AMERICAN CANALS

BULLETIN OF
THE AMERICAN CANAL SOCIETY

BULLETIN NUMBER 37 | Editorial Address — Box 310, Shepherdstown, W.Va. 25443 | MAY 1981

PRESIDENT'S MESSAGE

I am delighted to welcome into LIFE MEMBERSHIP in the American Canal Society **Michael A. Handford** of Hinckley, Leics., England; **Irving M. Johnson** of Hadley, Massachusetts; and **R. Arden Phair** of St. Catharines, Ontario, Canada. This brings to seventeen our membership in this special ACS Group, who are now assured a permanent place on our mailing list, air-mail overseas delivery, and no further worries about future dues increases!

Charlie Derr, our faithful Secretary and Treasurer, reports that between May 1, 1980 and May 1, 1981 our membership climbed from Serial Number 1201 to Serial Number 1296, indicating 94 new members during this period. We have dropped only 45 members for nonpayment of 1981 dues, leaving us a net gain of 49 in the past twelve months. Charlie further reports that our savings account as of May 1, 1981 stands at $2484.97, our checking account at $3007.71 for a gross balance of $5492.68. Our excellent financial standing is due to: (1) good retention of old members as well as a nice increase in new ones (2) special income from our Life Members, and (3) surprising sales of our book "Best from American Canals", which has just gone into its second printing!

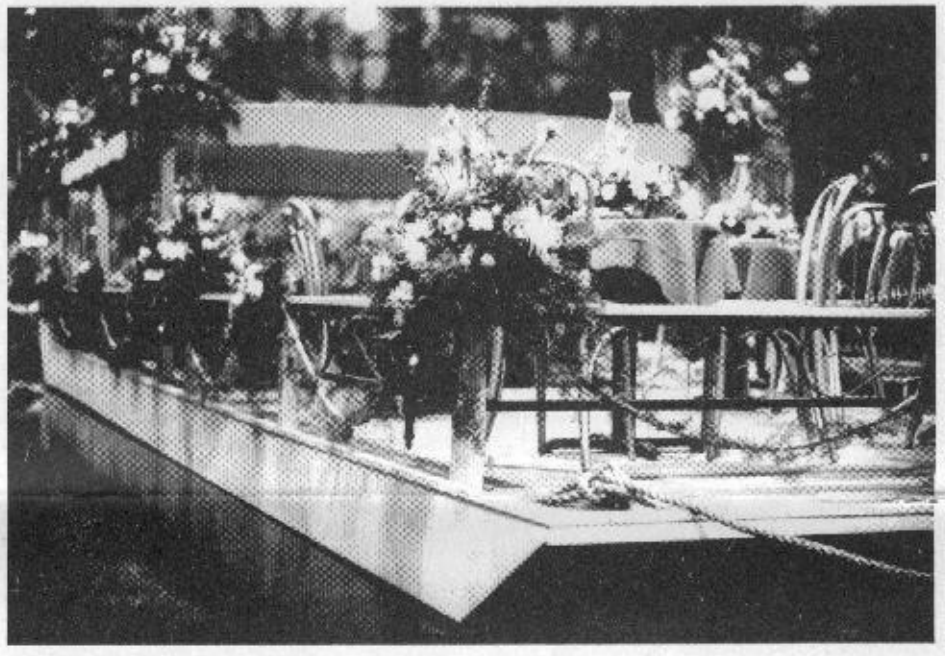
Our healthy financial situation almost guarantees no dues increase in 1982. It also enables us to offer you an occasional twelve-page issue of AMERICAN CANALS, like this one. Your Editor, Tom Hahn, has a back-log of material which you have been sending him, which is crying for publication. Perhaps we will now be able to get more of it into print. Don't forget; we need good black and white photos, or drawings, to accompany your written text. My best to all of you!

Bill Shank

ONTARIO CANAL SOCIETY?

Consideration is being given by members of the Welland Canal Preservation Association and others for an Ontario Canal Society to coordinate and promote activities on a province-wide basis. Ontario holds a special position in North America for the number of former canals which it spawned — the first three Welland Canals, Cornwall and Williamsburg Canals, Desjardins Canal, Georgian Bay Canal, and a canal in Brantford. However, it is just as interesting for the number of 19th and 20th century canals which remain to this day as navigating waterways — Sault Canal, Rideau Canal, Burlington Bay Canal, Trent-Severn Waterway, Welland Ship Canal, and the St. Lawrence Seaway. The American Canal Society strongly supports the formation of such an organization. Those interested in forming an Ontario Canal Society are invited to contact W.C.P.A., 56 Lakeport Road, P.O. Box 1224, St. Catharines, Ont. L2R 7A7

"CANAL TOWN" FEATURED AT FLOWER SHOW



A flower-adorned canal boat floats in its own little pool at the recent Philadelphia Flower Show.

Edward L. Lindemann, floral show designer, welcomes visitors aboard the New Hope Canal Boat replica.

This year's Philadelphia Flower Show focused on a nostalgic canal boat trip to New Hope for show designer Edward L. Lindemann. "I went to school near New Hope," Lindemann says. "I always enjoyed the barge town idea . . . the main street idea."

So he decided to make a piece of New Hope the centerpiece for this year's show. There were nine displays in the canal town exhibit — shops, restaurants, even a band shell surrounded by thousands of blooming flowers. And in the middle was a canal boat floating in its own little bit of canal.

The rental canal boats at New Hope are what inspired "The Barge Party" display constructed for the show by the Allied Florists of Delaware Valley. "In New Hope, you could rent a canal boat," Lindemann says. "There'd be dinner and a band and mules to pull the boat . . . everything you needed for a lovely evening."

And as you looked at the Philadelphia Flower Show's blossom-bedecked canal boat and the cafe tables at the bow, each adorned with a bouquet, it was easy to imagine lazy nights at New Hope, enjoying dinner and the music aboard a living relic of the Delaware Valley's canal town past.

(Information supplied by Pat Hendrick, Allentown.)

American Canals

BULLETIN OF THE AMERICAN CANAL SOCIETY

"DEDICATED TO HISTORIC CANAL RESEARCH, PRESERVATION AND PARKS"

AMERICAN CANALS is issued quarterly by the American Canal Society, Incorporated. Objectives of the Society are to encourage the preservation, restoration, interpretation and use of the historic navigational canals of the Americas; to save threatened canals; and to provide an exchange of canal information.

Annual subscription to "AMERICAN CANALS" is automatic with a minimum ACS dues payment of $8.00 Individual copies may be purchased at $2.00

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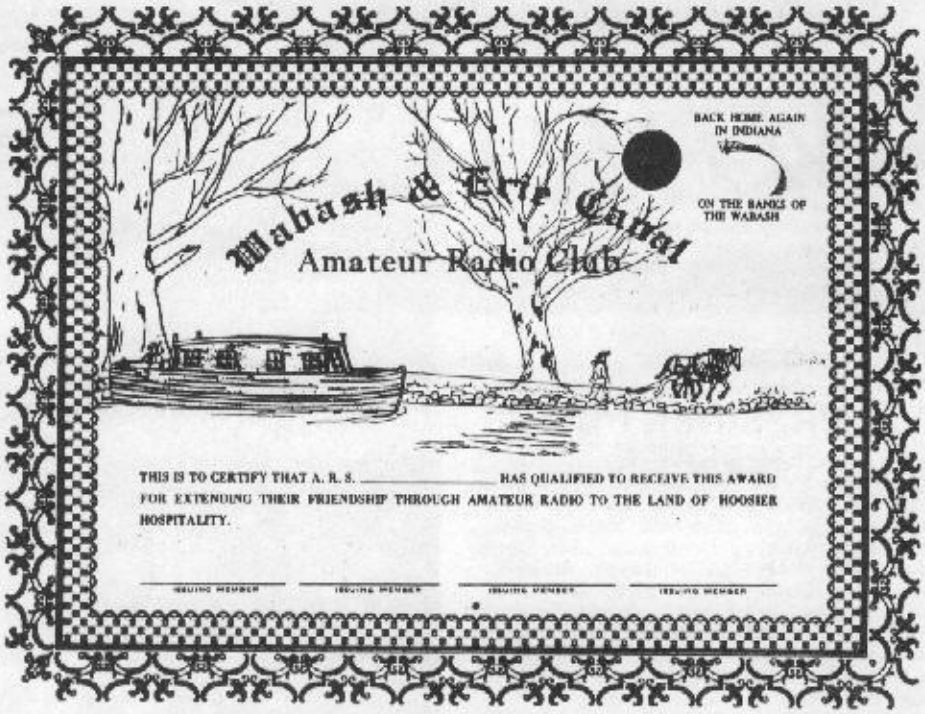
NEW CANAL CLUB FORMED



A new club — the Wabash & Erie Canal Amateur Radio Club — has been formed, and is located at Covington, Indiana. Shown here is a certificate which, along with a history of the club's name, is sent to radio amateurs who make contact with three members of the new club. Membership in the club consists of individuals from Western Indiana and Eastern Illinois. A special event is being planned on or about the 4th of July. At that time the club will set up stations near the actual line of the old canal and certificates will be presented to all participating stations. Write Wabash and Erie Canal ARC, c/o Norm Allen K9FAR, 1313 Seventh St., Covington, IN 47932. (Submitted by Gardner Smith, ACS (W9ALZ) from World Radio, May 1981.)

LETTERS . . .

(Since the last issue, we have received the following communications which we would like to share with all of you. In some cases, information is sought by the writers. We hope any of our readers, who can help, will correspond directly with those seeking assistance.)

Bill Gerber, *16 Princess Avenue, Chelmsford, Massachusetts 01863:*

"I am researching the ballads of our canal era to compile as much of the musical heritage as can be gathered and, perhaps, to produce a song book. I would like to borrow any materials that ACS members may have (lyrics, recordings, sheet music, etc.) as well as obtain leads to any other holdings. All materials will be promptly returned."

Edward Ludwig III *(Author of "Gateway to Paradise") 150 East Main Street, Apt. 213, Elkton, Maryland 21921:*

"The second paragraph in your message in the AMERICAN CANALS February 1981 issue fitted in exactly with my ideas on the give-a-way of the Panama Canal . . . I have written many letters on that sad affair in our Nation's history, and also on the give-a-way of American farm land to foreigners at low prices . . ."

Thomas & Julia Meek, *c/o Allen County-Fort Wayne Historical Society, 302 East Berry St., Fort Wayne, Indiana, 46802:*

"We are very much interested in forming a Canal Society for Indiana. One problem to be confronted very soon is what to call it. 'Canal Society of Indiana' comes readily to mind, as well as 'Indiana Canal Society', but there are a lot of people, ourselves included, who like to learn about early railroads, highways, as well as other early transportation, such as river navigation. We feel that all of these subjects are somewhat related, and that persons with one primary interest in the early transportation field may nevertheless find advantage in sharing knowledge with persons who have other, similar interests. This is especially poignant in Indiana where several long stretches of the Wabash and Erie Canal have served as convenient grades for highways and railroads, and where the canal towpaths served as the routes for some of the light rail lines which were so prevalant.

"Through you, we would like to appeal to your readers for advice concerning the choice of a name, as well as some parameters of scope of such an organization as we hope to form. Also: We are presently putting together a mailing list of people interested in joining. Please write 'INDIANA CANALS' in care of the above address."

