PRESIDENT'S MESSAGE

In recent months we have had several inquiries concerning possible "Life Membership" in the American Canal Society. Apparently some of our members would prefer a "one-shot" dues payment instead of being repeatedly billed for dues, year after year with the inevitable due increases. For the benefit of these individuals, and other ACS Members who may wish to consider the method of advance dues payment, your officers have decided to add an ACS LIFE MEMBERSHIP category to our various membership classifications.

The one-time dues payment for Life Membership will be fixed (this year) at $100. With our rapidly deflating dollar, we feel this offers our members an attractive small investment possibility for the future. (Ten years from now, we may find it necessary to re-set this figure at $200!) Once paid, this $100 fee will guarantee you a permanent place on our mailing list, no further dues payments, and the automatic title of "Canal Boat Captain". Other special privileges may be granted ACS Life Members in the future, as they may well become the "backbone" of our organization.

Any ACS members who are interested in changing their membership to the "Life" category are invited to write for further information or to simply send a $100 check to Charles Dam, our Secretary-Treasurer, who will put you on our permanent mailing list, and issue you a special LIFE MEMBERSHIP card, as well as an "acknowledgement" for income tax purposes.

William Shank

ACS DIRECTOR CAHILL HONORED

Louis J. Cahill, Canadian Director of the American Canal Society, was recently honored by fellow members of his profession of public relations when he was presented with the Canadian Public Relations Society's Award of Achievement for "distinguished achievement and service". We are proud to count Mr. Cahill among the directors of the American Canal Society.

Lou Cahill is currently very involved in plans for the 150th Anniversary of the first Welland Canal - 1629.

Charles River Dam and Locks

Commercial lock on the James River, 300' x 40', the only one open to navigation in August 1976, when this photo was made.

The new Charles River Dam is a multi-purpose facility with provisions for flood control and recreational and commercial navigation. It is located in Boston inner harbor on the site of the former Warren Avenue Bridge which linked Boston and Charlestown.

The major features under construction are the pumping station, the navigational locks, and an overhead enclosed walkway. The walkway connects two standing stair towers and the pump station with the three navigation locks and contains the control stations for operating the locks. At the south terminus of the walkway is the MDC police boat facility. An on-grade crossing of the road has been provided for pedestrian traffic between Boston and Charlestown.

The design and construction of the project was under the supervision of the U.S. Army Corps of Engineers in cooperation with the Metropolitan District Commission who will operate and maintain the facility. The project was designed by the architect-engineer firm of CE Maguire, Inc., Waltham, Massachusetts. It was constructed by J. F. White Contracting Co. of Newton, Massachusetts, under a $24,887,950 contract. Construction began in September 1972 with removal of the abandoned Warren Avenue Bridge under a separate contract.

Sector type gates to be used on all three locks, during construction in August of 1976.

(Concluded on Page Two)
Charles River Dam and Locks

(Concluded from Page One)

horsepower diesel engine. Offices, personnel rooms, workshops, control rooms, and a public viewing area overlooking the engine room and navigation locks are located on the harbor side of the station shown in the photo. Arched openings (hidden from view in the photo) constructed above the downstream discharge bays and the upstream engine room windows reflect the character of the Charles River with its many arched brick arches.

The existing single navigation lock at the old dam operates at capacity. To accommodate the increasing boat traffic between the harbor and the Charles Basin, the new project has three locks. Two locks, for recreational traffic, are 250 feet long and 22 feet wide, and the third, primarily for commercial traffic, is 300 feet long and 40 feet wide. This lock is also used for recreational boat traffic during the peak traffic periods. All locks feature sisdor gates for rapid lock operation. A major improvement in the navigation locks is the capability for discharging salt water, which enters the lock during operation, always into the harbor. At capacity, those locks would handle 40,000 boat passages per year, almost triple that at the old lock. Dual control consoles in the overhead walkway and in the lock walls allow efficient gate operations.

The Paul Revere Landing Park on the Charles town houses features tree-lined walks, waterfront benches, and grassed areas. Coins put into the park is a plaza framed by the pumping station and a large tree, standing stair tower containing the public entrance to the facility. Next to the stair tower is a castle-like building that overlooks the inner harbor, the fishway entrance, and the pump discharge bays.

The public viewing area extends along the entire waterfront, located at the basin end of the fishway is a special area for the public to view fish passage.

A centrally located public access walkway extends from the upstream fishway end to the large commercial lock. This public access walkway continues across the lock gates and terminates on the Boston shore where a landscaped public parking area for 60 cars is provided.

(Submitted by Aileen Gould, Director ACS, Photos by Gould, Text and map from a Corps of Engineers brochure.)

WELLAND CANAL MAPS AND PLANS

The St. Catharines Historical Museum has a considerable number of line maps and plans, many of which come from the old Welland Canal offices. These, along with about 200 copies of maps from The Public Archives collection in Ottawa, mostly relating to the canal, make up a comprehensive collection for research purposes. To aid such research in the future it is necessary to have a cataloguing system whereby the maps are easily retrievable. With money made available from Canada Works for the 150th Anniversary of the Welland Canal, a system is being devised to catalogue in detail as much information as possible about each map. This information will be recorded on cards and placed in order according to the date on the map. Cross-references will also be created, one by location along the canal, and the other by the 1st, 2nd, 3rd, or 4th Canal, hopefully such a system will aid the researcher while at the same time reduce excessive handling of fragile maps.

Time is also being given to the conservation of these artefacts so that they can be maintained in good condition. One map of the 1st Canal has already been sent to Montreal for extensive renovation.

For further information write to: St. Catharines Historical Museum, 343 Merritt St., St. Catharines, Ontario L2T 1K7, Canada.

AMERICAN CANALS. No. 28 — February 1979

View of the Charles River Pumping Station from the Boston side, looking northwest.
An Early Trip On The Erie Canal

by Ernest H. Schell

The greatest monument to American enterprise in the early nineteenth century was the Erie Canal, the longest canal in the world in its day, a 364-mile giant over ten times as long as any canal previously built in the United States. It was a stupendous engineering feat undertaken by ingenious and dedicated amateurs working scientifically and systematically on a project that many people had considered a certain failure.

