was also built for the Bath-Brunswick Road. Together these structures channeled off the flow that had for years sustained the canal, leaving the adjacent water to stagnate. Slowly, the canal began to fill and disappear. Today, this waterway, once a thoroughfare of men of industry and vision, is little more than a wet scar on the earth. And Bath, which for more than 100 years was an island during each high tide, has once again become a peninsula.

But not all traces of the canal are gone. In spite of the reports of its disappearance, this writer claimed to have made his pilgrimage to the old canal and walked its frozen water. There was, of course, no way to confirm that it was once either fair or foul. It was there, and it certainly no longer is. But in some places, the ice clearly exhibits the dimensions that history records, a width of 30 feet through much of its 12 mile length, narrowing down to 10 feet at some points. Furthermore, Bath's peninsular status is still visible, at least. The entire end to end journey, except perhaps the half the length of a football field, can be made over the ice of the canal. Of course the walk is not so easy as it was 70 years ago. The northern section, between the North Bath and Lover's Retreat Roads, is still kept open by the flow of Welch's Creek (also known as William's Creek), but from Lover's Retreat downstream the roadblocks to the banks of the New Meadows River, the channel is thick with impeding ice growth. Approaching the town of Bath and Brunswick, the marsh grasses obscure most traces of the canal edges but south of this point, the route again becomes quite obvious.

What are the origins of the canal? When was it built; by whom and for what purpose? It hasn't made the news in a long, long time; in fact, the Bath Independent's story of 1911 may have been the most recent significant news coverage. But a little digging produced the following, the first record of the canal's conception is a petition to the General Court of the Commonwealth of Massachusetts for permission to cut a canal from the head of the New Meadows River into Merryymeeting Bay. It dated September 1, 1812, and was signed by 88 citizens of Brunswick and Bath.

The purpose of the canal was to bring "Lumber and Maids . . . directly into Casco Bay and to Portland without going to sea or running the hazard of going down that rapid torrent, the main stream of the Kennebec." The principle beneficiaries were to be the owners of the tidal mills along the New Meadows River. Timber local to the West Bath area was becoming scarce by this line and the canal would give the mills access to logs which even then were being floated down the Androscoggin and Kennebec Rivers into Merryymeeting Bay.

On this aerial photo, the route of the old canal, between the New Meadows and Kennebec Rivers, is clearly visible.

About four years later on March 5, 1816, the General Court passed an act authorizing the creation of a corporation to build the canal, listed the members of the corporation, and specified that no tolls would be required for public use. On June 17th of the next year, a second act was passed amending the list of corporate members and making provisions for the collection of tolls.

A canal from the head of the New Meadows River to Merryymeeting Bay . . . the New Meadows Canal . . . that the said canal shall be kept open for the passing of boats, rafts and other water crafts, and for all persons who may wish to pass or transport business therein at tolls the following toll: . . . every boat . . . of one ton, the sum of nine pence, and in the same proportion for vessels or boats of greater or less burden not exceeding six shillings for any such vessel or boat. For every three hundred feet of boards in rafts four pence halfpenny; and the same proportion for all other kinds of lumber.

How many plans and projects have been proposed for the restoration of this canal? How many have been put aside? How many have been abandoned? How many have been completed?

On March 22nd, 1793, the court passed the act recognizing that the canal had been opened" from the New Meadows River to the waters of the river Kennebec, a little below Merryymeeting Bay, at a place called Welch's Creek, if having been found impracticable to open a canal directly to the Bay, and further by reason of rocks and other obstructions. This act also empowered the proprietors to keep the canal open and to enjoy all tolls and privileges. Based upon this act, it appears that the canal was probably completed the preceding year, i.e., in 1792.

One John Peterson, must have been the driving force behind the canal or perhaps because it was his father, He built a dam across the ripper cove, apparently in the vicinity of the present Maine Central Railroad Bridge, and established a grist mill at the eastern end and saw mills at the western end. Eventually the New Meadows Canal became unofficially known as the Peterson Canal, and a road on the west side still bears his name.

The records don't tell us much about how the canal was operated. Among a number of people interviewed around the turn of the century, several insisted that the canal had never been completed and no logs had ever been transported through it. Others could recall their parents talking about going down to the locks but no conclusive evidence of locks or tidal gates has ever been found. It is not my intention to seriously look for them. There is a remnant of some kind of stone and mortar structure in the canal near the northern end but it is more a lock and probably not a tidal gate. One man, however, remembered his father telling how hard he had worked as a boy piling logs up through the canal. His father was born in 1856 and worked on the canal when he was only 10 years old, then the canal operated for at least 12 or 13 years. Of the various accounts, this one seems reasonably plausible. It is further substantiated by at least one other statement that under favorable conditions, two rafts of long log could end to end, each raft composed of six large logs laid side by side, each log not less than 80 feet long, were easily floated through the canal.

