



Friends of the Old Croton Aqueduct

Newsletter

No. 40, Winter 2012

The Keeper's House Restoration

Robert Kornfeld, Jr.

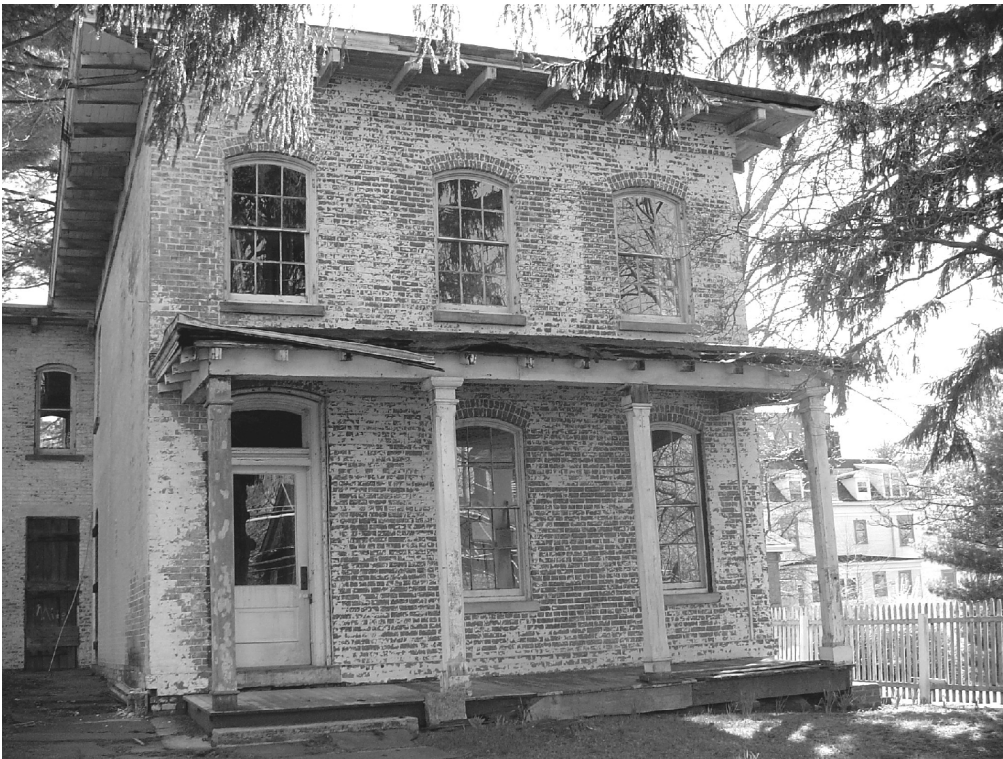
It has been a long journey but we are getting close! Final drawings and specifications for the design of the Keeper's House renovation have been completed and are being reviewed by state officials. It appears that construction work is set to begin in 2012. At this point we want to remind everyone

of the history of the project, and give an idea of what the next steps will be.

What is so significant about the Keeper's House and Old Barn that they rise to the highest level of national landmark?

Of the countless offices, storehouses, dwellings, carriage houses, stables and other buildings used by the Water Commissioners and Croton Aqueduct Department, who built and operated the aqueduct and fulfilled their mission to deliver pure and wholesome water to the desperate city, these two small buildings are all that remain. They remind us of the human side of the history, the engineers, masons, laborers, sandhogs, inspectors, clerks and police who devoted their lives to this huge undertaking, including those whose lives were lost in the effort.

When it became clear in the years following 1842 that the aqueduct required ongoing masonry work and maintenance, permanent keepers were assigned to superintend each of the eight divisions and in 1846 they were provided with insubstantial wood houses. Well



The Keeper's House, Dobbs Ferry, showing the deterioration before the Friends reconstructed the porch, particularly the porch roof and columns, to save it from collapse. Photo by Tom Tarnowsky



Above: Medallion on a ceiling in the Keeper's House.

Below: A damaged wall in the Keeper's House. Photos by Elisa Zarrera.



constructed brick houses, including the one in Dobbs Ferry, were built for each division in 1857. The first keeper in Dobbs Ferry was James Bremner, appointed in the 1840s even before a house was provided for him.

Keepers along with engineers oversaw the operation of the water system, taking care of daily maintenance activities as well as looking for cracks, settlement, leaks and other signs of trouble. There were emergencies such as freshets that washed out embankments, leaving the aqueduct conduit itself vulnerable to collapse. A sustained shutdown of New York's only aqueduct would have interrupted daily life, shut down

industries and hobbled the city within days, and soon become disastrous, with increased threat of widespread fires, epidemics, and mass evacuations. Imagine responding to such an emergency in a storm at night without telephones, radios, motor vehicles or even flashlights. Unless arrangements had been made in advance, all repairs had to be made to a "live" system, because it would take two days to shut off, drain and re-fill the aqueduct.