A host of visionaries had for decades promoted schemes that would link the Hudson River with the Great Lakes, but the bankruptcy of the Western Illinois Lock and Navigation Company in 1809, after a disappointing 17-year history of marginally useful ventures, discouraged many of the state's leading merchants and speculators from investing in canal stock. While businessmen in New York City saw the value of having their town serve as the gateway to the West, they did not believe that a successful canal could be completed in their lifetime. Even DeWitt Clinton, the forty-one year-old mayor of the city, when he was appointed to the New York State Canal Commission in 1810, was not enthusiastic about the prospects of the project. He had long recognized the value of a link with the West; however, and after the War of 1812 became the canal's leading promoter.

When construction of the Erie Canal was finally authorized in April, 1817, Clinton and the other Commissioners knew that to win over support from a wary public and particularly from the financial community, a modest but successful beginning was preferable to failure on a spectacular scale. Accordingly, the canal was divided into three parts, with work on the middle section from Seneca River to Utica to be completed by 1819. Under the direction of Judge Benjamin Wright, often considered the "father of American engineering," work proceeded on schedule, with Wright supervising the application of new equipment and innovative techniques in landclearing, bridling, and construction.

Though four weather damaged part of the uncompleted canal in the spring of 1818, and malaria and yellow fever took their toll, all doubts about the project were dispelled by October, when a portion of the middle section from Rome to Utica was opened for traffic. On the 22nd, Clinton, now the governor of the state, embarked at Rome on a 60-foot long canalboat named "Chief Engineer of Rome," in honor of Wright, loading a company of dignitaries who sat off on the trip to Utica amid the pealing of bells, the salute of cannon, and the enthusiastic cheers of thousands who lined the canal banks to witness the great event. Investors were suddenly bullish about "Clinton's Ditch," vindicating the Commissioners' decision to bank on early signs of progress in winning the support necessary to complete the canal.

When the finished canal was opened with the famous "Great Pageant" in October, 1825, the attention of the entire country was focused on the event. By then, though, canalmania already had the country in its grips. Investment in the Erie had not only proven sound, but had been encouraged by the continued care with which the Commissioners had continued to promote their efforts. Had it not been for these early and elaborate celebrations, the "Great Pageant" itself might never have taken place.

April 21, 1829, opening day for the entire middle section, for example, was an dramatically staged as the fanfare that had accompanied the opening of the Rome-Utica leg the previous October. The Lion of the West, a 76-foot boat with a 4-foot beam, left Rochester early in the morning with its contingent of the illustrious, laid over at Lyons that evening, and arrived in Utica the following day, having made the trip with an average speed of five miles an hour. Since water from the Great Lakes had caused part of the bank to crumble along with way, a speed limit of four miles an hour was imposed to try to solve the problem. Otherwise, everything went as well as the Commissioners had prayed it would. On the 4th of July, an international exhibition at Syracuse commemorated the completion of what had already proven to be a resoundingly successful venture. The opening of the first commercially significant portion of the Erie Canal had become the most talked about event of the day.

The middle section was immediately put into use carrying freight and passengers. A ride on the canal, in fact, was considered high adventure for travelers, who could return home boasting of their experience. One of the passengers that first summer was a Philadelphia merchant, Thomas Pym Cope, on his way from Philadelphia to see Niagara Falls. Cope, civic leader who was later to become interested in several of Pennsylvania's internal improvements, was a meticulous observer of the world who for many years kept a diary of his daily rounds. Two passages from this journal recently edited by Eliza Cope Hentz, (Philadelphia Merchant: The Diary of Thomas P. Cope, 1809-1851, South Bend, Indiana Gateway Editions Ltd., 1978, $19.95), recount the trip he took on the newly-opened middle division.

For some reason, Cope's trip terminated at Montezuma, near the Seneca River, which was in fact the officially designated western end of the middle division, although the canal had been open earlier in the month as far west as Rochester, and a Utica newspaper announced that on July 25, three days before Cope's journey, pack of service was to have begun between Utica and Rochester. Unlike the inaugural voyage of the Lion of the West, Cope's canal sojourn continued through the night, a practice that became standard procedure, but one that could be dangerous, as Cope noted. There were other dangers, such as falling trees in stormy weather, that Cope noted as well. His account repro

Am aqueduct on the old Erie Canal, circa 1865-Hornung. (Early American Advertising Art)
An Early Trip On The Erie Canal (Cont.)

Sketch of the entrance lock to the old Erie Canal at Troy, New York, circa 1870. (Courtesy Canal Society of New York State.)

(Concluded from Page Three)
duced in full with the permission of the publisher (Peggy/Gateway, Inc., South Bond, Indiana) offers a detailed and fascinating glimpse of the very early and exciting days on the Erie Canal.

"July 28, 1820. At this morning we went on board the passenger boat Montezuma, Capt. Brown, on the great canal. The boat left Utica [where Cooper's Journey began] to Montezuma, distance of 96 mi. This boat is 76 feet in length, 12 beam and draws 20 inches of water. Capt.' B. has $16 per mo. and says that for weeks he has not had 3 hours regular sleep at one time. This is hard duty for such wages. The boy who drives the horses has $8 per month. Today he is to drive 50 miles and must return tomorrow.

"Our boat is towed by two horses attached to a line 110 feet long. Chains are not permitted, on account of their tearing away at the banks. There is but one tow path & when two boats meet, the one going to market stops & dropping her line, the other passes over it. Passenger boats pay 5 cents a mile, country produce one cent per 100 lbs., and dry goods 2 cents. The bridges over the canal, of which we are told there are 70 between Utica and Montezuma, are so contracted as to leave barely room for our boat, the abutments projecting too far into the canal.

"Capt. B. is sick with the fever and ague and says all the facts in their employ on the canal - the one who now drives our horses excepted - have the same disorder. It is an unpleasant one.

"One of our company has amused himself with hooking bullocks, which are numerous and display themselves in great style on the banks. We have had a mass of them for dinner and dined on the flesh not inferior to that of a chicken. The banks of the canal are rising in some places, owing to their having been made too steep. This error, however, they appear to have corrected.