Robert F. Felsburg, P.E., *Castlerock Farm 1517 Piketown Road, Harrisburg, Pa. 17112,* has sent us a most interesting article on the ICONN-Erie Project. ICONN — (Island Complex Offshore New York and New Jersey) envisions a deep-water port near New York harbor, built from fill provided by greatly widening and deepening the Erie Canal. The latter would be thus able to accomodate larger barges (possibly four-barge tows) to greatly increase commodity movements between the Great Lakes and the Port of New York. The new "Island" port, on the Cholera Bank alongside the Hudson Trench, would also serve as a site for energy related activities, and product transshipment facilities, and eventually even for power plants and refineries. The Corps of Engineers seems to endorse the idea. We will keep you informed of developments.

D. Marcus Potts, *Cropedy Manor Cruising Co., The Old Manor Cropedy, Nr. Banbury, Oxon. OX17 1PS, England:*

"We operate one of the few charter narrowboats on the English canal system . . . fewer since Tom Sewell stopped running 'Phobos' . . . and would like very much to extend our scope for potential clients. We are quite well booked for this year, but are already taking provisional bookings for 1982 . . ."

Mike Beech, *69 Caxton Street, Market Harborough, Leics. LE16 9EP, England:*

Mike is Chairman of the Foxton Inclined Plane Trust and is trying to trace drawings of the Foxton Plane sent to the St. Louis Exhibition about 1900 for an award in the USA. The engineer who designed the plane was Gordon Thomas, who is said to have received a "Gold Medal Award" (circa 1904) for its design. The Foxton Inclined Plane was built for the Grand Junction Canal Company, Foxton, N. Market Harborough, about 1896, to replace a flight of ten narrow locks. It was operated by a steam engine, with two counter-balanced caissons running sideways down a 1 to 4 incline. The Plane was closed in March of 1911 and in 1927 was dismantled and sold for scrap. Anyone in the USA with any knowledge of further details, or drawings, is invited to contact Mike Beech at the above address.

V. C. & N. Society Holds Spring Meet in Lynchburg

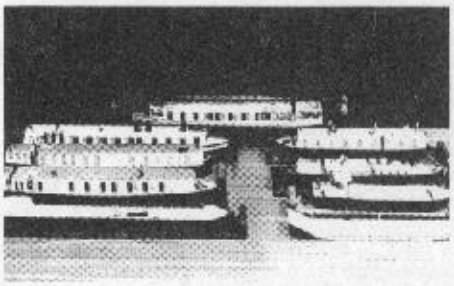
The week-end of May 2 - 3, 1981 saw approximately 35 canal buffs from three states participating in the well-organized Spring Meeting and Field Trip of the Virginia Canals and Navigation Society in Lynchburg, Virginia. Tour Chairman was T. Gibson Hobbs, who made the facilities of C. B. Fleet Company available for the Saturday morning gathering. Gibson was also tour guide for a fleet of cars traveling the James River and Kanawha Canal, from the Rope Ferry Locks east of Lynchburg to the Quarry Falls Dam, near Buchanan — Saturday afternoon and Sunday morning. All the locks, culverts and aqueducts which we visited had been beautifully cleaned up by Gibson ahead of time, so the photographers had a real "field day".

George Higgs conducts the Saturday evening business meeting.

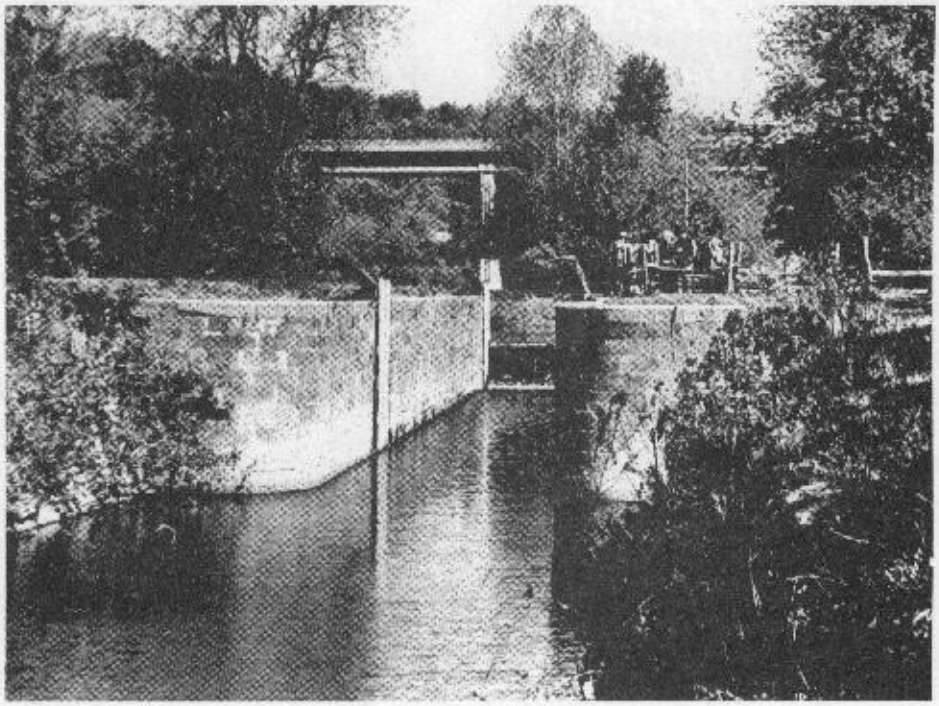
A number of excellent canal boat models were displayed during the Saturday morning session. An interesting slide lecture on the J. R. & K. was presented at the Holiday Inn banquet Saturday evening, after a short business meeting conducted by President George Higgs, during which he found himself unanimously re-elected for another term!

High spot of the Tour was the Staircase Lock (#46 and #47) above Rope Ferry which had been buried, but excavated personally by Gibson Hobbs and a team of canal enthusiasts. This double-lock is shown in a separate article in this issue. Also fully-restored Lock #7, with its pedestrian access bridge hanging **under** the Blue Ridge Parkway crossing of the James River, was a real delight to all who followed the National Park Service trail to get there. Nearly perfect weather was arranged for the week-end by the Tour Committee. All in all — a fine affair!

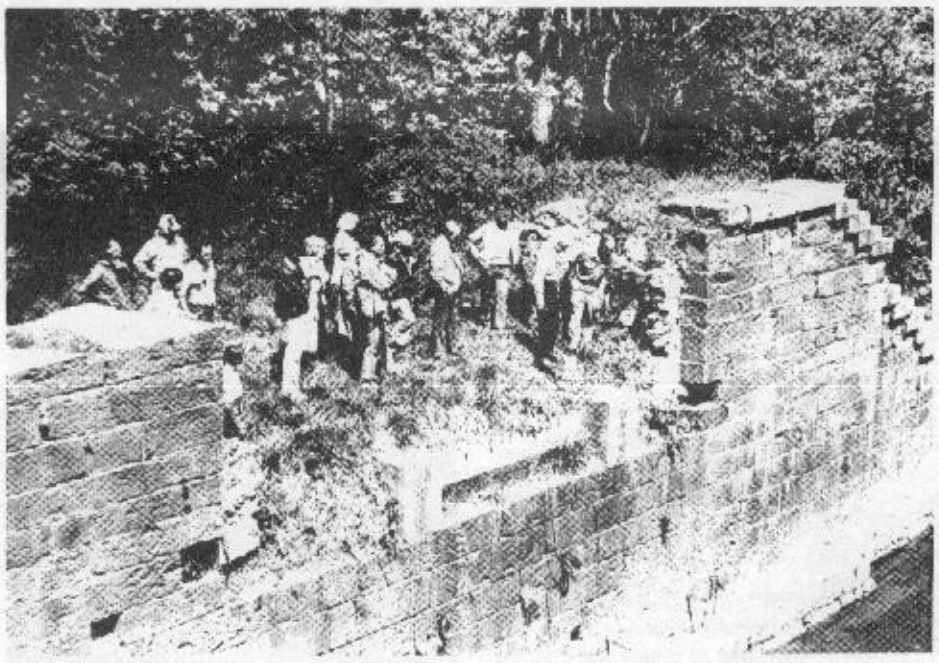
Bill Shank



A few of the many canal boat models on display at the Saturday morning session.



Restored Lock Number Seven at Battery Creek. The Blue Ridge Parkway Bridge over the James River can be seen in the background. This park, covering a number of acres both sides of the River, is maintained by the National Park Service.



Part of the Tour Group inspects the well-preserved ruins of the Beaver Creek Aqueduct below Lynchburg.

CANAL FULTON LOCK RESTORED

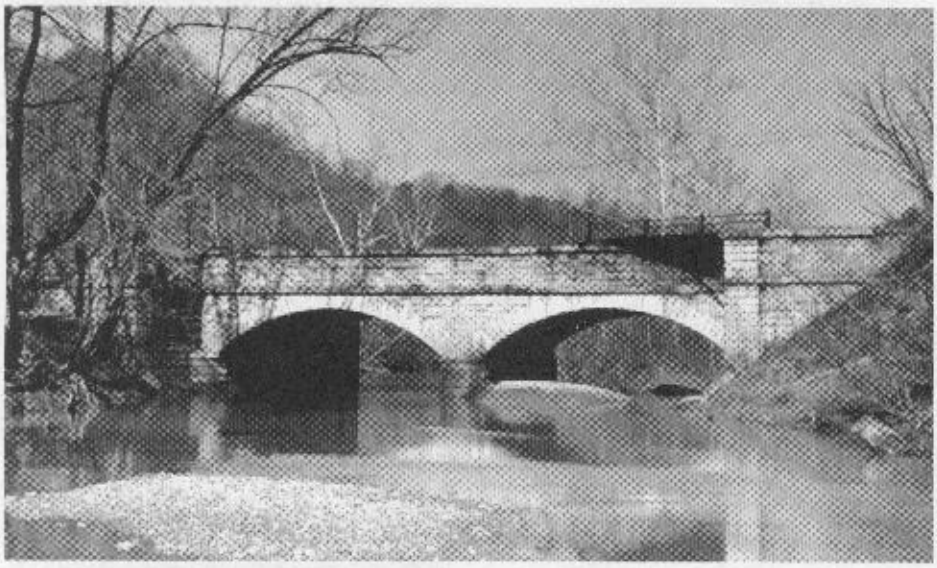
The Canal Fulton Heritage Society recently announced that a contract has been let by the Stark County Ohio Commissioners to the W. G. Lockhart Construction Company of Akron for restoration of lock #4 which is in a park about a mile south of Canal Fulton on Erie Ave. N.W.

The lock is at the lower end of a stretch of canal used by the St. Helena II, the first of several canal boat replicas operating in the eastern U.S. The restoration will allow the St. Helena to "lock through", to go from one canal level to another. The Ohio and Erie Canal originally had 152 similar locks in its 333 mile course between Cleveland on Lake Erie and Portsmouth on the Ohio River. The canal functioned as a main transportation artery from 1825 until 1913.

$75,000 in funds for the project were acquired through the U. S. Dept. of Housing and Urban Development's Community Development Block Grant Program.

Completion of the project is anticipated in May and public rides through the lock on the St. Helena II should commence in June.

THE JAMES RIVER AND KANAWHA CANAL (Part II)



Hardware River Aqueduct on lower section of the J. R. & K. Twin spans, 40' wide. Now in use as a railroad bridge on the Chessie System. (Photo by Preston Leech.)