In the final decades of the aqueduct's service, the Keeper's House in Dobbs Ferry, which is located midway between the dam and High Bridge, housed a single keeper for the entire line. The last keeper lived in the house until the 1950s. When he left the house was abandoned and, without maintenance, gradually deteriorated.

In 2001, the Friends applied for a grant from the U.S. Department of Transportation (DOT) under the Transportation Efficiency Act for the 21st Century (TEA-21). Among other things, TEA-21 provided funding to encourage people to leave their cars in their driveways and walk or ride their bikes. It also made funds available to restore historic resources connected to trails such as the aqueduct.

Why did it take so long from the awarding of the grant to the completion of plans for renovation? First, because the Keeper's House is a National Historic Landmark structure, the plans received a high level of scrutiny by state and federal agencies to ensure the work will be done appropriately, including a number of submissions. The Friends had to hold the requisite number of public hearings and to secure the approval of the State Historic Preservation Office and NYS DOT every step of the way. Stephen Tilly, Architect, who designed the project, had a scope of work that

repeatedly increased.

Second, we had to raise matching funds of 20 percent of the project budget to qualify for the grant, a fundraising effort unlike any we had attempted before. Fortunately, we received tremendous support from the Friends membership and other donors. We were also able to obtain other grants to cover projected costs that had increased from the original estimates as a result of an escalation in construction costs and continued deterioration of the house. Due to the length of the process, the Friends also performed the restoration of the front porch,

which had severely deteriorated.

Finally, TEA-21 grants are very complicated, requiring compliance with a host of regulations and coordination between the New York State Office of Parks, Recreation and Historic Preservation (State Parks) and the NYS DOT. By contrast, the Cedar and Main Street project in Dobbs Ferry to provide safer access to the trail was designed, funded and constructed in less than a year. It was a simple job that only required coordination between the State Parks Office and the Friends, with the construction documents prepared and construction administration done by the Taconic Region of State Parks.

Now that the final drawings and specifications for the Keeper's House have been approved by State Parks and submitted to NYS DOT, once we have NYS DOT approval, the next step is the public bidding process required for government projects. The construction project will be administered by personnel from the Taconic Region of State Parks in consultation with Steven Tilly, the design architect, and the Friends.

The TEA-21 grant covers essential aspects of the renovation such as parking and access that complies with the Americans with Disabilities Act, an outdoor gathering area and landscaping. It does not cover the purchase of equipment for displays or furnishings. This will be the responsibility of the Friends.

The Keeper's House interior is not being restored to look exactly like the house that Keeper James Brenner lived in with a kitchen and bedrooms, and records do not exist of how it was furnished. Its historic character will be maintained, but it will be a visitors and education center with both permanent and temporary displays. The office of the Historic Site Manager, today's equivalent of the historic keeper, will be relocated to the house from the trailer, and there will be facilities for the Friends and volunteers. The displays will include antique items as well as modern museum technology.

Hikers will be happy to know that the Keeper's House/Visitors Center will have bathroom and water fountain amenities—as well as maps, displays and educational programs. As the day approaches when construction will actually begin, we are planning for the long-awaited second life of the Keeper's House, a place that will welcome hikers, bikers, tourists, researchers, friends and neighbors and all lovers of the Old Croton Aqueduct and its heritage. We are now gearing up to undertake the next challenge, to design and produce the exhibits and procure furniture and furnishings for the house interior. In coming months you will hear about the outstanding team of professionals that are leading this effort and we look forward to your continued support.

Friends of the Old Croton Aqueduct 2012 Annual Meeting

John Cronin will address water issues facing our region and the planet in what has been called “the quiet crisis.” Mr. Cronin, who holds faculty positions at Pace and Clarkson universities, was founding director of the Beacon Institute for Rivers and Estuaries and, for 17 years, Hudson Riverkeeper. He is co-author, with Robert F. Kennedy, Jr., of *The Riverkeepers*, and speaks widely about water.

SUNDAY, MARCH 25TH 2pm

**The Warner Library
121 North Broadway, Tarrytown**

The talk will be preceded by a
brief business meeting.

Free and open to the public; advance
registration is not required.

Light refreshments.

914-478-3961

www.aqueduct.org

By train: Metro-North's Tarrytown Station

MEMBERSHIP COUPON

Your tax-deductible contribution helps to protect and preserve the trail.

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|---|---|
| <input type="checkbox"/> Renewal | <input type="checkbox"/> New Member |
| <input type="checkbox"/> Friend \$20 | <input type="checkbox"/> Students & retirees \$10 |
| <input type="checkbox"/> Good Friend \$50 | <input type="checkbox"/> Best Friend \$100 |

Please make check payable to Friends of the Old Croton Aqueduct. Send it with this coupon to the Friends at Keeper's House, 15 Walnut St., Dobbs Ferry, NY 10522-2109.