"July 28. We made no stop at Major's, which we passed late at night, just previous to which the

Boy, getting asleep, fell from the horse and luckily was not much injured, but it was so dark that the accident was not perceived except by the fillers. There had been a heavy storm of wind and rain, accompanied by thunder, the Oneida Chief, another passenger boat, bound to Utica, passed us some hours afterwards and reported that she was near being destroyed by the falling trees - indeed, the danger was considerable. About daylight we arrived at the first locks, 3 in number; they ascend together 27 ft. to the west. Halted for half an hour at Syracuse, 61 miles from Utica - a village of 100 houses on the north side of the Canal.

"We were much too crowded last night. Capt. B. says he can accommodate 10 or 12 passengers with comfort and does not wish more, whereas there are 21 of us. The women occupied all the berths and the men spread themselves on the seats and on the floor and were said to have fared better than their fair companions, who complain of having been annoyed by vermin. Alfred (Cooper's son), who slept on the floor, got up with one arm much swollen and inflamed, apparently from the bite of some insect.

"We reached Montezuma before midnight, 96 miles from Utica and have been 23 hours in coming that distance and therefore travelled at a rate less than 3 miles an hour. We had 4 meals on board and for these and passage paid 44. It had been a lightless, dull voyage - the novelty alone rendering it tolerable. None of our company probably regret having taken it, but none, I believe, would be willing to renew the trip.

(Mr. Scholl, a freelance writer and business historian, is a doctoral candidate in history at Temple University.)

1979 Dues

We are pleased to report that, as of this writing, more than eighty percent of our members have responded to our 1976 dues statement, mailed last November, and have paid their dues for the current year. However, there are still approximately one hundred members who are being reminded once more by Charlie Dier, our Secretary, in a separate mailing, that they have somehow neglected to send him a check. (This does not include new members who have joined our ranks since October 1, 1976 and whose membership continues through 1976)

Mail list operations and postage costs are being paid for by people who are members of our Society. If you have not received a separate "reminder" from Charlie Dier, we urge you to take care of this matter promptly. Otherwise, your name will be removed from our mailing list before the issuance of the May 1979 AMERICAN CANALS.

Florida Barge Canal Appeal

Attorneys for the state say they plan to appeal a district-court ruling that could have far-reaching implications for the disposition of land acquired for construction of the ill-fated Cross-Florida Barge Canal.

The appeals court gave canal backers three more years to begin development of the waterway - or sell 17,000 acres of Marion County land to the Ocala Manufacturing Co. at the land's $60,000 purchase price. Ocala Manufacturing Co. sold the land to the Canal Authority in 1966, contingent on a promise that construction of the Eureka Pool would enhance the value of approximately 4000 acres of adjoining land still owned by Ocala Manufacturing.

Ocala Manufacturing brought suit against the Canal Authority after the canal construction was halted during the Nixon administration because of environmental concerns. Circuit Judge Wallace Sturgis ruled in 1977 that the Eureka Pool and the Yorkwater to Palatka canal are not developed by Sept. 28, 1981 the Canal Authority must sell all the land back to Ocala Manufacturing for $395,848.

(Submitted by ACS Director Alden Gould from Fort Myers News Press)

AMERICAN CANALS, NO. 28 - February 1979
Early Canal Boats on the James River and Kanawha Canal

by T. Gibson Hobbs, Jr.

(Part three - Conclusion)

The listing of canal boats titled "CANAL REGISTRER" first appears in the August 8, 1841 issue of the Lynchburg, Virginia Newspapers and is continued in most of the issues thereafter. This list the name of the boat followed by the name of the captain.

The listings below are continued from "part two" of this series and are reproduced just as they appear, including the misspellings, errors and typographical mistakes plus possibly some of my own.

ARRIVED - Oct. 18 - Kanawha, Jenks; Old Virginia, Taylor; Jack Dowling, Murf.; Jenkins, Charles, Wm. L. Lancaster, Harrison.
Oct. 19 - Abingdon, Dolan; Jos. C. Cabell, Lodge; Josephine, Charlotte; Derby, Lynchburg, Virginia, Taylor; James Madison, Peters; Farmer, Couch.
Oct. 20 - Lynchburg, Fields; Pioneer, Peetz; Claysburg, Ash.
CLEARED - Oct. 15 - Lady of the Lake, O'Connor; Union, Old Virginia, Taylor; James Madison, Peters; Farmer, Couch.
Oct. 16 - Genil, Harrison, Clark.
Oct. 17 - Tennessee, Bally; Wm. L. Lancaster, Harrison.
ARRIVED - Oct. 22rd - Old Dominion, Childress.
CLEARED - Oct. 21st - Experiment, Goodwin.
Oct. 22nd - Old Virginia, Taylor; Buchanan, Armstrong; Highlender, Locket; Josephine, Orborne; Old Dominion, Childress.
CLEARED - Oct. 30th - Pocohontas, Grant; Red Bird, Brown.
26th - Commodore, Brown.
27th - Richmond, Eubank.
CLEARED - Oct. 30th - Columbia, Devinney.
26th - Claysburg & Burton, Ash; Jno. Randolph, Franklin.
Oct. 27th - Lynchburg, Fields.
ARRIVED - Oct. 30th - James Madison, Peters; Old Dominion, Childress.
Oct. 30th - Tennessee, Bally; Wm. L. Lancaster, Harrison.
CLEARED - Oct. 30th - Red Bird, Brown; Devil Crockett, Phelps.
Oct. 30th - Richmond, Eubank.
ARRIVED - Nov. 1st - Gabriel Tar, Pampin; Buchanan, Armson; Mohawk, Cheat.
CLEARED - Nov. 4th - Jno. C. Cabell, Dougerty; Highlender, Fourquarean.
Nov. 6 - Buchanan, Armson; Mohawk, Cheat.
ARRIVED - Nov. 6th - Pocahontas, Grant.
Nov. 10th - Jas. Madison, Peters; Richmond, Eubank.
CLEARED - Nov. 16th - Elizabeth, Robertson; Lady of the Lake, O'Connor.
Nov. 19th - Experiment, Goodwin; Red Bird, Brown; Josephine, Charlotte; Lynchburg, Fields; Columbia, Devinney; Abingdon, Dolan.
ARRIVED - Nov. 12th - David Crockett, Phelps; Pioneer, Peetz; Genil, Harrison, Clark.
Nov. 15th - Pocahontas, Grant.
John Randolph, Crump.