Nevertheless, all evidence suggests that the canal was less than a resounding success. One problem concerned the difference in the times of high tide at each end of the canal. Typically, the canal could be used for only about three hours of each tide cycle. Other limiting factors seem to have been the insufficient depth to which the building blasted through the ledge at the summit and accentuated by the absence of control such as might be afforded by locks or tidal gates.

Whatever problems the canal may have had, the concept of a waterway to Bath was a good one and would be quite useful today if it were reestablished.

The author, William E. Gerber, resides at 16 Princess Ave., Chelsea, Mass. 02150.

CanaL MUSEUM OPENs

The Narragansett Valley Area Museum, featuring displays and historic information on the Delaware and Hudson Canals, opens its doors on July 13, 1980, at ceremonies attended by over 300 people, including local congressmen, canal authors, and canal buffs generally.

The Museum has recently received a $50,000 grant from the New York State Council of the Arts, and also a $24,000 Federal Grant from the recently formed Institute of Museum Services. Future plans include development of a D & H Canal Park in connection with the Museum.

A special "Holiday on the Canal" dinner is being planned for December 7, 1980 at the Corinna Country Club, a historic inn located on land donated by the Narragansett Valley Area Museum. Box 283, Cuddebackville, N.Y. 12729.
**CANAL HYDRAULICS - A LA FRANKLIN**

John S. McOwen, of the Civil Engineering Department of the University of Minnesota, has called attention to one of Ben Franklin's letter quoted in "Hydraulics in the United States, 1767-1796" by Maurice A. Runyon letter was written by Franklin in 1766 to Sir John Pringle, while Franklin was living in England. Permit excerpts of the letter follow:

**SIR**,

*Craven-Street, May 10, 1766.*

You may remember that when we were travelling on the Schuylkill in his remark about the track-schunt in one of the stages went slower than usual, and encurred the skidder, what made it so, the reason, which was, as I understood, that it had been a dry season, and the water in the canal was low. On being asked if it was so low that the boat could not have cleared the bottom; we said, no, not so low as that, but so low as to make it harder for the horse to draw the boat. We neither of us at first could conceive that if there was water enough for the boat to swim clear of the bottom being deeper would make any difference; but as the man affirmed it seriously as a thing well known among them, and as the peculiarity required in their stages, was likely to make such difference, if any there were, more readily observed by them than by other watermen who did not pass so regularly as we. In the canal it was less, but in the river it was much more obvious; and forwards in the same track I began to apprehend there might be something in it, and afterwards soon confirmed this conjecture that the boat in proceeding along the canal, most in every boat's length of her course, move out of her way a body of water, equal to half the room her bottom took up in the water; that is, the water she moved, must pass on each side of her and under her bottom to get behind her; that if the passage under her bottom was straitened by the shallows, most of that water must pass by her sides, and with a swifter motion, which would retard her, or lessen her, according to that water becoming lower behind the boat than before, she was pressed back by the weight of its difference in height, and her motion retarded by having that weight constantly to overcome. But as it is often lost time to attempt accounting for uncertain facts, I determined to make an experiment of this when I should have convenient time and opportunity.

After our return to England as often as I happened to be on the Thames, I enquired of our watermen if they were sensible of any difference in running their boats on shallow or deep water, and they affirmed to all observing an apparent one. When standing on the bridge looking at the canal this morning. I measured and found them agreeing in the fact, that there was a very great difference, but they differed widely in expressing the quantity of difference, some supposing it was equal to a mile in six, others to a mile in three, etc. As I did not recollect to have made any accurate measurement, I made this matter in our philosophical books, and concerning that if the difference should really be great, it might be an object of consideration in many projects now on foot for digging new navigable canals in this land, I lately put my design on making the experiment in execution, in the following manner.