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Address _____

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The Old Croton Aqueduct in History and Culture

Ed Brody

VI. From expansion to the New Croton Aqueduct (1862-1907)

This continues the story from the Fall 2011 newsletter (#39) that covered the period from 1842 to 1862. The Aqueduct officially opened on Oct. 14, 1842 but demand for its water developed slowly. It took another cholera epidemic (in 1849) to push people into action. Demand then expanded, quickly leading to a second reservoir in Central Park and a survey of the Croton watershed for future water sources.

Growth of New York City

The civic leaders who saw the need for the Aqueduct and the planners who designed it did not anticipate just how quickly New York City would grow and how great the demand for fresh water would become. As the nation expanded after the Civil War the City experienced huge waves of immigration. Between 1850 and 1900 Manhattan's population almost quadrupled from 516,000 to nearly two million. This expansion led to a real estate boom with elegant houses along Central Park for the wealthy and tenement buildings for those of little means squeezed in wherever they would fit.

The City continued to expand northwards – the new, elevated railroads reached 155th St/8th Ave – and began to attain its characteristic appearance with tall office buildings and electric light replacing gas light. The Brooklyn Bridge opened in 1883 and others followed, leading to a Greater New York comprising the five boroughs by 1898.

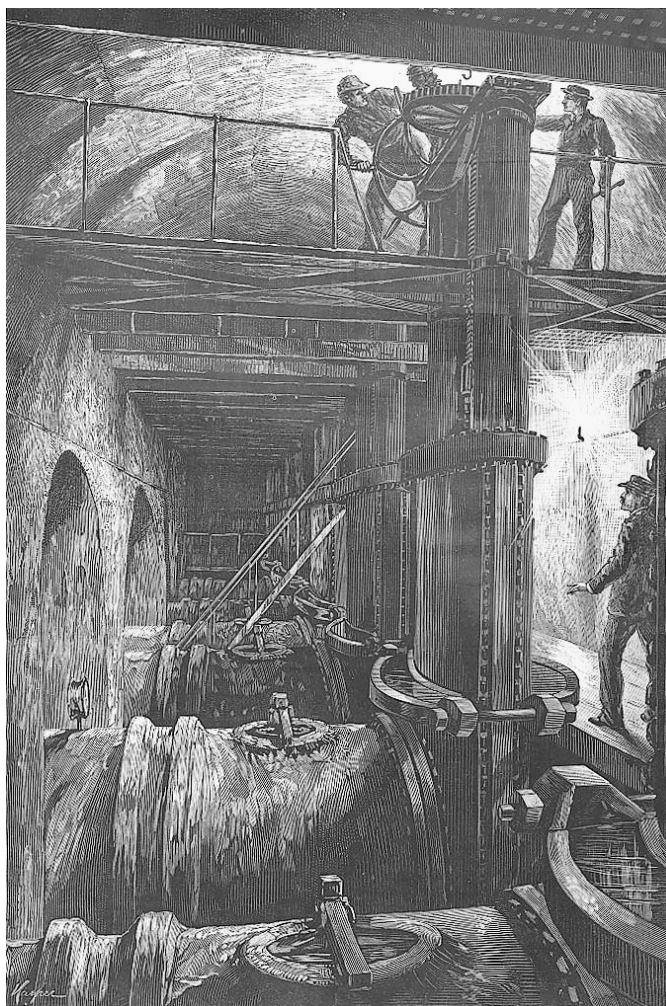
Demand for fresh water was also driven by new ideas about infectious disease, hygiene and public health. By 1870 it was generally accepted that germs cause disease; doctors now washed their hands before surgery. Sanitary plumbing was improved and popularized, making it socially acceptable to discuss; a bathroom fixtures industry developed. But, as

with housing, there were still great disparities in access to clean water between the prosperous and the poor. Gradually the City developed an administrative structure for public wellbeing. The first step was taken in 1864 with the creation of a professional Fire Department. That was followed the next year with the formation of a Board of Health, which soon prohibited throwing dead animals, garbage and ashes in the streets. Indoor plumbing was now required in every building – even tenements had to have at least one water closet for every 20 tenants – and in 1881 a Department of Street Cleaning was established.

Expansion of the Old Croton Aqueduct (OCA)

As mentioned earlier, the expansion of population coupled with the spread of cleanliness caused a tremendous surge in demand for clean water. The capacity of the OCA had been planned based on usage of 20 gallons per person per day. At the time, the population of Manhattan was only 313,000 and was not expected to reach one million until the 1930s. But by 1874 New York City already had one million inhabitants and water usage, residential and commercial, had increased to 100 gallons per person per day – five times the original estimate. Together with the rise in population this resulted in a sixteen-fold increase in demand.