The accompanying photographs of James River and Kanawha Canal artifacts were received recently via ACS Member T. Gibson Hobbs, Jr. of Lynchburg, Virginia from Samuel Guerrett of Roanoke, Virginia. The upper photograph shows a JR & K canal boat horn being blown by Mr. Guerrett. The other is a piece of iron 7 3/4 inches and 2 inches thick, weighing 20 to 25 pounds and identified by Gibson Hobbs as a hinged post. This is probably the device upon which the hinged post of a lock gate rested. The hinge post (a gudgeon plate and pivot pin as it is also called) was designed to fit snugly (yet smoothly) into the thrust bearing (sometimes historically called a hollow iron quill) of the hinge post. Ed.

ARRIVED - Dec. 4th - Highlander, Locket;
CLEARED - Dec. 3rd - Pioneer, Peetz; Donald, New River, Shiner.
ARRIVED - Dec. 6th - Red Bird, Brown; Donald, New River, Shiner.
Arrived - Dec. 7th - Buchanan, Armson; Lynchburg, Fields; Richmond, Eubank.
CLEARED - Dec. 6th - Experiment, Goodwin.
Dec. 7th - Highlender, Locket; Jas. Madison, Peters.
Dec. 10th - No Canal Register included.
ARRIVED - Dec. 13th - Old Dominion, Childress; Pig Iron, Trent.
Dec. 18th - Genil, Harrison, Clark; Mohawk, Quail; James, Nelson.
CLEARED - Dec. 12th - Buchanan, Armstrong; Old Virginia, Taylor,
ARRIVED - Dec. 15th - Farmer, Capt. Couch.
Dec. 16th - Avingdon, Capt. Crump; Peacheppee.
Dec. 18th - Pioneer, Capt. Peetz; Donald, New River, Shiner.
Dec. 19th - Columbia, Capt. Devinney; Govt. Harrington, Clark; Gabriel Tar, Capt. Shaw.
Dec. 17th - Mohawk, Capt. Quail.

1979 CANAL CALENDAR

Mar. 9 - "Towpath Trail" slide show by Canal Society of New Jersey at 8 P.M., Allied Chemical Auditorium, Morris Township, NJ
April 15-28 - Walk along entire 16-mile Chesapeake & Ohio Canal & C & O Canal Association, M. E. Johns, 60333 16th NW, Arlington, Va. 22209
April 20 - Restoration of Canals in England and preview of planned D & H Canal trip, CSNJ, 8:00 P.M., Allied Chem. Aud., Morris Township, N.J.
April 27-29 - Delaware & Hudson Canal bus trip to Kingston, D & K Museum at High Falls, Locks, aqueducts, DePuys House, movie "Canalway," two dinners. CSNJ, MacMull Hall, Box 737, Morristown, N.J. 07960
May 9-10 - Canal Society of Ohio, Ohio & Erie Canal Tour, Cuyahoga Valley National Park, Kirtland, Ohio 44040; Chairman: Bob McFarland, 1917 S. Ohio Rd., Parma, Ohio 44134.
Aug. 17-19 - Roscoe Village Canal Festival, Roscoe Village, 381 Hill St., Coshocton, Ohio 43812.
Oct. 12-14 - Bus Tour of the Sandy & Beaver Canal, HQ Salerno, OR, Canal Society of Ohio & Pennsylvania Canal Society, Jack Lunher, 235 Windsor Dr., East Liverpool, OH 43920

(American organizations please note, Send information regarding your events for American Canals by 1 January, 1 April, 1 July, and 1 October, Editor from Hahn, American Canals, Box 310, Shepherdstown, WV 25443.)

ACS Member Don Rampsey asks, "Is there any other experience dating back to the Canal Age (as opposed to the Scotch loch)? Though both represent an impoundment of water, Loch comes from Gaelic/Scot fish and loch seems to come from Germanic sources. On the other hand, the Celtics were more widespread than we used to think. According to a recent national GEOGRAPHIC, 14, so maybe there is a remote connection." [Any comment? Ed.]

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crackle on pottery, and a drying mud flat but was arranged like railway, road and canal networks on Earth, with points of convergence he called "oases." Since the canals on Mars were so long and straight - at least 3,000 miles long - it was clear that unlike Earth, Mars had a unified planetary government far more advanced than ours. Perhaps this huge network was the last great engineering feat of a dying civilization trying to gather scarce water from the polar caps to irrigate a dying planet. Who knows, perhaps we earthlings were really Martians, having left our dead planet ages ago? However, the visibility of the canals changed with the Martian seasons, and there were indications that the system was still under construction because over the years of observation, new canals appeared which had clearly not been there before. Lowell also supplemented his astronomical observations with terrestrial experiments. For example, by observing piano-wires strung out across the horizon a mile away, he calculated that the smallest line one should be able to see on Mars had to be at least a mile wide, so the "canals" must actually be wide irrigation systems, not just long, straight lines as assumed. Lowell even took his honeymoon in a balloon a mile over London, to see what the canals looked like from a great distance.

Unfortunately, in science the path to the truth is frequently not a straight one. Lowell was every bit as good as Sherlock Holmes, but his basic premise was in error. We know now from the dramatic close-up photos of Mars by NASA's MARIAN and VIKING that there is not, and never has been, any canal network on Mars such as Lowell saw. There is no doubt that Schiaparelli, Lowell, and others saw lines crossing Mars, but they were not related to linear surface features, and must have been illusions created by the mind playing tricks. Exobiologist Carl Sagan (himself a product of the Martian Canals) compared the map with the MAFINERI photographs in a 1975 article in ICAUS and found little correlation. Undaunted, Lowell's observations tell us a lot about both Mars and the human brain, but alas, not much about intelligent life on our sister planet, or about extraterrestrial canals.