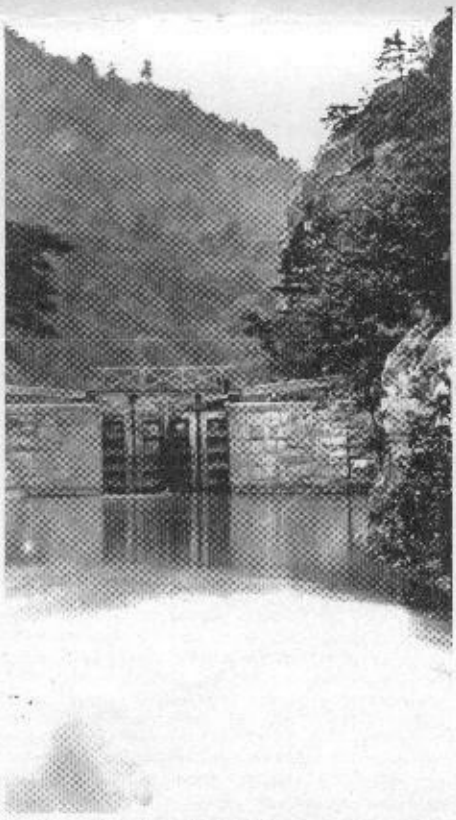
By T. Gibson Hobbs, Jr.

Cholera, malaria and smallpox plagued the work at times. The old canal above Richmond and the Blue Ridge Canal, being in poor condition and too small for the new plan, it was decided these should be rebuilt. This meant additional work and expense and rendered the $1,000,000 credit a total loss. Finances were soon a problem and the state was persuaded to make loans for completing the canal to Lynchburg. In 1838, surveys of the western sections were completed with the railroad over the mountains laid out almost as it runs today with a tunnel two miles long. Mr. Cabell pointed out that the grade of this line would give it preeminence over any other railroad line between the Ohio and the Atlantic. He also pointed out that this route would allow an all water route to parallel it later as outlined in the 1827 survey of Major McNeill. In 1839, Ellet, who was not popular with Cabell, was replaced by Judge Wright who agreed to serve full time as Chief Engineer.

In December, 1840, after nearly five years, the 146 1/2 miles of canal were completed from Richmond to Lynchburg. The waterway was 50 feet wide at the surface, 30 feet at the bottom and 5 feet deep. The banks on either side were 2 feet higher than water level. The towpath next to the river was 12 feet wide at the top. The berm bank on the other side was 8 feet wide. A Lynchburg freight boat, the GENERAL HARRISON, was the first boat to reach Lynchburg from Richmond.

Four dams were used to supply water to the canal. At Lynchburg, the old water works dam was used. The canal crossed the river below Lynchburg from the south side to the north on a rope ferry at the head of the Joshua Falls Dam Pond. A windlass was used to pull the boats across. The next dam was at Tye River, and the last was the old Maiden's Adventure Dam. The 428-foot difference in elevation between the two cities was handled by 51 lift locks of about 8 1/2-foot lift each. These were each manned by a lockkeeper living in a lockhouse next to the lock. The canal was made high enough above the river to keep out all but the highest floods. This required the use of stone culverts or aqueducts to allow the creeks and river entering the James to flow under the canal. Tye River was crossed by a towpath bridge for the horses and mules pulling the boats.

The canal owned no boats but built, operated, and maintained the waterway free to all who paid the tolls and abided by the regulations. Tolls for 1841, the first full year of operation, totalled $121,500 which was confidently expected to increase rapidly. However, a major flood in 1842, which Cabell said was not likely to occur again for 50 years, did major damage to much of the new canal, resulting in over $40,000 in repairs and suspending navigation for several months, so that tolls were only $109,000 for the year. It also brought more severe criticism from the railroad advocates.



Lock #17 in Blue Ridge gorge, below North River and above Lynchburg. Completed in 1851, when the canal opened from Lynchburg to Buchanan. Photo made by A. H. Plecker in the 1870's.

Stone for most of the masonry was quarried along the river. Natural cement rock, first discovered in this country in 1818 on the Erie Canal, was needed for mortar. In 1827, a source on the North River had been found. The new company soon found other sources near Balcony Falls, and by 1840 had built its own cement plant for this valuable and necessary material. In 1839, construction was started on the second division from Lynchburg to Buchanan. This proved a disaster as finances were exhausted and the General Assembly, unable to agree on further financing, halted all new construction in 1842. In the meantime, the Blue Ridge Canal had been torn out in order to rebuild it on the larger scale. This meant all the traffic again had to run the treacherous rapids at Balcony Falls during which much cargo and some lives were lost.

In 1841, Mr. Cabell convinced the stockholders that an all water route over the mountains was preferable to the railroad. The state, however, refused to advance further financing for this. In 1845, the railroad advocates voted to substitute a railroad for the canal and President Cabell resigned, but not before presenting a masterful and detailed report outlining the advantages of the canal over the railroad, citing statistics of many of the northern canals and railroads to support his arguments. In 1847, John Y. Mason became president, and Walter Gwynn, a successful railroad engineer, became chief engineer. They lost no time in convincing the State to finance completion of the canal to Buchanan. Gwynn successfully completed this 50 mile division in late 1851. This section had seven dams to the North River and four above, with 26 locks to elevate the 258 feet. Traffic grew appreciably with this additional line and construction was started on the first 15 miles above Buchanan to Eagle Rock.

By 1856, ten locks and several culverts had been completed, much of the skilled stone work being done by slave labor. Gwynn, and others later, recommended buying slaves rather than renting them so that their skills could be retained. However, finances never permitted this. Gwynn, in 1850, said experience has proven that there was no part of the work which could be done as well by slaves with a few months training as by the majority of the white men calling themselves journeymen. The 192-foot Mason Tunnel had been dug through a ridge to save nearly three miles of canal around a long loop in the river. The 1,900-foot Marshall Tunnel, cutting across the next large loop above to save another 2 1/2 miles, was well along with shafts dug from both ends and in the center by use of a vertical shaft. This work all came to a halt when the state refused further funding.

This same year, the Virginia and Tennessee Railroad was completed from Lynchburg to Bristol. This proved a desirable adjunct to the canal, as it brought in western trade, much of which transferred to the canal. However, in 1854, the Southside Railroad from Petersburg to Lynchburg was completed. This, in conjunction with the Richmond and Danville Railroad, competed directly with the canal. Much passenger traffic was lost, but more importantly, by setting unrealistically low rates, the railroad was able to take considerable freight traffic. In the meantime, the railroad interests had not given up. The Virginia Central and Blue Ridge Railroads were encouraged by the state to connect Richmond with Covington. Charles Ellet, Jr., former chief engineer, was made chief engineer of the Blue Ridge Railroad. In 1850, surveys were authorized by the state for a railroad from Covington to the Ohio. This resulted, in 1853, in the start of construction, under state auspices, of the Covington and Ohio Railroad to continue the Virginia Central on to the Ohio River. Charles B. Fisk, former chief engineer of the C & O Canal, was their chief engineer.

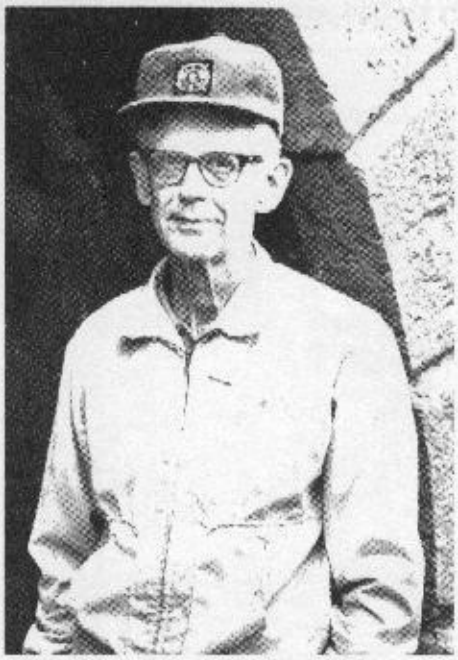
Still confident that a central water line was the only feasible plan for heavy freight, the canal interest convinced the state to require the railroad engineers to lay out their line so the canal could be completed later without interference between the two. In 1857, Edward Lorraine, then chief engineer, completed his survey and beautifully detailed map of the canal route across the mountains. A series of locks were to lift to an elevation of 1,916 feet, with a tunnel 2 1/2-miles long piercing the Allegheny backbone. Water to feed this summit level was to be fed from a series of dams on the mountain streams.

In 1854, the Tidewater connection at Richmond was finally completed. Five beautifully-cut stone locks and several short lengths of canal provided the 1-1/2-mile passage for canal boats from the basin down to the ship dock on the James below the falls. In spite of floods, a staggering debt and increasing competition from the railroads, total tonnage on the 200-mile canal had increased from about 110,000 tons to over 225,000 tons by this same year. Revenues had increased from about $121,000 to over $291,000 during the same period. In 1860, total tonnage was over 224,000 tons, while total revenues had dropped to nearly $239,000 because of rate cutting by the railroads. This freight exceeded that of the four railroads then serving Richmond combined.

In 1854, the canal reported 195 freight boats in operation. There were 75 decked boats, 66 open freight boats, and 54 batteaux, requiring 423 horses and 865 men, all valued at over $109,000. (Six packet boats for passengers were valued at nearly $14,000. They required 120 horses valued at $15,000 and 96 men.) Speed was limited to four miles per hour to reduce erosion of the canal banks. The larger freight boats could handle over 80 tons. Time for the packet boats going from Lynchburg down to Richmond was about 31 hours, and 33 hours going back up. Travel by packet was leisurely and pleasant in good weather. Passengers sat on deck, dined below, and slept in bunks let down at night in separate compartments for men and women. Boats' horns were sounded to alert the lockkeeper to make the locks ready. Passing through a lock took less than 10 minutes for operating the gates and raising or lowering the water over 8 feet. The locks were 100 feet between gates and 15 feet wide, allowing boats over 90 feet in length and 14 feet wide to pass through. As a challenge to the railroads, two packet boats driven by steam with screw propellers were tried in the year 1843 and 1844. The wakes caused excessive erosion and the trials were discontinued.

In the 1850's, the North River branch of the canal was completed to Lexington. A connection was also made with the Rivanna Navigation Company, allowing boats to reach Charlottesville. Dams or bridges were also added to permit trade on the south side of the James access to the canal.

Ruins of Locks Number 46 and 47 below Lynchburg, at the Rope Ferry. Locks were rubble stone, lined with planking, built in 1840. (John Taylor photo).



The Author, T. Gibson Hobbs, standing in front of the ring stones of an 8-foot culvert completed above Buchanan in 1856. Stonework was never covered by the canal bed, and the creek was never diverted through the culvert. (Photo by Roanoke Times and World News.)

The Civil War affected the canal less than it did the railroads. Not a single piece of rail or rolling stock of any kind was available to the southern railroads during the entire war. The heavy service caused a rapid decline in the condition of their equipment. The canal, requiring mostly wood and stone, was better able to cope with repairs, although labor shortages caused increasing problems. Record receipts of over $445,000 were recorded for 1864. Being in Confederate currency, however, it was not representative of actual value.

During the war, the Confederate government owned and operated 25 to 30 boats on the canal. It was not until 1865 that the enemy inflicted any serious damage to the canal. In March, General Sheridan's force of 6-8,000 men damaged 34 locks from Cedar Point, above Richmond, to Bent Creek, made five breaches in the embankments and destroyed or burned numerous farm bridges, some boats, work shops and the like. In the two weeks prior to April 3, 25 miles of the line above Cedar Point had been repaired. Richmond was evacuated ahead of the Yankee invasion on that day, and all repairs were stopped. The canal office at Richmond was burned and many valuable records lost. Repair work was resumed on May 27, and the canal was opened through to Lynchburg a month later.

(To be Concluded)

ST. HELENA II SUMMER SCHEDULE

One-hour trips on the mule-drawn *ST. HELENA II* are scheduled every hour on the half hour from 9:30 to 4:30 from May through October at Canal Fulton, Ohio. Group tickets are $1.75 per adult, $1.00 for children six through sixteen. At the boat dock is the newly-combined Heritage House/Old Canal Days Museum.