I provided a trough of plain boards fourteen feet long, six inches wide and six inches deep, in the form of a test, with a shallow and deep end, on which I measured one inch on the side, to represent a canal. I had a loose board of nearly the same length and breadth, that being put into the water might be swung down to the depth, and fixed by little wedges where I would choose to have it stay, in order to make different depths, leaving the surface at the same height with regard to the sides of the trough. I had a little boat in form of eighteen boat of bunt or six inches long, two inches and a quarter wide, and one inch and a quarter deep. When closed, it drew one inch of water. To give motion to the boat, I fixed one end of a long stick behind it, having just enough to support it in the water, and could let it out of the way on a well-made brass pully, of about an inch in diameter, turning freely on a small axle; and a

The water was the weight. Then placing the boat at one end and giving a tug, the weight would draw it through the water to the other.

Not having a water that shows accurate, in order to measure the time taken up by the boat in passing from end to end, I counted as fast as I could count to ten, repeatedly, keeping an account of the number of times on my fingers. And as much as possible to correct any little inequalities in my counting, I repeated the experiment a number of times at each depth of water; I thought it might take the medium. And the following are the results.

**WATER DEPTH:**

<table>
<thead>
<tr>
<th>1½ inch</th>
<th>2 inch</th>
<th>2½ inches</th>
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<tbody>
<tr>
<td>1st exp</td>
<td>100</td>
<td>.94</td>
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<tr>
<td>2.</td>
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**Medium 10**

<table>
<thead>
<tr>
<th>Medium 10</th>
<th>Medium 12</th>
<th>Medium 16</th>
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<td>150</td>
<td>155</td>
<td>160</td>
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</tbody>
</table>

I made many other experiments, but the above are given with both and they serve sufficiently to show the difference that is considerable. Between the deepest and shallowest it appears to be somewhat more than one fifth. So that suspending large canals and basins and depths of water to bear the same proportions, and if four men or horses would draw a boat in deep water four feet long in four hours, it would require five to draw the same boat in the same time as far in shallow water; or four would require five hours.

Whether this difference is of consequence enough to justify a greater expense in deepening canals, is a matter of calculation, which our ingenious engineers in that way will readily determine.

I am, etc. B. F.

John McOwen makes the following comments: "In the early days when canals were only 40 ft wide and 4 ft deep, the limiting velocities were too low. Conventional tugs could go no faster than about 3 mph in one of them without undue increases in the towing forces. Even the smaller and speedier passenger ships had absolute limits of some 6-7 mph. Had they approached these speeds, their sinkages would have been 0.4-0.7 ft and their drafts very high. At the actual maximum speeds, they may have settled a few inches of a foot of horned that were strong and fast."
Susquehanna & Tidewater Lockhouse

Front view of the Lockhouse in Havre de Grace, now being restored and re-furnished. (Photos by Bill Shank)

Work has begun on the restoration of the lockhouse housing the Susquehanna Museum at Havre de Grace, Maryland. The restoration will cost about $18,800. The restoration of the lock and the flooring will cost about $10,000. Information is in on the furnishing of the four rooms of the lockhouse, to make it compatible with its operating period from 1840 until 1894. Send responses to Editor, American Canals (Box 310, Shepherdstown, WV 25443), with copies to Charles D. Montgomery, P.E., Office of the Mayor, Havre de Grace, MD 21078.

HAMPShIRE AND HAMPDEN CANAL

By J. M. Francesco

On February 1, 1823, the Massachusetts legislature passed the petition for incorporation of the Hampshire and Hampden Canal Company. The canal was to begin at the Connecticut River in Northampton and pass south through Easthampton, Southampton, Westfield and Southwick. It was to link up with the Farmington Canal in Connecticut, providing a continental route from New Haven to Northampton. One of the proprietors was Samuel Hinckley who was a strong supporter of canals and who later would support an extension of the Hampden Canal to the border of Vermont. (Other initial proprietors were Ebenezer Hunt, Ferdinand H. Wright, Isaac Damon, Ephraim Williams, Samuel Fowler, Elijah Bates, William Averter, Enos Foote, John Mills, Heman Lapham.)

The construction of the above authorized canal had scarcely begun when the H. & H. Canal Company petitioned and was granted by the Massachusetts legislature permission to construct a canal from Northampton to the north side of the Connecticut River. This was largely a result of the remonstrances of the rival Connecticut River Lock and Canal Company which favored river improvements and complained that the proposed of the Connecticut River would impair navigation in the southern part of the state. The legislature established the locks and the widening at the surface to be 34' wide at the surface, 20' wide at the bottom and 4' deep. The legislature also required that the canal be a public way. This section from Northampton to the north end was never constructed. The history of the section south to Northampton necessitates a diversion and brief discussion of the Farmington Canal in Connecticut.