One canal - Agathodaimon, or Capretort, a wide and long which Lowell knew was different from the other narrow lines - did in fact turn out to be a remarkably straight surface feature 3,000 miles long and 300 miles across, now named Valles Marineris in honor of Mariner. However, far from being an indication of intelligent life, this "Grand Canyon of Mars" is up to four miles deep, and was probably caused by massive faulting of the crust followed by wind and water erosion.

Does this mean that the canals of Mars have been worthless? Far from it! Our present-day enthusiasm for space exploration and life on other worlds is nurtured in a breath of ideas about life on Mars. It gave science-fiction gods material for adventure and speculation which has greatly affected us. Who knows, if Lowell had not caused the public's imagination most a century ago, the people of Earth might not have managed by now to rise above their domestic and planetary problems long enough to send men and robots into space to find out what is really out there.

And Lowell may have left us another legacy. Perhaps with so much science fiction having been written about Mars, at least a few faint lights shine through some of today's work. The "oases" on Mars have been an imaginative bit of canal lore. How about Martian "canals" in other worlds that our will of the artificial bit of canal lore? How about Martian "canals" in other worlds that our
EASTERN MARS CANAL

The "Grand Canyon of Mars" can be seen in the upper left running diagonally southeast, below the north polar cap, in this photo made by the Viking 1 Orbiter on June 18th, 1976. (NASA Photo.)

Viking 1 - the first modern canals on Mars - the excavator of which was begun on July 28, 1976 by the Viking 1 Lander.

(Dr. Trout is Vice President of the American Canal Society.)

"THE JOSIAL WHITE"

July 1, 1976 was the first official day of commercial operations on the Lehigh Canal since 1931. The canal boat, "Josiah White", formerly the "A. Emerson" on the Delaware and Hudson Canal (see American Canals # 1 & 2), operates from July 1st to October 29th. During this time the "Josiah White" carried 4,561 passengers. The boat was pulled by two mules and had a crew consisting of a mule driver, captain, and deck hand.

The boat was named after Josiah White, founder of the Lehigh Coal and Navigation Company, which built the Lehigh Canal. Josiah White was not only a canal builder but also an inventor. He invented the barge race lock, the drop gate lock mechanism, and some of the country's first wire rope suspension bridges.

During 1979 the "Josiah White" will be operating Wednesdays through Sundays from Memorial Day through Labor Day and weekends until the end of September. (Photo by J. Stephen Humphrey.)
The above interesting photo was sent to us by Richard L. Mix. It shows a canal diorama built by Mix and his two sons, Scott and Andrew, for the Lycoming County Historical Society Museum in Williamsport. The canal boat model, shown in the lock, was designed by Bill Shank.

ERIE CANAL BIBLIOGRAPHY

With the cooperation of the American Canal Society, noted canal author Lionel D. Wyld (Low Bridge on the Erie Canal) has prepared a fine bibliography for the Erie Canal. The introduction states, "This bibliography is an outgrowth of discussions with Capt. T. F. Hahn, USN (Ret.), former president of the American Canal Society, regarding the ongoing series of reference lists. The Society is making available on the artificial waterways of the various states. It was initially agreed that so far as New York State was concerned (1) a single bibliography covering all the canals would be impractical and (2) the Erie should be treated separately because of its historic importance and influence. Also, because of the extensive literature and other documentation on the subject, it was recognized that any useful treatment of the Erie Canal, while it may have to be selective, would be a consideration of a number of entries.

The present bibliography is divided into three major categories: (1) BOOKS, MONOGRAPHS, AND THESSES, (2) ARTICLES, PAMPHLETS, AND BROCHURES; and (3) FOLKLORE AND GENERAL LITERATURE. The first part is self-explanatory. These are the principal works, most often consulted as references on the Erie Canal. This section lists books and monographs dealing significantly or entirely with the canal, as well as other books, pamphlets, chapters, and academic works that offer useful Erie information. "Books" is used somewhat loosely to include also important publicized books, generally obtainable through commercial book cutters. The second section lists articles of reference interest to the historian of the Erie, and also includes separately lawed pamphlets, and booklets or brochures such as those offered by museums and historical societies either gratis or at a nominal charge. The last section includes books and other pieces which seem to be interestingly literary or folkloristic.

Published by the American Canal Society, The Erie Canal: A Bibliography, 19 pages and an attractive cover, is available at $3.75 (includes mailing) from Lionel Wyld, 20 Countryway Drive, Cumberland, R.I. 02864.

INLAND WATERWAYS EXHIBITION

International visitors and delegates to the Inland Waterways Exhibition Conference and Study Tour will have what will surely be a unique opportunity to assess the potential of waterborne transport on the inland waterway networks of Europe, and indeed the world. European industrialists, shippers and forwarders, representatives from foreign and shipping companies, trade delegations and the widest cross-section of specialized purchasing influences involved with everyday aspects of the global inland transport sector, will be invited to attend the events, scheduled from the 28th to May 10th of 1979 in Strasbourg, France.

In association with the exhibition there will be a conference on inland waterways. The conference programme is being drawn up by the conference division of Ebrocks & Mack Consultants AG, Basel, Switzerland, under the guidance of a distinguished group of authorities drawn from many water interests.

As at the present scheduled, the conference will run from Tuesday 28th May to Thursday 31st May inclusive, and will consist of five half-day sessions. Topics include waterway development in the less-developed countries, commercial and regulatory aspects of the integration of the East and West European waterway networks, innovations in cargo-vessel operation and in navigational aids, the place of waterway transport in the Common Market during the latter half of the next decade and the introduction of river/sea vessels and their implications. The study tour, by river to Botte Rhone, will allow an opportunity to travel at first hand and small and quiet enough to be more like the canal parks in the east, with a footpath and no need for fencing, as in Salt Lake City (See Salt Lake City's Early Day Canals) by Bill Troup in the March 17, 1977, UTAH FARMER STOCKMAN, 501, from 610 Grand Park, Salt Lake City, UT 84101.