Self-guided and guided walking tours of Canal Fulton are also available. To schedule a canal boat ride or for further information call (216) 854-3808 or write Canal Fulton Heritage Society, P.O. Box 584, Canal Fulton, OH 44614.

CANAL CALENDAR

June 20-21, 1981 — Steamship Historical Society of America, Viking Hotel, Newport, RI, Spring meeting and tours of Narragansett Bay and Block Island aboard the M.V. Yankee. Contact Steve Dininio, 72 Chandler St., Boston, Mass. 02116.

June 27, 1981 — Old-Time Canal Market Days at Freemansburg. Contact Charles Derr, 117 Main Street, Freemansburg, PA 18017

June 28, 1981 — Lehigh River Canal Festival, Glendon section of the Hugh Moore Park at Easton, PA 12:30 to 6:00 P.M.

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

July 31 - Aug. 2, 1981 — Canal Museum Associates "Ottawa Outing." Bus tour, Syracuse, NY to Ottawa, Ont., including Rideau Canal Cruise. Contact Kate McHugh, Canal Museum, 315 E. Water St., Syracuse, NY 13202.

Aug. 1-16, 1981 — English Canals Study-Tour. Avoncroft College short tours and studies; Hotel Boat Cruise, Warwick to Leicester; National Rally of Boats and Waterside Arts at Leeds. Contact Dr. Roger Squires, 4 Manor Way, Beckenham, Kent BR3 3LJ, England.

Aug. 9, 1981 —Identical bus tours of the **Aug. 22, 1981** Susquehanna and Tidewater **Sept. 26, 1981** Canal, Havre de Grace, MD to Wrightsville, PA — Contact Karen Gray, Smithsonian Associates, Washington, D.C. 20560

Oct. 17, 1981 — Whitewater Canal Tour, by rail, sponsored by ACS and the Canal Society of Ohio. Contact John W. Droege, 2937 Neil Avenue, Columbus, Ohio 43202

Oct. 23-25, 1981 — Pennsylvania Canal Society tour of the Union Canal. Contact Earl Leiby, 7th & Guilford Streets, Lebanon, PA 17042

FRENCH CANAL TRIP

ACS Member Michael Handford is organizing a number of one, two or three week trips on the French canals this year as a result of the many inquiries from his earlier article on French canal holidays.

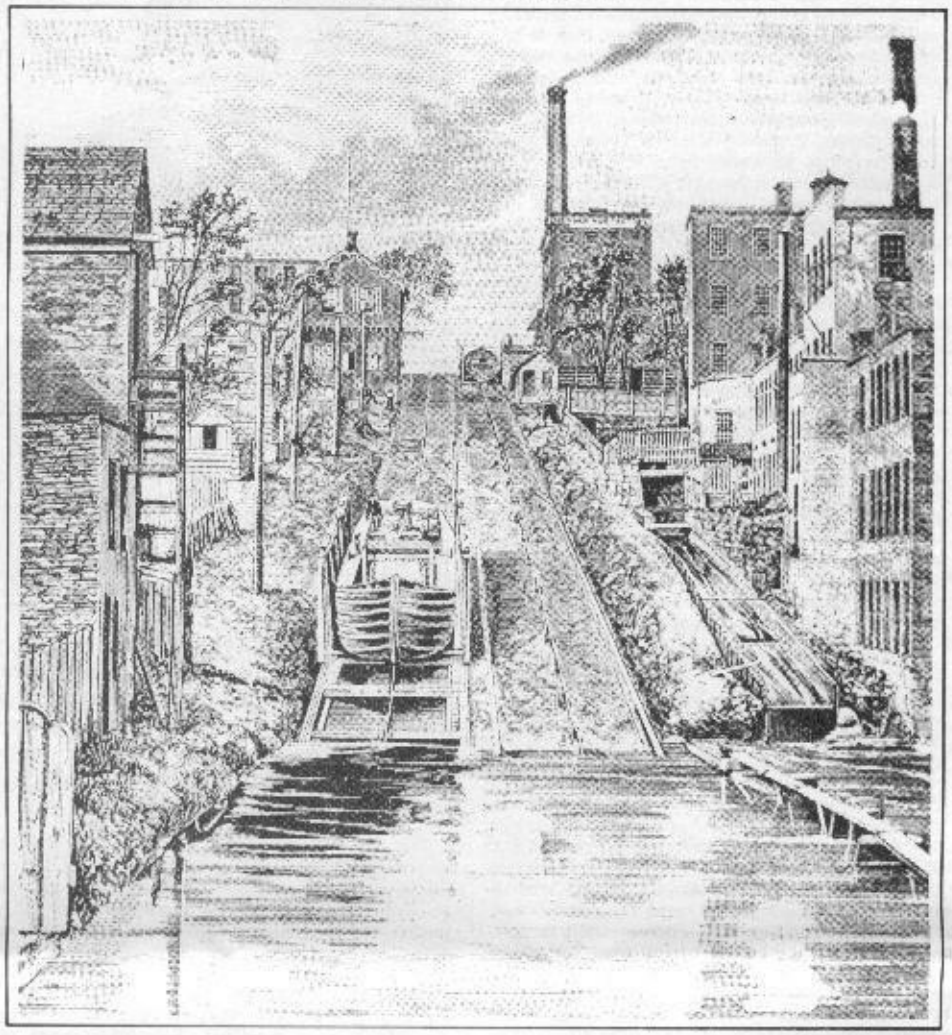
Members, family, friends or anyone else interested in seeing these fascinating waterways are welcome to join on these holidays. The boat is a well-converted nine-berth ex-grain barge owned by a British company. At the time of publishing there were three vacancies during the 15 August - 2 September period when the boat will start from Carcassone on the Canal du Midi and proceed on the Canal du Rhone a Sete along the Mediterranean coast and up the rivers Rhone and Saone to Chalon sur Saone. There may be vacancies at other times. Contact Michael Handford, 6 Spa Lane, Hinckley, Leics. LE10 1JB, England. Telephone England Operator 0455-611508.

CORRECTION

In the last issue of AMERICAN CANALS, we referred to the British Waterways Board movie film as a "35-mm film" in sound and color. In case the "35-mm" size designation prevented some of you from writing for it — this should be **16-millimeter!** The film is really great and we have several showing dates reserved already. Get your order in **now** for your meetings next Fall — give us exact showing dates.

INCLINED PLANES OF THE MORRIS CANAL

The following article is excerpted from THE AMERICAN ENGINEER AND RAILROAD JOURNAL for December 1894, pages 555-558, and was submitted to us by Carl W. Lawson, Caldwell, N.J. The three line drawings were published with the article. The wood-cut was obtained elsewhere.



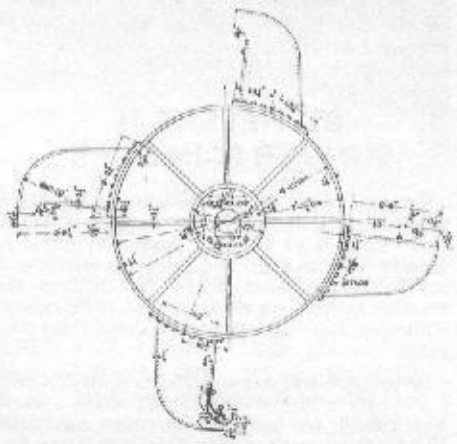
In our issue for January, 1893, we illustrated and published a short description of the inclined planes that are in use on the Biwa Canal, in Japan, which were built under the superintendence of Mr. Sakuro Tanabe, of the Imperial University of Japan. At the time of the publication of the article we were not aware that Mr. Tanabe had visited this country as a member of a Japanese commission to investigate the inclined planes in use on the canals of America, with the view of adapting them to Japanese services; but the fact is that this commission made a very careful study of the inclined planes in use on the Morris Canal, and it was from the drawings and memoranda obtained during this visit that the details of the planes on the Biwa Canal were prepared. Thus did we go abroad to learn the news of home.

It was at the close of the first quarter of this century, before the advent of railroads and when canal transportation still held the pre-eminent position as an economical method of transportation, that the charter was granted for the construction of the Morris Canal, that was to and did afford a cheap means of transportation for merchandise between the Hudson and the Delaware, and especially as an eastern outlet for the coal of Pennsylvania. To be exact, the charter for the construction of this canal was granted on December 31, 1824, and in the following July ground was broken and the work pushed to completion, which was accomplished six years later, in August, 1831 — that is, the canal was finished through to Newark, but it was not until 1836 that it was carried through to Jersey City.

In these days of ship canals connecting widely separated bodies of water, the original Morris Canal was of Lilliputian dimensions. As first constructed the depth of the water was only 4 ft., in which boats of 18 gross tons capacity and drawing 3 ft. of water were floated. The breadth of the canal was 20 ft. at the bottom and 32 ft. on the water-line. The locks were naturally of corresponding dimensions, the chambers being 9 ft. wide and 75 ft. long between the miter sills.

Differences in level were overcome, then as now, by both locks and inclined planes, depending upon the lift between the two adjacent levels, but the planes were of the lock as well as of the summit type. There were 23 of these planes all told, of which three were of the lock type and 20 were summit planes. The difference is that the summit plane is one where the incline rises over the brow of the embankment at the end of the canal, and thence passing over it dips down into the water, while the lock planes end in the chamber of a shallow lock, into which the boat is run, and where, after the gates have been closed, water is admitted raising the level to that of the canal above.

This system was continued until the winter of 1835-36, when all of the summit planes were changed to lock planes. The probable reason for this was that an increase in the length of the boats was in contemplation, and there was a difficulty in carrying a solid boat over the brow of the incline on a single car. The canal remained in this condition until 1841, when the demand for better facilities and larger boats led to the widening of the planes by 2 ft., while the locks were widened to 11 ft. and lengthened to 95 ft. The traffic still continuing to increase, work on the general enlargement of the waterway was begun in 1845, when the breadth of the canal was increased to 25 ft. at the bottom, to 40 ft. at the water-line, and the depth of water made 5 ft. instead of 4 ft. At the same time the section boats, were first introduced, and these had a cargo capacity of 44 gross-tons. These boats are really two separate vessels, but dependent upon each other in that one has the bow and the other the stern with the rudder. They are hinged together at the deck-line by heavy iron bars in a manner exactly similar to that shown on the half section of the car in our engraving. As these boats were of such a construction as to be easily carried over the brow of a summit plane, and as this style of plane is less expensive and troublesome to operate than the lock type, all of the planes west of the summit were rebuilt and converted to summit planes using wire ropes in the winter of 1850-51.



PLAN OF WATER-WHEEL USED AT THE INCLINED PLANES ON THE MORRIS CANAL.

The work was, however, begun in the winter of 1847-48, when plane No. 6, west, was so reconstructed. This work was followed at once by the remodelling of all of the planes east of the summit to similar arrangements, but the work proceeded more slowly, and it was not until 1860 that the last change had been made, although it had been commenced in 1852 and continued without interruption until completion.

This enlargement and change in the capacity of the canal was followed at once by the introduction of larger boats in 1860, when 70 gross tons was the limiting capacity. This rating has been only slightly increased since then, and the average cargo is now from 75 tons to 80 tons, with the boat drawing 4 ft. of water.