The Farmington Canal was chartered by the Connecticut legislature in 1822 to construct a canal from New Haven to the Massachusetts-Connecticut border. Work commenced in 1825 and was completed in 1828. James Hillhouse was superintendent and David Hurst and Henry Farnum were the engineers. In 1826, at a meeting of the stockholders, the company voted unanimously to unite the stock of the Hampshire and Hampden Canal Company, to the extent and for the purpose of constituting the net amount of tolls and proceeds of both a general fund for dividends, as soon as both canals shall be completed. By 1827, the company by traffic as far as Westfield, that portion of the Hampden canal having been completed. The remainder of the Hampden Canal was completed by 1835.

The Farmington Canal did adequate business but its income could not meet the extraordinary expenses caused by freshets which severely injured the canal and its feeders. In 1836, an especially disastrous year, a new company was formed. It was a merger of the Farmington Company and the Hampden Company and was called the New Haven and Northampton Company. The stock of the Farmington Canal was reorganized at which time the canal faced a loss of $792,931. Since the Hampshire and Hampden was also in financial difficulties, the merger was possible. This increased the good of all the stock in the company which amounted to about $259,900. The debts of the company were

Information Needed on Turtle Creek Culvert

Information, technical aid and financial aid is needed to preserve a portion of twin barrel culvert which carries the Miami-Erie Canal over the Turtle Creek Valley in Shelby County, Ohio.

This twin-arch stone culvert is approximately 168 feet long. There are concave curved stone wings at all four corners exhibiting the quality stone work of the period. Each of the two barrels has a span of 22 feet, height from flow line to spring line of the arch is 5 feet, and the rise of the arch is 13.5 feet.

Though the structure is probably unique in Ohio, information is sought as to better determine its significance within the American canal systems. Send any information on similar structures to Editor, American Canals (Box 310, Shepherdstown, WV 25443), with copy to Stephen Dowd, PE, PS, 216 E. Poplar Street, Sidney, OH 45365.

The Summer 1980 issue of "The Tiller," official publication of the Virginia Canals and Navigable Societies includes an excellent series of articles by ACS Vice President Bill Trout on 24 different historic canals in Virginia. For information about the VCAN Societies contact: Vivienne Mitchell, Secretary/Treasurer VCONS, 625 Pomanor Walk, Alexandria, VA 22314.

Route of the H. & H. thru' Massachusetts were paid by the creditors subscribing them at their par value to the stock of the New Haven and Northampton Company. The loss of the company was therefore $229,110.01 ($110.01 was not subscribed) which added to the loss sustained by the Farmington Canal Company of $768,931.01 makes a total of $1,039,041.52. The new company, New Haven and Northampton, was formed in 1830 with authority to issue 12,000 shares of stock ($25 a share. After satisfying its debts, the company was left with a cash capital of $120,134.92.

Between the years 1836-1840, the canal "was doing a very good business" but had spent its capital and was mortgaged beyond it. By 1840 the New Haven and Northampton suffered a loss of $338,114.92 which raised the total loss of both companies to $1,777,156.54. Between 1840 and 1847, the canal continued to do a healthy business. However, its extraordinary losses incurred as a result of spring freshets and heavy rain kept the company in increasing debt. Capital ended with a small capital stock in 1848, the canal was purchased by the railroads.

Reason for failure of canals or why we did not make any money:

"The canals of New England were never able to control the line of travel, or to carry passengers to any great extent. The canal companies were not transportation companies, but derived their income entirely from tolls. They therefore required several times the amount of freight which railroads do in order to make the same profit. Scarcity of capital also was a problem which resulted in the slow construction process. The appreciation that the canals would soon or later be given up also retarded competition."

(Prepared in 1972 by J. M. Francesco for the Massachusetts Historical Commission as background material for a potential National Register nomination.)

Page Seven
Where Are These Locks?

In this case the editor knows, but what is not known is the history of the short canal of which they are a part. Comments are invited. By the way of a hint, these locks can be said from the southbound lanes of I-91. The location will be given in the next issue of American Canals. If you have a photo of an historical canal scene about which you would like to learn more, send it to the editor for inclusion in a future issue of American Canals. (Box 310, Shepherdstown, WV 25443) Photo courtesy of David G. Barber, ACS.

By the way, the WHAT IS IT? photo in the May 1980 issue of American Canals was provided by Jerry Surphyn, ACS, the steamboating and waterways expert in Huntington, WV.