It is time for westerners to systematically and zealously protect their canal corridors, especially in cities, so that they may be utilized in full as canal parks and linear parks. As for the Bureau of Reclamation's canals, they are in a similar position in the canals of England, controlled by one agency with the problem of wholehase preservation of open space corridors for future use. At the very least, the Bureau should set the policy of protecting their corridor's rights-of-way from encroachment. By developing areas, parks will not only be needed; they should not allow developers to work away at the canal corridor. It may not be so much the corridor's corridor, but the corridor will be priceless in the future, with water or not, and it should be the duty of the Bureau of Reclamation to keep them intact until that day comes.

Future Canal Parks?

Many of the western states not lucky enough to have historic navigation canals, have irrigation and water supply canals instead. Because many of these canals are obviously potential linear parks and open space, especially near expanding urban areas, it is important to start now to protect these rights-of-way from encroachment, and to plan for future use when building new canals. The same kind of work and planning used for historic canal parks, is needed in the west, where some canals - those considered the most have already been culverted. The Bureau of Reclamation canals are of especial interest because there are hundreds of them, all controlled by one agency, with the prospect of an overall park and preservation policy.

An article on "Adventure Trails" by Mike Miser in the summer 1977 issue of the Bureau's periodical, RECLAMATION EFT, described our bikeways on Bureau canals. Three were in California: a 67-mile trail east of San Francisco, and 30 miles in the Antelope Valley north of Los Angeles; have been completed by the state of the 444-mile California Aqueduct Bikeway, 14 miles have been completed of a 22-mile bikeway along the Fresno South Canal near Sacramento; and still more trails in the name Corona Costa Canal Bikeway near San Francisco. The fourth is the Papago Bicycle Loop along two canals in Phoenix and Scottsdale, Arizona.

We asked the Bureau for more information on their parks and canals, and have received a number of maps from the regional divisions, which are now in the process of the ACS Canal Parks Committee and available for use. It was disappointing to learn that on the hundreds of Bureau canals, evidently only those mentioned above are officially used as parks. The Pacific Northwest Division was so far as to say that none of the Bureau canals in Idaho, Oregon, and Washington were potential parks, although it all the divisions were so pessimistic: there are canal parks and trails waiting only for the money and interest to create them. Generally, the canal parks are not at all suited for water recreation and can be dangerous because of fast water and siphons; the safety problem is a major one for the Bureau - the California Aqueduct Bikeway, for example, is carefully fenced off from the canal. The canal right-of-way, however, is not the most valuable, but the publicly owned linear corridor off main roads and sometimes through urban areas. Most canals are mainly works, unfortified on either side or by foot, bicycle, or even automobile if the access road permits. There are of course other canals than Bureau ones, over from placebo, small and quiet enough to be more like the canal parks in the east, with a footpath and no need for fencing, as in Salt Lake City (See Salt Lake City's Early Day Canals) by Bill Troup in the March 17, 1977, UTAH FARMER STOCKMAN, 501, from 610 Grand Park, Salt Lake City, UT 84101.
With Sam Cash on the Tavistock Canal

Sam Cash, who has already appeared in AMERICAN CANALS several times, is one of our most enthusiastic members in England. Sam is moving his textile designing business to Bristol but in September he was still in Tavistock, in southwest England, when he finally met him for the first time. Tavistock, fortunately for Sam, is at the upper end of the Tavistock Canal, which runs 4½ miles down to Morwetham Quay where there is an open-air museum, so he has been able to work actively on the canal and encourage local interest in it.

We took the afternoon off to take a walk down the canal, which starts at a stone arch bridge surrounded by the original warehouses which stored loire to be sent by canal. Tavistock is a fine town—Drake's birthplace as its canal flows through a park with he statue of Don Quixote and bowls growing, then under an abandoned stone ruin of the Grand Western Railway, across an aqueduct embankment, and past an abandoned branch canal which in the 1820's took stone from Mill Hill Quarry on its way to London Bridge and then to Lake Havasu City, Arizona. Then we came to a deep, dank cutting and the mouth of the 1½ mile tunnel, inscribed "1830." "You no be wanting to go there," said a local with a sheep-dog and a tobacco roll when we asked for directions to the other end of the tunnel, which lacks a towpath. But he finally told us, from the other portal a short stretch of canal loads to a long inclined plane down to Morwetham Quay's fantastic open-air museum complete with the canal and place, lime kilns, lime works, waterwheels, a narrow-gauge tip into a mine, and a small hydro plant with Pelton wheels which runs off the water from the canal. From here, one and lime kilns was shipped down the Tamar River. Literature and oddities from the museum includes a leaflet with the "Woodland and Canal Trail", and the TAVISTOCK CANAL by Carolyn Hodges. The address is Morwetham Centre for Recreation, Near Tavistock, Devon.

CANAL HUNTING IN PRAGUE

The Detsky Island Lock in Prague, taken from under the "First of May" Bridge (Photo by Bill Trout, September 1978.)

The ancient city of Prague is beautifully situated on the Elbe River, which flows northwest through the Czech Republic. The Detsky Island Lock is a tributary of the Elbe which flows westward to the North Sea. The canal has been landscaped by locks and jams up to and beyond Prague in old prints of Prague you can see a boat boat and log rafts, running the sluices through the low dams. Now there are locks for commercial and excursion boats, but the sluices are still there.

There are three sets of locks in Prague, two of them in the city center near the Old town and Hradcany Castle. They are all of roughly diamond-shaped brownish stone trimmed with granite, and have remotely operated miter gates. Roger Calvert in his book INLAND WATERWAYS OF EUROPE says there are two sets of locks in Czechoslovakia, 8.2 x 57 meters, and 10 x 147; there are two locks at each dam, perhaps of these sizes, the longer lock having an intermediate gate of pairs for short boats.

You might start your tour of the canals of Prague by going to the excursion boat dock (naspovna panku) on the right (east) bank between the Palackaha and Jiraskuv Bridges, to see when a boat might be going downstream, perhaps to the Zoo through two locks. When I was there in September, the Zoo boat only went on Sundays, the rest of the time going on excursions upstream, and not through any locks. The Czech travel agency, Ceecc (10 East 40th St., New York 10016) may have further information.