As we have already said, the canal starts from tide-water level at Newark and runs to Phillipsburg on the Delaware River. In traversing it a boat passes through 16 lift locks and over 12 inclined planes to the summit, which is at Lake Hopatcong. The elevation above the sea-level at this point is 914 ft., of which 156 ft. were gained in the locks and 758 ft. on the inclined planes. From the summit the drop to the Delaware River at low water is made by means of 11 inclined planes and seven locks, giving a total fall of 760 ft., of which 69 ft. is accomplished by the locks and 691 by the planes. This survey indicates that the Delaware at Phillipsburg is 154 ft. above tide-water. Water is supplied by the Ramapo, Pequonock, and Wyanock rivers, from Greenwood Lake, which is artificially raised 15 ft. by the canal dam, and from Lake Hopatcong, which is raised 11 ft. above its normal level by similar means. Then there are other reservoirs known as the Cranberry Reservoir, Bear Pond, and the Rockaway River.

At present the tonnage passing through the canal is from 1,500 tons to 1,600 tons a day and the time required for the passage from end to end, a distance of about 75 miles, is in the neighborhood of four days, all boats lying to at night.

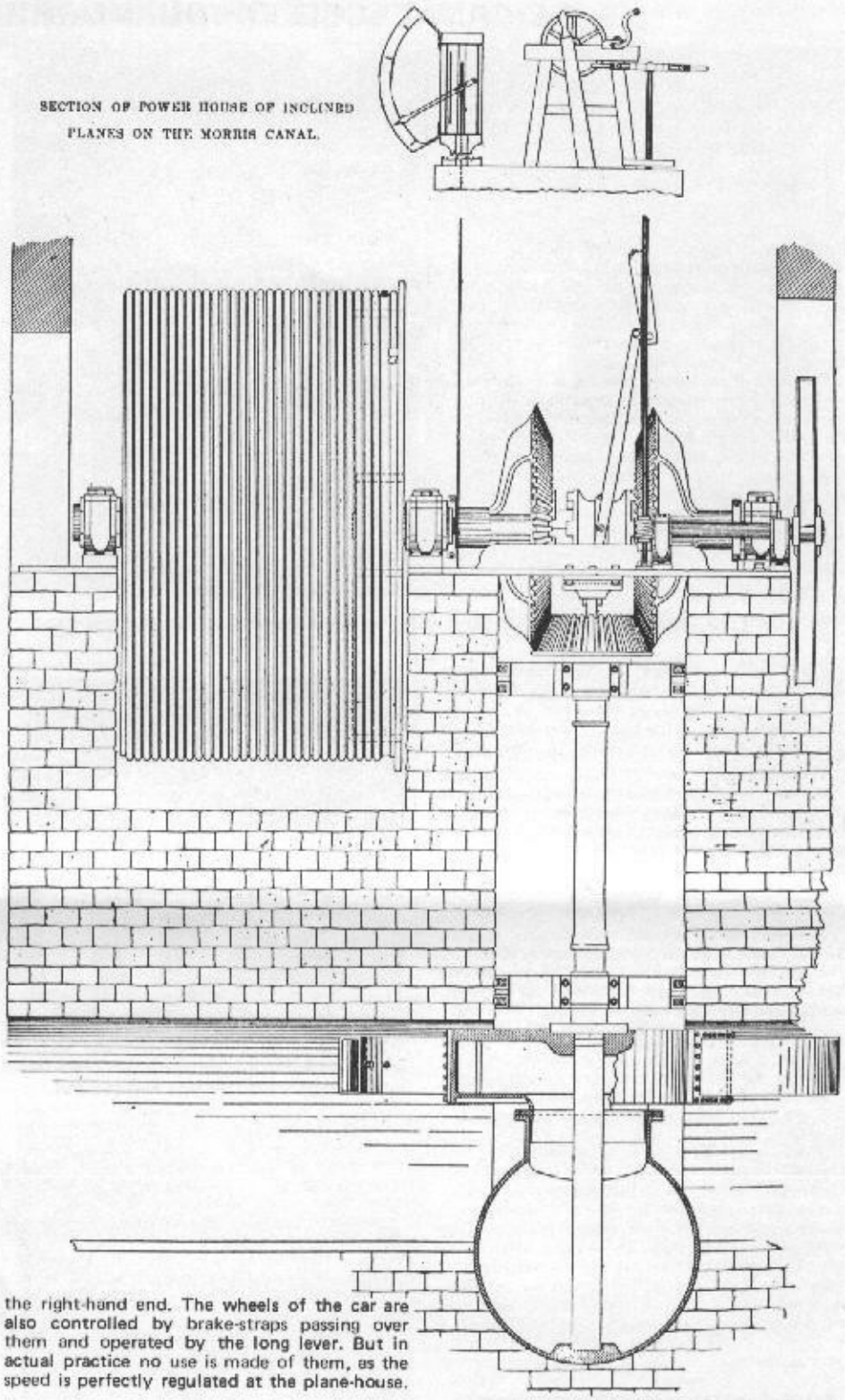
Water is used as the prime mover throughout on every plane, and the wheels are geared directly to the drum. In this the machinery at the inclines of the Biwa Canal, in Japan, differs from its American model, in that an electric motor is interposed between the wheel and the winding drum. The wheel, an engraving of which is given in plan and in the section of the power-house is of the simplest type of reaction wheels. Originally the wings were cast solid with the main body of the wheel, but as a slight breakage would cripple and destroy the whole wheel, the design shown in our engravings was adopted and is still used. The whole is of cast iron, and the nozzles are arranged with adjusting plates to fix the outflow and power in accordance with the head of water that is available. The opening is 1¾ in. horizontally and 16 in. vertically. The total height of the wheel over flanges is 22½ in. Water enters from below, and while work is being done it takes the weight off from the step that carries it through an auxiliary shaft resting on a step in the trunk, and in contact with a brass block 2 in. thick beneath the main shaft. The wheels are undoubtedly very wasteful of water in comparison with the amount of power that they develop, which, by the way, has never been measured; but as a certain amount of water is required to supply waste and the locks on the lower levels, it is as well to let it run through the wheel as idly through a flume, so that under the circumstances there is no occasion to economize.

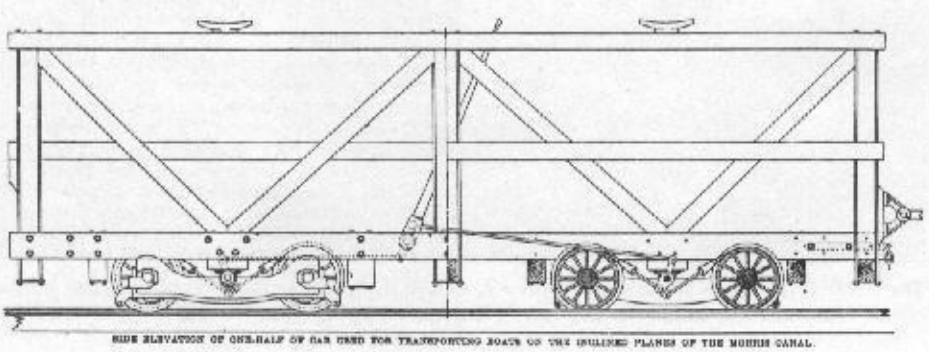
The track upon which the car runs has a guage of 12 ft. 5 in., and is composed of two T-rails 3 in. high, with a head of the same width and a flange of 4 in., the web being 1 in. thick. These rails are laid on stringers of 8 in. x 9 in. timber set on stone foundations. The hauling rope runs up and down in the center of the track, and is supported by carrying pulleys in the ordinary way. Where it runs under water it passes over horizontal submerged pulleys for the necessary change in direction.

The rope, after leaving the drum, runs out of the house in both directions over the carrying pulleys, beneath the surface of the water, and to the car, where one end is rigidly and securely fastened to one of the cross timbers, while the other is attached to a drum that can be turned to take up any stretch that may occur.

The car, like the boats, is made in two sections, each 32 ft. long over the main longitudinal sills. Each section is carried by four two-wheeled trucks, giving eight wheels to each. The wheels have flanges on both sides of the rail, and are 2 ft. 5 in. in diameter. the truck framing is of cast iron. The main longitudinal sills are 12 in. deep, and on them a side framing of the form shown in the car engraving is built. This framing is 9 ft. 6 in. high, and is strongly braced to withstand side shocks; the detailed arrangement being clearly shown in the accompanying engraving, which shows, however, only one section, the other being coupled to it by the heavy bars at the right-hand end. The wheels of the car are also controlled by brake-straps passing over them and operated by the long lever. But in actual practice no use is made of them, as the speed is perfectly regulated at the plane-house.

SECTION OF POWER HOUSE OF INCLINED PLANES ON THE MORRIS CANAL.

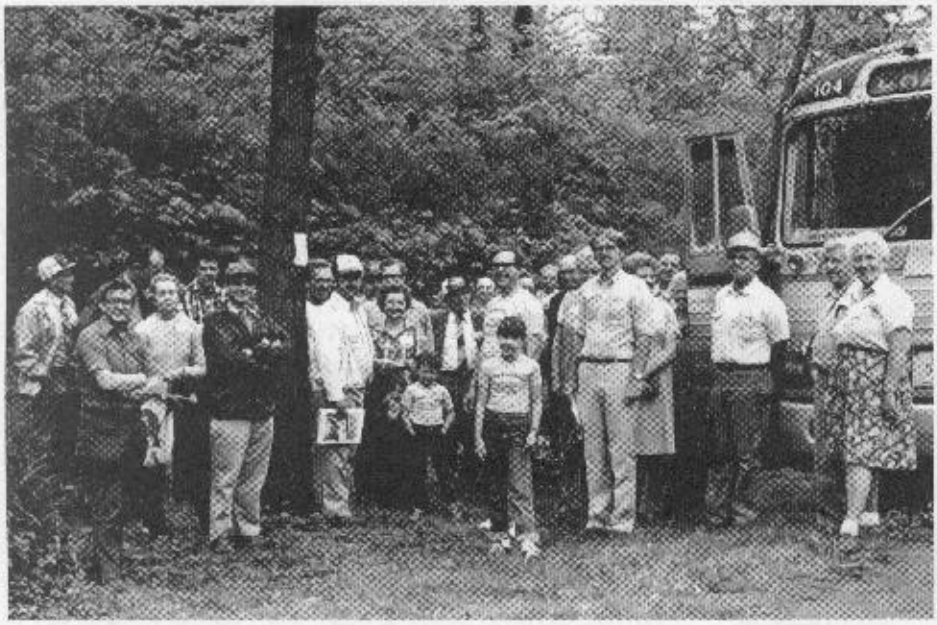




SIDE ELEVATION OF ONE-HALF OF CAR USED FOR TRANSPORTING BOATS ON THE INCLINED PLANES OF THE MORRIS CANAL.

Two men serve to operate the plane: one in the house and the other on the car. When a boat appears the car is run down into the receiving basin, and the boat floated over it between the frames. When in position lines are made fast to the cleats on the top of the side frames, a signal given by hand or by a horn at night and in foggy weather, to the man in the house who starts the machinery. The car tows the boat out, and rising up the incline, catches it and carries it to the other level, an operation requiring about five minutes of time. Some of the planes are double tracked, so that a boat can be transferred in both directions at once. But for the most part they have only a single track, like the one at Bloomfield, which may be considered as a typical example of what is done.

PA. CANAL SOCIETY TOURS MORRIS CANAL



The PCS Tour Group at Plane #10 West (lift, 44 feet) maintained by Jim Lee's son.

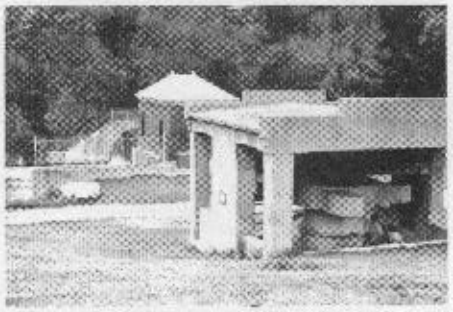
Forty-eight members of the Pennsylvania Canal Society, with a sprinkling of Canal Society of New Jersey members, convened in Phillipsburg, New Jersey for a tour of the west end of the Morris Canal, the week-end of May 15-17, 1981.