Canal Tours

Among popular new cruises are voyages through the Panama Canal. They team up Mexican and Caribbean ports with fascinating daylight travel through the “Big Ditch.” The voyages are offered by a variety of cruise lines: Royal Viking, Princess, Staten, Royal Cruise, Holland America, Carnival, and Sun Line. Most of these fall into spring sailing runs ten to 17 days.

(From Bill McKone, from Bottorf Homes and Gardens for Feb. 1979)

We have just received an interesting full-color brochure from Continental Waterways of London with complete itineraries for “Royal Barge Cruising in France” in 1981, using “Les Escargot,” “Little,” Palmiras, Virginia Anne,” “Mark Twain” and “Catherine Anne” on the Canal du Midi and canals in the Champlain Region of France. Similar tours in England are included. The brochure and information may be obtained in the USA by contacting Julia Collins, Continental Waterways Ltd., 11 Beacon Street (Suite 1110), Boston, Mass. 02110; Phone (617) 227-3220.

Trent - Severn

(Continued from Page Three)

1965 when the old Marine Railway at Swift Rapids was replaced by a single deep (47 ft.) fully automated elevator gate lock. Since that time various other double locks, such as the one at Fenelon Falls, have been converted to single deep locks and many locks have been fully automated.

In 1973 the Trent-Severn Waterway was seen as part of the Canadian transport system. Its control was thus initially placed with the Department of Transport. However, in 1972 its administration was transferred to Parks Canada as a formal recognition of its change from a commercial artery to a recreational and heritage resource. A formal commitment to ecologize the future of the Waterway was made in 1973 when Parks Canada and Ontario’s Resources Department jointly agreed to accept the recommendations of the CORTS (Canada-Ontario River Trail Survey,Trent-Severn) Report that contained recommendations for “preserving the corridors unique qualities and linking a means for the optimal development and use of the waterway,” while striving for a pollution free environment. In specific terms, the Report called for the restoration of historic sites, development of scenic trails, municipal parks and marinas and boating facilities as well as preserving the wild life and natural areas. These features have since been constructively developed and the whole 425 miles of waterway that is composed of the two Heritage Canals, the Rideau and the Trent-Severn; now has its future assured.

One of the tangible results of the CORTS programme has been the expansion of the recreational use of the Severn section of the route, which has been serviced with a new parallel Marine Railway capable of moving more large craft. The new “car” which became fully operational in 1976, is being capable of carrying craft of 100 tons weight up to 100 ft. long 30 ft. beam. The carriage itself is a masterplank, holding the 80 ft. long and 35 ft. high and boats are supported on it in slings which can be adjusted by means of hydraulic rams to fit the variety of hull configurations. The whole carriage runs on two independently contoured pairs of tracks, one for the front wheels and one for the rear, which by an offset arrangement enables the car to narrow the vessel’s arched level as they are transferred down the SBT difference between the two water levels at this point. It was first planned to replace the earlier Marine Railway with a new deep lock but the decision to go ahead with the new Railway was taken to preserve the land barrier and to prevent the migration of sea lyme grass into the fish holding waters of Lake Simcoke. The old Marine Railway, with its 25 ft. car built by Douglas Furie in 1947, still remains as a backup for the new and is still often seen in operation over the summer weekends.

The waterway today is now the domain of the leisure enthusiast. All locks are manned by lock masters and are opened between May and October each year. It is maintained in prime condition, for which pleasure craft pay a toll to use the waterway. For a 25 ft. craft annual fee is $295 per year, while larger craft pay slightly more. The waterway is mainly used by the normal pleasure cruisers, but because of the long distances between locks, they all have powered engines and some are capable of well exceeding 25 mph whilst traversing the unrestricted lake sections. For the hire boat, the normal craft is a motorized house boat, which looks like a caravan on pontoons. Even so, it serves its purpose very well. Others simply use an outboard on a dinghy or a canoe. Even so, it is unusual to find a comprehensive canal system that is so unique. As such the Trent-Severn perhaps offers the canals enthusiast all he seeks.

(Or Spivew is ACS Director for the United Kingdom.)

MORE MINDERMAN CANAL ART

These Georgetown (District of Columbia) towpath houses are probably the most picturesque of all the sketched and photographed buildings on the Chesapeake and Ohio Canal. The house on the astern left was once used by the canal company and was built between 1810 and 1812. The building on the extreme right was built in 1811 by the Poindimie Masonic Lodge which occupied it until 1870. The other buildings were built between 1840 and 1870. (The painting was done by Earl M. Knepper, ACS, a landscape artist, 5010 Jamieson Road, Beltsville, MD 20705.)

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