From the dock, across the Jiraskuv Bridge. Just below is a low dam which has a small lock dated 1693, now an old dock for the motor boat, a sluice through the middle of the dam and the entrance to a canal on the left bank. As Detsky Island. This is the most interesting of the canals in Prague, extending half a mile downstream, almost to the famous Charles Bridge, where it also bypasses the low dam seen in old prints of the bridge. Walk along the west side of the bridge to see the guard gates and the lock, which has an extra pair of miter gates in the middle and a gate and "silt" at the lower end near the 1st May Bridge.

Between this bridge and the Charles Bridge, leave the riverbank and follow the Cernovka, a mill race, through "The Venice of Prague," with a wooden water wheel at the upper end, then a park, and another water wheel along the back streets, just before the race goes under the Charles Bridge you might see kayaks practicing maneuvers through the slalom gates hanging across the stream. From the Charles Bridge and a��速路 you can look back upstream at the navigation canal.

The next locks, two miles downstream, are also at an island (Prague has used her islands to make wonderful parks, unlike some U.S. cities); at the head of Stvanice Island is a dam, with a long sluice on the left bank, and near the right bank below Hlavou Bridge there are the two parallel locks, one large and one small. The Hallwag city map of Prague shows the tram routes, if you don't want to walk. (Most shops sell tram tickets, you can't buy them on board.) The commercial harbor of Prague is another mile downstream and the next locks three miles farther near the lower end of Galatazy Island. If you want to go that far, but these locks are not as accessible as the others.

For more information on the Czechoslovakian inland waterways see Roger Calvert's INLAND WATERWAYS OF EUROPE (available from the American Canal and Transportation Center) he suggests contacting the Ceskoslovenská Plova a Ustavišká Oderska in Prague for river excursion schedules.
German canal climbs toward European link

[Reprinted from Engineering News Record, June 22, 1979, Copyright, McGraw-Hill, Inc. All rights reserved.]

West Germany’s Main-Danube Canal is stepping up to its highest point and heading for a 1985 completion, but uneven settlement and greater hydraulic forces than anticipated have damaged some of the side pond locks, requiring repairs and bringing design changes in the locks yet to be built. Because of low natural flow in the waterway, concrete holding ponds beside the locks recover 80% of the water used in locking barges through.

The 108-mile Europa Canal, as it is also known, eventually will link the Rhine and Main rivers with the Danube, permitting traffic to flow between the North Sea and Eastern Europe (see map). But protests on economic and environmental grounds may delay its completion.

Work started on the 44-mile section from the Main to Nuernberg in 1983 and recently was completed at a cost of about $400 million. New under construction from both ends is the toughest section south of Nuernberg, where the waterway will climb to its peak, 1,066 ft. above the Main, then drop 951 ft. to the Danube. That is expected to cost $750 million.

The canal will have a total of 16 locks, plus seven bridges carrying it over obstacles. In addition, the government spent a considerable amount improving the Main River and installing 27 locks both before and after World War II. Last month it opened the Danube to commercial barge traffic up to Kelheim, where it will join the canal.

The locks will have a standard length of 622 ft and width of 58 ft. to accommodate the common “Europe size” self-powered barges, typically traveling in tandem, or a pair of the new Europa II barges pushed by a tow boat.

The theoretical capacity of the canal is about 50 million tons per year. However, the lock system now operates only 16 hours a day, and with weather delays and other maximum loads locking through, the actual volume is around 15 million tons. There is room for a second, parallel string of locks to double the capacity when necessary.

Unexpected forces. With canal traversing fairly flat land, then rising abruptly to cross a divide south of Nuernberg, there is not sufficient natural flow to flush water through the locks with every passage. Therefore the canal company provides ponds alongside each lock to recapture up to 85% of the water with each operation. Often in Europe the side ponds are stacked to conserve space. Along the Main-Danube Canal, however, there is ample room to step the three pairs of open ponds back a terrace effect.

Water is pumped in and out of a lock through galleries flanking it in the spread concrete base (see drawing). Water is also pumped from intersecting streams and rivers to fill the canal.

The locks completed so far have thin reinforced concrete walls spanning between towers, buttressed by reinforced concrete ribs. The walls are cast in 43-ft-wide lifts with construction joints between them containing seals. The design minimized the amount of concrete needed. It also was intended to make the wall more aesthetically pleasing.

The locks built before Leerstetten were designed with their side ponds immediately adjacent to the machinery hall—only about 40 ft. from the lock wall—to attain the fastest flow times. However, after about six months of operation with about 5,000 water changes, the arrangement was found to have considerable problems. “We encountered additional forces that did not show up in the calculations,” says Goed Schaake, head of the regional water and shipping office in Nuernberg.

One was uneven settlement caused by the proximity of the ponds. Although they do not share a common foundation, they are closely linked structurally. That, combined with effect of the water flow back and forth caused the locks to list toward the ponds.

“Some of our most famous static experts did the calculations,” says Schaake. “But the walls showed movements much bigger than expected.” At their midpoints, the walls were squeezed as much as 85 mm (3.4 in.) out of line. At two locks, shear forces developed between the side towers and the walls and between lifters toward the center that ripped out joint slabs. Also the floor slabs cracked.

And there apparently is a fatigue problem with the soil underlying the two damaged structures, according to Herbert Goldschmiedt, a top designer for the Rhine Main-Danube Co., the organization sponsored by the federal and Bavarian state governments to develop the waterway. The soil consists of coarse deposits with a high sand and clay content.

To regain stability, concrete was cast between the walls, the sides and adjacent pond walls were drilled into the base joints, some of it post-tensioned. Repairs to each lock cost close to $1 million. Their original cost was $75 million and 300 million apiece.

To avoid repetition of the difficulties, future designs will move the side ponds away from the lock chamber and have more massive walls, tapering from a thick base, and founded on a wider foundation.