Friday evening activities were somewhat dampened by a heavy rainstorm. In spite of this a dedicated group of canal buffs assembled at the PCS Canal Museum of Easton, Pa., for a talk by Bill McKelvey on the Morris Canal, plus an inspection of the latest additions to the Museum holdings.

The weather improved considerably on Saturday, and except for a brief shower at Waterloo Village, the day-long bus tour of the Morris Canal, from Phillipsburg Plane Number 11 West, to Lake Hopatcong, went very well.

Our most interesting "stop" was at Plane Number 9 West, which has the highest lift (100 feet) on the Morris western section. Here James Lee, who owns the entire plane area, has done a fantastic job of digging out the old water-turbine penstock shaft, the tail-race tunnel, the turbine chamber and the vertical drive-shaft. Most of the group took advantage of the opportunity to crawl through the tail-race tunnel to inspect the turbine chamber (some forty feet below ground surface) where the old Scotch turbine itself rests intact! Plane #9, as well as most of its "sleepers" and even part of the old cable, is maintained in excellent condition by Jim Lee, who never knows when a group of canal buffs may drop in on him! Many parts of the gearing and cable house, which Jim has resurrected in his archeological work, are also on display.

Forty feet underground at Plane #9, Bill Moss (with cap) explains the workings of the old Scotch Turbine, one nozzle of which appears in the left foreground.



An old Scotch Turbine from one of the Morris Planes in a permanent shelter at Lake Hopatcong. In the background is the lake outlet spillway, near the old canal feeder.

We enjoyed Jim Lee's company again Saturday evening when he was principal speaker at the Holiday Inn banquet in Phillipsburg. PCS President John Miller was General Chairman for the entire affair, and was also one of the tour guides ably assisted by Bill Moss, President of the Canal Society of New Jersey. Bill was happy to show us, at the Waterloo Village Restoration, the new CSNJ Museum which is a part of that extensive complex. Recently installed in this Museum is an excellent model of a typical Morris Inclined Plane and its water-turbine system. Next step, says Bill, is a fully-operational working model of same!

Bill Shank

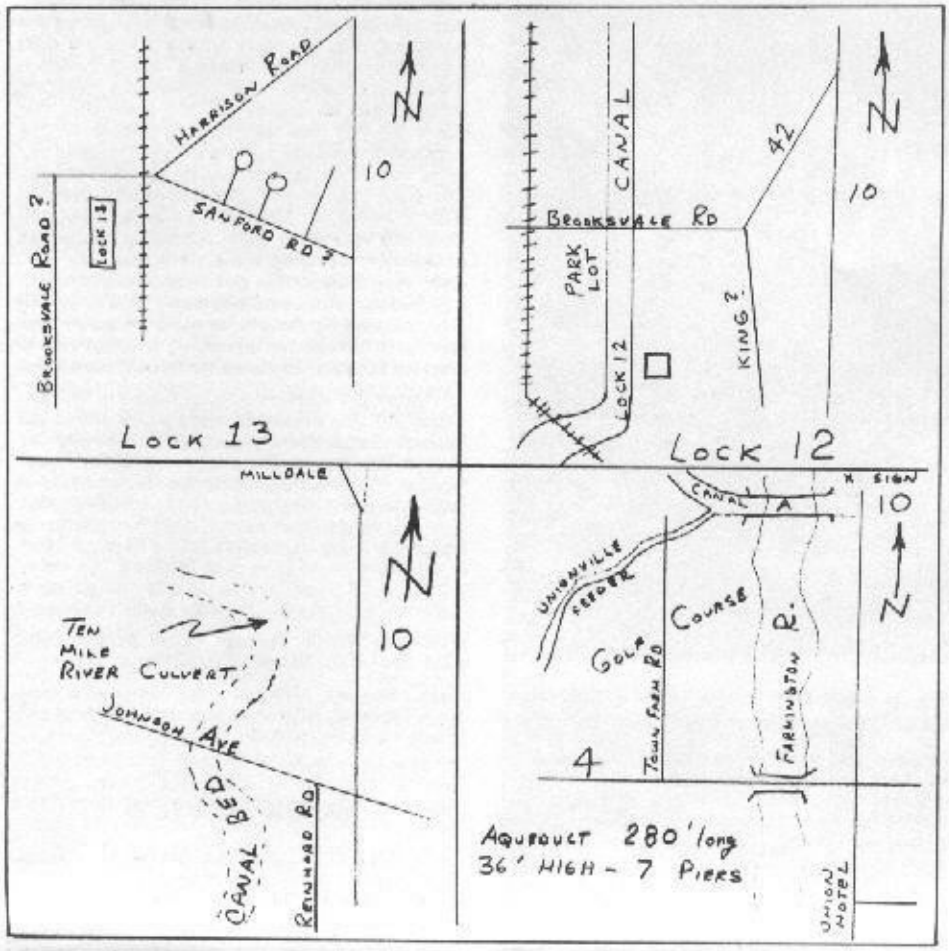
SEAPORT PUBLICATION

Attention of ACS readers is invited to the Spring 1981 issue of Seaport, the magazine of the South Street Seaport Museum, which contains two articles of interest to canallers plus an excellent photo of New York canal boats as a part of a mixed Hudson River tow in the 1890s, mules pulling a canal boat in a photo of the Delaware and Raritan Canal in 1894, and a Harper's illustration of grain being transferred from a canal boat to a steamer in Brooklyn (Ca. 1873.) $2 to Seaport, South Street Museum, 203 Front St., New York, NY 10038. *(ACS Director Bill McKelvey, Jr.)*

Handsome plaque erected by A.S.M.E. at Jim Lee's Turbine Restoration, Plane #9, West.

The visitors climb to the top of Plane #9, where it dips over into the upper level of the canal. Note the old cable on the left, a bit rusty but still intact after lying un-used for nearly sixty years!

FARMINGTON CANAL REMAINS



(The following article is the result of a conversation between Editor Tom Hahn and Chet Gehman at a recent Society for Industrial Archeology meeting at which they discussed the difficulty of trying to find surviving landmarks of the Farmington Canal (1828-1848) because of the short life of the canal and the nature of the area it passed through (highly urban and industrial) resulting in a low number of surviving features.)

The route of the Farmington Canal, New Haven, Ct. to Northampton, Mass., roughly follows Route 10. Below the town of Mt. Carmel, little remains of the canal. For all these directions I will assume you are traveling north on Route 10. From the center of Mt. Carmel, travel north to Todd St. on the left, turn onto Todd St. to the railroad tracks – dry canal bed is on the west side of the tracks.

Back on Route 10 North - drive to Cheshire - Mt. Carmel line and turn left on Sanford Road. Descend to RR tracks, park. Lock 13 is in the woods on the SW corner of Sanford Rd. and tracks. This is probably the second best preserved structure (next to lock 12) along the canal in Conn. Most of the stone is in place, and note the underground stone weir! Or take Harrison Road - SEE MAP.

Route 10 North again - traveling through Cheshire until intersecting with Route 42 - turn left and drive until you come to a Y; turn right onto Brooksvale Road and down the hill. At the bottom of the hill, just before the tracks, park in the lot on your left; walk south along the towpath to Lock 12 and the locktender's house. Note the skew arch bridge over which the RR crossed the canal.

Back on 10 North until Johnson Ave. (last left turn before Milldale) turn left 0.3 miles down, where the road becomes steep, turn right on the dirt road. Follow the canal bed north to the enbankment over Ten Mile River. The canal crossed here at a height of about 60 feet; the river was channeled through an 18 foot culvert in excellent condition. Note the timber foundation!

Route 10 North through Southington - I-84 has wiped out the canal here to Plainville. At the junction of 10 and 72 turn left on 72 (west), and at the third traffic light, turn left onto Washington St. Five blocks down, in Norton Park, is about 700 feet of restored canal and towpath. Don't forget to visit the Plainville Historical Center on Pierce St.

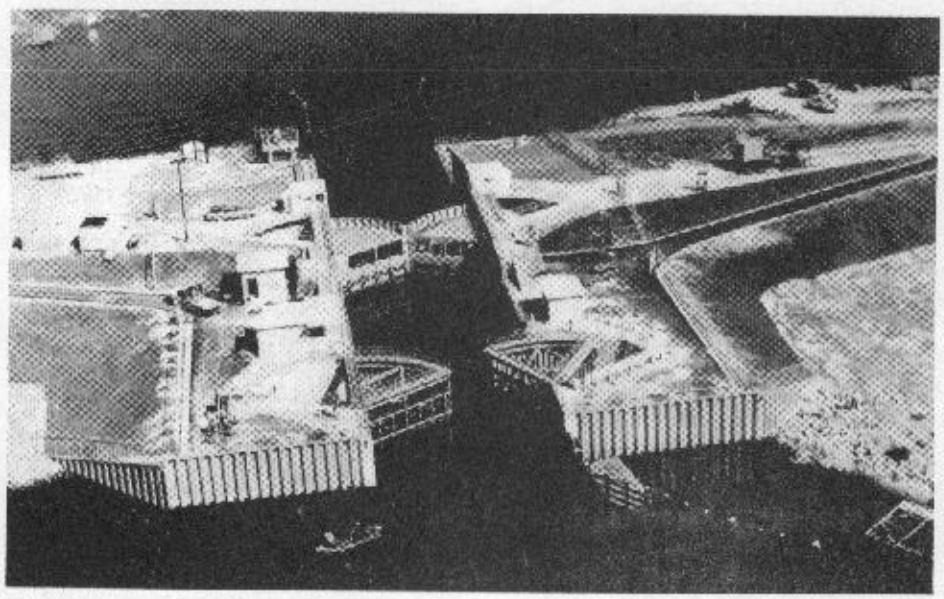
Next stop is Farmington. The Union Hotel, now a part of Miss Porter's School is on your left. The aqueduct crossing the Farmington River is located north of the center of Farmington; both sides are accessable. I have never been in to see the west side; these are second-hand directions. Turn left (west) onto Route 4 at Farmington center, cross the bridge, and turn right on Town Farm Road (first right after bridge) and park north of the Farmington Club. The feeder from Unionville should cross the road west to east and join the canal to your right; follow it in to the river and the aqueduct abutments. Three of the piers lasted until 1955 when the Corps of Engineers removed them.

If you return to Route 10 and head north to Avon watch on the left for a location sign on the left identifying the aqueduct. (If you cross the Avon town line you've gone too far.) Just south of that sign you can see the canal cross the road; follow it in to the river (west) to the east side abutments.

The last structure I will mention in Conn. is in Simsbury. Continue north from Avon to Simsbury. Just before West St. comes into Route 10 from the left is the visitor's parking lot of the Ensign-Bickford Co. Park there if you can; on the south end of the lot is the remains of an arch culvert crossing Hop Brook.

If you have the time, I would recommend a side trip to see an aqueduct ca. 1821 in excellent condition and still in use on the Enfield Canal. Stay on 10 north to Granby and pick up Route 20 eastbound; stay on 20 to Interstate 91; take it northbound about 2 exits and get off onto Route 159 north towards Suffield. As you enter the township of Suffield, (before or after you cross the RR tracks; I can't remember) proceed north one mile beyond the tracks, cross the bridge, and take your first right (east) onto Paper St. Go to the end of the paved portion and walk down the road to the stream. About 100 yards downstream is the aqueduct.