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Steam on Canals

Morgan, Editors. On page 166, current volume of your journal, The Scientific American, I notice a communication under the heading, “Steam on the Towpath.” There is certainly much room for improvement in canal navigation and I have longed to hear of some movement being made to this end. Hoping that the time for this improvement is near, I would offer my idea, which is neither to favor steam nor propellers, but instead what I would denominate “pursuaders.” To understand this, I must explain that a pursuader is a water jet or cable being turned over the middle of a canal for any distance, one or ten miles, properly secured at regular intervals. A boat is an engine of sufficient power is to be placed directly under the cable, and connected to it by machinery. By the operation of this machinery on the cable, the boat to be moved forward, just as one would move a skiff by pulling along a rope stretched across a stream. A speed of at least 75 miles an hour could be obtained without difficulty, whilst the duration of railroad travel would be overcome. One boat could be connected to another forming trains as on railroads. On the same plan rivers and oceans could be traversed. Though there are difficulties to this plan, yet greater have been overcome, and this may not be far distant when traveling by water will leave railroad behind. W. F. Mappern, Maysville, Ky., April 13, 1894.

(Seventy-five miles an hour ought to satisfy most persons. Correspondents mistake in making too high estimates, as it gives to many a good idea of a chimera, and closes the minds of men from undertaking it. — Eds. (The Scientific American))

(From The Scientific American Vol 1019, 7 May 1894. Submitted by Bill McKelvey, ACS Director.)

Cross-section of the Leerstetten Lock, flanked by three levels of storage ponds. The thin walls will be replaced by heavier tapering design at other locks.
The Cartersville Connection - Solved?

By Wm. E. Trout III, Ph.D.

The Cartersville Connection was a short branch canal with a stone lock, from the James River & Kanawha Canal down to the James River opposite Cartersville, Virginia. The lock had been unused for about five months after its completion in 1851. The contractor's canal company learned that a measuring error had been made during construction so that it was too short to take a railroad boat. The lock was subsequently lengthened and remains in line condition today. But it was not until 1852 that Mr. W.W. Goddard of Richmond and his farm manager, Mr. Johnson, removed a century of silt from the lock, and the reason for the engineering mistake came to light.

Six feet below the coping, the upper miter sill was found, but unlike all the other locks on the canal built up to that time which we know of, the sill was just downstream of the upper gate, instead of upstream as usual. On the other locks on the canal, the standard distance between gate posts was 100 feet, to provide a chamber for a boat at least 90 feet long. Could the builder have given this lock the standard 100 feet between posts, forgetting that the upper sill would make the chamber too small?

With canal enthusiasm Howard Rock & Son we made a measured drawing of the lock, which included the position of the sill and all three pairs of gate recesses. Earlier we had thought that the middle pair of gate recesses was the bottom pair of the original short lock, but that gave us a chamber only about 60 feet long (not considering the sill), which is just right for the pointed barges which would have been used on the Williamsburg & Manchester. So the middle pair of gates was intentional. Also, in 1852 the engineer had reported that a boat 91 feet long could have passed through the lock if it had only

Scale drawing of the Cartersville Connection Lock, showing the presumed location of the mistakenly placed gates, in dashed lines. (Bill Trout)

German Canal Climbs Toward European Link

(Concluded from Page Ten)

More challenges: The Leopoldshausen lock, being built by E.J. Zehnder of Stuttgart, and Riepl of Regensburg - do not include all those revisions, however. It retains the slim, 6-ft-thick walls with ribs, but the chamber rests on a broadened, 115-ft-wide foundation slab and the first pair of side ponds is moved back about 80 ft from the lock structure. Also, the well lifts are reduced to 9 ft wide to prevent fracturing.

Two other locks now under design will have walls tapering from 11 ft at the bottom to about 8 ft, and one will have its side ponds moved 98 ft away.

At another lock location, in Sulz Valley south of the divide, designers anticipate a serious soil problem. The material there, at Delft, is described as gipsei, a yellowish form of silica that often has a high water content and is highly soluble. When exposed to water, it turns to mud.

Alfred John, manager of that section in the canal company's Munich headquarters, says the excavation will have to be deepened as deep as 80 ft, or the more expensive process of dewatering down to that level, possibly with submersible pumps to hold back ground-water.

The poor soil in the area, as well as reaction to the erosion failure along the Elbe lateral canal near Hamburg two years ago, led to redesign of the stretch, says Saehke. The original plan was to rebuild a section of the old Ludwig Canal, a picturesque but much too small waterway, parallel to the new one, that was built by King Ludwig of Bavaria in the early 19th century.

In the Sulz Valley, the old canal hugs one side of the valley some distance above its floor, following the natural contours. Sloping layers of various materials on top of the underlying clay soil would have made construction of what amounts to a large dam on the side of the valley a risky proposition.

The original outlet also called for a large steel trough bridge to carry the canal across the valley at one point. While three canal bridges were built along the section north of Nuremberg, the Elbe washout cost doubt on their integrity. There, the sand at the end of a canal bridge washed out. So it was decided to place the Sulz stretch of the Main Donau Canal in the middle of the valley where the sand was thinner. This eliminates the cost of the bridge and makes the project safer, says Saehke.

NORTH BRANCH EXTENSION PENN'A. CANAL

To Contractors.

NOTICE is hereby given that North Branch Extension Penn'a Canal contractors are Profiled at Tankside Rock, until Tuesday, April 3 of this year, for putting under contract the last unfinished portion of North Branch Extension Penn'a Canal, on 54 miles of canal commenced between the present terminus of the North Branch Extension at Tankside Rock, and the termination of the North Branch Extension at Westmore. The work will be let by and will necessarily be the attention of those who wish to contract. Plans and specifications will be exhibited at Tankside Rock five days previous to the letting.

JUICE ADAMS, Agent.

Richard Mix, of Williamsport, Pa., has sent us the above advertisement from "The West Branch Republican" of 1838. It indicates the importance which the Pennsylvania Canal Commissioners attached to the completion of the North Branch Extension, to make connection with the Susquehanna and the Erie Canal. This difficult section was not placed in operation until 1856.

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Canaling Through France

Many of our ACS Members are exploring and enjoying the many miles of canals still in operation throughout Europe. Here is a photo sent in by Dean Brown McNealy of Kentfield, California, who made a canal and river trip last summer in the “Wraanda”, shown here on the Canal Lateral de Loire. Note the lush, rural countryside on this photo, taken near the Sancerre wineries. McNealy also traveled the Canal de Briare.

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