(Prepared by Chester G. Gehman, RFD 2, Winsted, Conn 06098. Readers having comments or further information on the Farmington Canal are requested to inform Mr. Gehman and/or Editor Tom Hahn, American Canals. *A future issue of* American Canals *will contain an article on the Farmington Canal by Bernard Heinz, ACS.)*



New Clewiston lock built by the U. S. Army Corps of Engineers through Hoover Dike at Clewiston, Fla. (Lake Okeechobee). The size of the lock is 60 x 50 feet. The Industrial Canal is located immediately to the left of the lock. (Submitted by ACS Director Alden Gould. Army Corps of Engineers Photo.)

RARITAN RIVER FESTIVAL

The prize-winning "Clayton F. Smith" tied up in Lock Number 14 of the Delaware and Raritan Canal. The "water-walking mule team" can be seen at the rear.

The Raritan River Festival was organized to celebrate the 300th Anniversary of the founding of the City of New Brunswick, NJ. For the Canal Society of New Jersey the event was of special significance. It was also the 150th Anniversary of the granting of the charter and ground breaking for the Delaware and Raritan Canal in 1830. The major event of the festival celebration was a parade of floats in the Raritan River, at the northern end of the canal, and the Canal Society decided that they must launch a prominent entry.

Preparations began well in advance, and centered on finding a suitable vessel. The American Naval Cadet Alliance (ANCA), a group which trains boys to be seamen and good citizens, was contacted at their National Headquarters (PO Box 981) in Cranford, NJ. Capt. Bill McKelvey, Chairman of the Society's float committee, was elated to find that the Alliance had a most appropos vessel. It was a 35 foot steel lifeboat complete with a wood deck. The Elling Inner Hull lifeboat, with a capacity of 135 persons, was built on November 1, 1949 by the Weun Davitt Boat Corporation of Perth Amboy, NJ. — an historic vessel in it's own right! ANCA was happy to loan the boat and allowed Canal Society members to work on it at the ANCA base in Carteret, NJ.

Many weeks of planning and hard work were required to transform the drab looking former ships lifeboat into an authentic-appearing canalboat float. The entire vessel was painted to simulate weathered wood color and "planks" were scored on the sides utilizing a magic marker. A deck house (complete with curtains and a smoke emitting smoke pipe), tiller/rudder and a working hand powered bilge pump were added. An authentic "night hawker", canalboat headlight, was placed on the bow; a water barrel by the cabin; cleats on the deck; and wood log fenders on the sides. Lastly — a wash tub and wash board; wash line with hanging clothes; stove with coffee pot and frying pan; coiled snubbing and tow lines; and decorative flower boxes were added. The canalboat was christened the "Clayton F. Smith of Waterloo, N.J." in honor of the founder and president emeritus of the Canal Society of New Jersey and the Waterloo Village Restoration.

The most unique feature of the completed canalboat replica was its mode of propulsion. It was towed by 4 mules, walking on water! Actually, the mules were painted on 4 foot by 16 foot waterproofed plywood which was secured to the sides of the 16 foot outboard motorboat supplied by the United States Power Squadron member Lieutenant Carleton B. Riker. To the spectator crowds lining the banks of the Raritan River, 4 mules were towing a canalboat, miracle or not. The mules were undoubtedly spurred on by the carrots dangling ahead of them, just out of reach.

The entry was manned by a full crew, all dressed in clothing typical of the heyday of canal activity. At the helm was Captain Bill McKelvey, author of books about the Delaware and Raritan Canal. Bill Moss, current President of the Canal Society was a deck hand. The "mule drivers" were Carl Riker and Peter Vroom, both Lieutenants in the Lackawanna Power Squadron and Canal Society members.

At the conclusion of the parade the "mules" pulled the "Clayton F. Smith" into lock #14, the north outlet of the D & R Canal. It should be noted that although the D & R was officially closed in 1932, at high tide boats can also enter lock #1 at the south terminus of the canal on the Delaware River at Crosswicks Creek near Bordentown. The "Clayton F. Smith of Waterloo, N.J. " took the prize for best float in the parade and first prize in the history section!!

MIDDLESEX CANAL

Horse-drawn COL. BALDWIN packet boat rides can be taken this summer on 21 and 23 July and on 9 and 23 August starting at the Baldwin Mansion in North Woburn, Mass. at the junctions of routes 38 and 128. Call Len Harmon 935-3561 for reservations and further information.

Middlesex Canal documents can be viewed at the Lowell University Lydon Library in the rare book section. See Head Librarian Joe Kopycinski (Board Member Middlesex Canal Association) and his assistant, Martha Mayo.

The Baldwin Mansion is to be made into a restaurant. The Middlesex Canal Association sees that move as good news because it will serve as a meeting place for association members.

(From TOWPATH TOPICS, Apr. 1981)

PORTAGE CANAL SOCIETY

Update of the society: "The Canal Society members are still working hard to preserve the Portage Canal. We have finally come up with the information that there is a right-of-way, though encroached . . . When the canal is assigned (to an agency by the governor), the Canal Society can ask that by virtue of the documents we have for the assignee to acknowledge the canal right-of-way or go to court . . . There is also in the Department of Natural Resources budget $30,000 to start a canoe trail from the Wisconsin River Locks up to Eureka Locks with camping areas along the way . . . The Canal Society has put in an application for $15,000 for work and another $15,000 for 10 acres of land that could be used for a park and have another party interested in another 20 acres to be donated for an additional park land.

"Recently I received a letter from Dr. William Trout, III. He suggested that I write about the Portage Canal Society success in showing the English Canal Slide Program narrated by Roger Squires. To date the Society has shown the program (to many organizations and individuals). It is a good contrast to our own Portage Canal which has been so neglected. The Portage Canal is only 2½ miles long and England has many hundreds of miles . . .I strongly urge canal societies to use the English Slide Program."

(Frederica Kleist, Portage Canal Society, 528 West Cook St., Portage, Wis. 53901.)

Note: Squire's slides and accompanying tape are available at ACS Headquarters, 809 Rathton Road, York, Pa. 17403

BOOK REVIEW

The Cape Cod Canal. By Robert H. Farson. (Middletown: Wesleyan University Press, 1977. xiv + 177 pp. 165 illustrations, bibliography, index. $14.95, cloth. $6.95 paper.)

As early as 1697, the Massachusetts General Court acknowledged that a canal across the isthmus of Cape Cod "was very necessary for the preservation of men and Estates, and (would be) very profitable and useful to the publick." And at regular intervals throughout the next two centuries old canal surveys were dusted off and new surveys conducted.

Meanwhile, the "Ocean Graveyard" between Monomy and Wood End exacted its relentless yearly tribute, with 687 vessels reported wrecked, at least 105 lives lost from 1875 to 1903 alone. The *Marine Journal* called the outer Cape "the most dangerous coast in winter to be found on the map of the United States." There are many who would confer this dubious distinction on Cape Hatteras. What difference to those who have perished on either cape?

The United States had the engineering capability and manpower to dig a navigable channel across the Cape Cod isthmus almost from the first. But it wasn't until 1907 that financier-sportsman August Perry Belmont (whose maternal roots lay in Bourne and who was justly proud of his Perry blood) put together an adequately funded canal construction corporation and got on with the job. Dredging began in earnest some two years later.

At last, on the afternoon of 29 July 1914, the sidewheeler *Rose Standish*, under charter for the occasion to Belmont and his stockholders, led a flag-bedecked flotilla of naval vessels, yachts, and commercial craft into the western entrance of the canal. Slicing through a length of red, white, and blue bunting suspended across the canal near Gray Gables, *Rose Standish* proceeded without incident and "at the lowest possible speeds that (would) afford steerageway: the remaining 7.68 miles of "Belmont's ditch" and into Cape Cod Bay. Brass bands and speeches were the order of the afternoon in Sandwich. The dream became reality.

(Continued on Page Twelve)

ARCHAELOGICAL SURVEYS OF HISTORIC SITES IN STREAM BEDS

by William E. Trout, III, P.h.D.

Even before the Canal Era, water transportation was the essential commercial link which held America together. Thousands of batteaux, canoes, keelboats, push-boats and other small craft were poled, paddled and sometimes sailed along thousands of miles of upland rivers and streams, carrying down iron, coal, wheat, tobacco and other products, some returning upstream with pots, pans, pianos and other accoutrements of civilization.

So important was this inland commerce that everyone from Washington and Jefferson to the local landowners took a personal hand in the development of the system. Little is known today of the extent and archaeology of the sluices, wing dams, hauling walls, landings, portages and other remains of this early period.

Most of the sites can now only be rediscovered through field investigation, because records and maps cannot be assumed to be accurate, and in most cases no detailed records are known. Unfortunately, these streambed historic sites, together with the more widely appreciated fish traps, mills, locks and canals, are the most likely historic sites to be inundated, damaged or destroyed by reservoirs, channelization, and other water projects, so it is essential to locate and document them before it is too late. Therefore archaeologists conducting historic site surveys need to add to their repertoire a deliberate, imaginative search for signs of navigation on any stream large enough for a canoe, with special care east of the Mississippi and on streams which may have linked mills, forges, plantations and other centers with a larger stream or river. Even small streams should be checked; navigation sites have been found in places hardly believable today, and these are of especial interest. For local expertise contact the state or local canal society, or the American Canal Society, 809 Rathton Road, York, Pennsylvania 17403, (717) 843-4035. A Bibliography of the subject and examples will follow in later issues of **American Canals.**

WELLAND CANAL COMMEMORATED

On May 9th the Second Welland Canal in Old Port Dalhousie, Ontario Canada was commemorated by the placing of a plaque on Lock 1. The University Women's Club of St. Catharines donated the plaque.

BOSTON MUSEUM TO FEATURE CANAL EXHIBIT

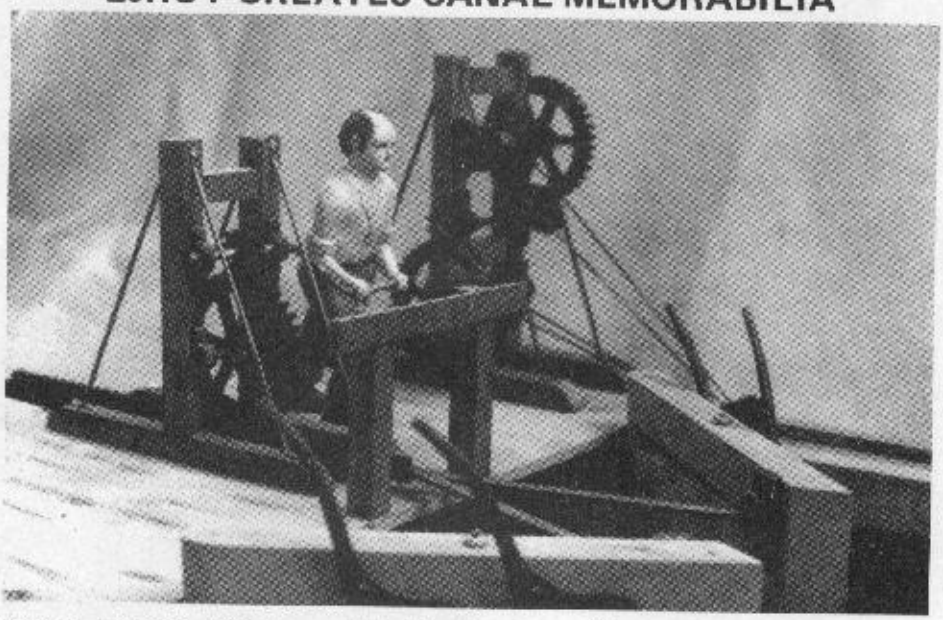
The Boston Museum of Transportation, located on the Boston waterfront has announced that it will shortly complete the preparation of a permanent gallery of exhibits reflecting the development and importance of the Middlesex Canal to the history of the region's transportation. The area will contain numerous canal models, artifacts and graphic displays.

This major assemblage of historic Middlesex Canal memorabilia is being made possible by a most generous donation from the Woburn Five Cents Savings Bank. As the area of Winchester and Woburn was the center of the canal's social and commercial life, the local financial institution is most interested in seeing that this important exhibit is successfully carried through to completion.

The Middlesex Canal Association and the State's Canal Commission are serving as the overall technical consultants to the Museum of Transportation for the program.

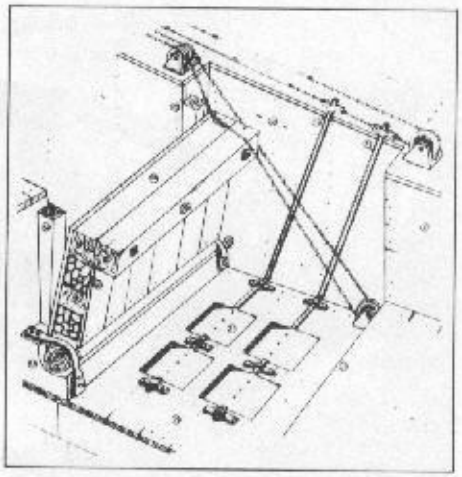
(Towpath Topics, April, 1981)

LeROY CREATES CANAL MEMORABILIA



One of LeRoy's intricate models, depicting a cranking mechanism for operating lock-gates on the Delaware and Hudson Canal.

Ed LeRoy displays several of his many interesting wood-carvings.



A portion of one of LeRoy's sketches, showing remote controls for drop-gate and wickets used on some of the Delaware and Hudson locks.

Edwin D. LeRoy, 50 Garden Avenue, Chatham, N.J. 07928, has been a student of the Delaware and Hudson Canal ever since his boyhood in the Pocono Mountains, and his discovery that his grandfather owned some canal boats on the D. & H. at Barryville, N.Y. He has hiked every foot of the canal between Honesdale, Pa. and Kingston, N.Y. and has investigated all its lock ruins, as well as the remnants of the two gravity railroads which carried coal to the canal.

Upon retirement from his job as Annuitant for Travelers Insurance Company in 1968, Ed has spent full time using his talents as a writer, artist and sculptor to upgrade his book entitled "The Delaware and Hudson Canal", originally published by the Wayne County Historical Society of Honesdale, Pa. in 1950 and now going into its fifth printing. LeRoy does his own illustrations for the book and has also created a fascinating series of wood carvings depicting life and mechanical operations on the canal.

Ed was able to interview some of the old D. & H. Canalers during the 1920's and 30's and was thus able to get first-hand accounts of life on the canal, and details of its operation, all of which he has preserved in his book, sketches and carvings. LeRoy is a frequent canal tour guide and guest lecturer at colleges and canal-buff meetings. He is also an active member of a number of historical societies. Reflecting on his activities during thirteen years of retirement, he wonders how he ever had "time to go to work".

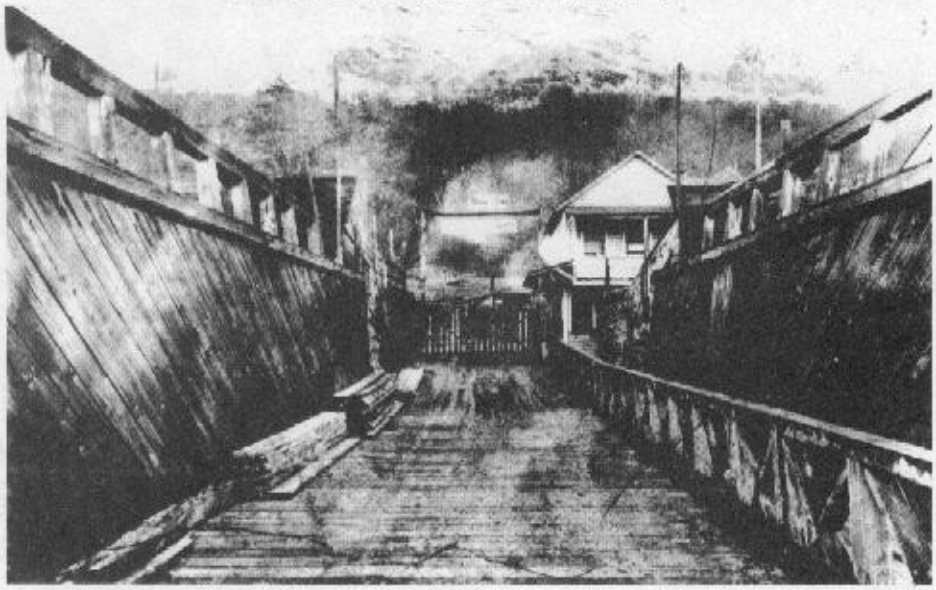
(Note: We are indebted to Willis Klotzbach of Trenton, N.J., for putting us in touch with Mr. LeRoy.)

QUEENSTOWN CHIPPAWA CANAL

Ontario Hydro is planning to dredge the six-mile-long Queenstown-Chippawa Canal which supplies water to the Sir Adam Beck power plants from the Welland River in Niagara Falls. Industries along the way will not be affected by the cleanup which will start this summer.

(St. Catharine Museum from the St. Catharines The Standard.)

ROEBLING'S FAMOUS AQUEDUCT A PRESERVATION PROBLEM



Interior view of the Roebling Aqueduct at Lackawaxen, Pa. (Circa 1905) shortly after shut-down of the Delaware and Hudson Canal and conversion of the structure to a highway toll-bridge. Note the wooden side walls of the aqueduct are still in place — later removed. (courtesy HAER, Nat'l Park Service)

A problem facing the National Park Service and the planning team for the Upper Delaware is the preservation and use of the Delaware Aqueduct.

The oldest wire suspension bridge in the nation, it was built by the famous engineer John A. Roebling in 1848.

The bridge originally carried canal boats filled with anthracite from the coal fields of northeastern Pennsylvania to industrial and domestic furnaces of New York.

Its future use in the scenic river area is complicated by community needs, incomplete scientific data, overall management plans for the valley and limited restoration funds.

Engineers from the Federal Highway Administration inspected the old structure last August and reported to the Park Service on repairs that needed to be made to the wooden superstructure and to the masonry piers.

Unanswered questions that remain: How much (if any) deterioration is there within the masonry and cables? Has the movement of the piers, caused by a fire a long time ago, had any long-term effect on the balance and basic integrity of the aqueduct?

What has been the effect of the "sway" caused by vehicular traffic, in contrast to the dead weight of the water-filled aqueduct? Would continued vehicle use cause deterioration?

Since the aqueduct is listed on the National Register of Historic Places, the federal government must be guided by the provisions of the Historic Preservation Act of 1966. As a historic structure within the National Park System, the aqueduct is also subject to NPS policies safeguarding historic properties.

Throughout the planning process, close scrutiny will be given to the issues surrounding the Delaware Aqueduct. The planning team welcomes constructive ideas anyone may wish to share. Call or write to the Upper Delaware Planning Team, Box 13, Milanville, PA 18443; (717) 729-7147.

(Submitted by ACS Director Bill McKelvey from **Our Scenic Delaware,** *Jan. 1981.)*

BOOK REVIEW

(Continued from Page 10)

Despite the hefty tolls originally charged by the Canal Company, the canal showed an operating loss of $1.5 million during its first three years of operation. Out of old custom or for reasons of economy, or both, much of the canal's potential traffic continued to sail around the Cape. Only a year after the canal opened for service, Belmont was willing to consider sale of the canal to the Federal government.

Under new management by the Army Corps of Engineers, the canal was substantially widened to allow for two-way traffic by all but the largest vessels. The canal was dredged to a controlling depth of 32 feet. The troublesome double bend at Buzzards Bay entrance was eliminated by the creation of Hog Island Channel.

Robert H. Farson's history of the canal is concise, workmanlike, and readable. Although Farson, a professor of journalism at Penn State, has relied very heavily indeed on William James Reid's *The Building of the Cape Cod Canal* (a doctoral dissertation that was privately published, without the scholarly apparatus, for Eleanor Robson Belmont in 1961) his own lack of scholarly pretension is disarming. Farsons account of the canal's day-to-day operations will be of particular interest to those who make frequent use of the canal. The remarkable collection of illustrations Farson has included in this well-produced book amply justify its high hard-cover price.

For the serious student of maritime history, Reid's *The Building of the Cape Cod Canal* still remains the best source of information about "Belmont's ditch." For the general reader, Robert H. Farson's *The Cape Cod Canal* will serve nicely.

Llewellyn Howland, III

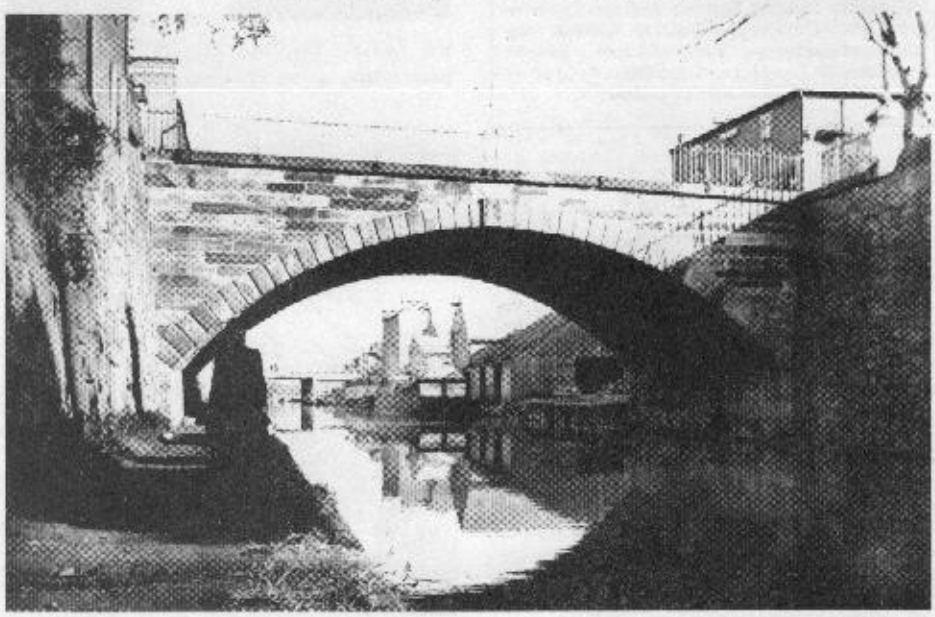
(From *The Log of Mystic Seaport* July 1978. Reprinted with permission.)

British Canal Rally

In England there is a great spirit of canal restoration. To emphasize this great spirit, a Rally is held each mid-August in a different part of the country. When we attended the Northwich Rally in 1979, there were over 600 boats that had come through thousands of locks. There was a festive air for the full weekend. If you are in the Leeds, Yorkshire area of England this year be sure to save the weekend of 15 - 16 August to visit the rally. If you come, ask for Bev and Dollie Morant and we will introduce you to the Inland Waterways Association and other English canal society friends. When you return to the United States, make the restoration spirit work. The one principle to keep in mind is that we can do it if the English can.

(Bev W. Morant, 61 W. Bonita, Sierra Madre, CA 91024.)

"MYSTERY PHOTOGRAPH"



Can you identify the canal and the place the photo was taken? Answer will be provided in the August 1981 American Canals. The "Mystery Photograph" in the February 1981 Issue of A.C. was the Jackstown Aqueduct on the Juniata Division of the Pennsylvania Main Line Canal, about three miles west of Mt. Union.