The OCA had been designed for a maximum flow of 72 million gallons per day. Various attempts were made to increase the amount of water flowing into the New York City system to 100 million gallons per day. In 1862, a 90" diameter pipe was added to the High Bridge on top of the existing ones.¹ In 1869 a reservoir was built at



Shutting Off The Old Croton Aqueduct - Harpers Weekly Illustrated (1881)

the Manhattan end of the bridge and in 1872 a water tower was completed to improve the water pressure for upper Manhattan. (The Tower still stands though the reservoir was demolished.²) From 1866 onward dams and reservoirs were built along tributaries of the Croton River, even going into Putnam County, to capture more water.

But the system was overstressed.³ By the 1870s, the exterior had to be inspected twice a day for leaks and cracks. The tunnel arch began to give way and had to be reinforced. Water pressure in the City had to be reduced except for fire fighting. In 1881 shutoff gates were added at four weirs so that internal repairs could be made without draining the entire Aqueduct and a new weir was built at Ossining in 1886.

New Croton Aqueduct Constructed

The OCA had been envisioned as a conduit for water that would sustain the city for at least a century. But in 1883, just 41 years after it opened, the need for a larger aqueduct and reservoir was acknowledged and plans for an aqueduct with a more extensive watershed were approved. Work on the New Croton Aqueduct started in 1885. Labor problems and disruptive property disputes delayed the project but some water was flowing through the new tunnel by 1890. The New York State Watershed Act of 1893 gave New York City the power to acquire even more property and to protect the water supply with buffer areas. In 1892 work began on the New Croton Dam at its current site in Croton Gorge. This enormous undertaking was completed by 1907, creating a reservoir 19 miles long (the old one was five miles long). At the same time a 95-acre, 500 million gallon reservoir was built on the site of the Jerome Park Racetrack in the Bronx (today near Lehman College) serving both the Old and New Croton Aqueducts and also supplying water to the newly annexed Bronx.⁴

The New Croton Aqueduct was three times the size of the old one. All tunnel, it followed an inland route meeting the OCA at the Jerome Park Reservoir but then continued separately, crossing the Harlem River via a tunnel north of the High Bridge. Both aqueducts met at the 135th St. /Convent Avenue gatehouse and then flowed side by side into the reservoir in Central Park. (The gatehouse was converted into a theater arts building by Harlem Stage in 2006.⁵)



135th St Gatehouse - E. Wegmann, The Water Supply of New York City (1896)

When the New Croton Aqueduct was completed in 1892 the Murray Hill Reservoir was taken out of service. Intended to provide many generations of visitors with magnificent views from atop its massive battlements, it was demolished in 1900 to make space for the New York Public Library. The old dam continued in use until 1907 when the new dam went into service. The old dam is now under water, hidden from view when the Croton reservoir is full but clearly visible when reservoir levels are low. But water did continue to flow through the old aqueduct into the city.

Footnotes

1. From 1842 until 1848 a temporary 36" pipe carried Aqueduct water across the Harlem River. There was no walkway for pedestrians until the High Bridge opened in 1848 with two 36" pipes covered by packed earth. When the 90" pipe was added in 1862 the bridge deck was paved and the sidewalls were raised for pedestrian safety.
2. Newsletter #27 (Summer 2007) describes the High Bridge complex and plans for its restoration,
3. Newsletter #10 (Dec 2001) by Robert Kornfeld describes these problems.
4. Robert Kornfeld describes the Jerome Park Reservoir in Newsletter #7 (Fall 2000).
5. The gatehouse and its renovation are described in Newsletters #16 (Winter 2003/4) and #25 (Winter 2006/7).

Note – Helpful sources included Linda Cooper, A Walker's Guide to the Old Croton Aqueduct (2nd ed.1992, NYC Dept. of Environmental Protection); The Old Croton Aqueduct: Rural Resources Meet Urban Needs (1992, Hudson River Museum of Westchester); and Meisha Hunter, Croton Water and the Manhattan Landmarks (no date).

William Lee Frost (1926 – 2011) A Personal Memoir



William Lee Frost

We are saddened by the death of our member, friend, and benefactor William Lee Frost, last fall. Bill, an early Aqueduct fan, started collecting Aqueduct material long before there was the Friends of the Old Croton Aqueduct, or even the Croton Aqueduct Committee. In later years, he donated the bulk of his collection to the Croton-on-Hudson Historical Society, with one exception: A piece of the original old wooden pipe of the

Manhattan Water Company, founded by Alexander Hamilton and Aaron Burr in 1799. This he donated to FOCA for our future exhibits in the Keeper's House. He also gave a substantial donation to the Keeper's House Fund. When I went to his office to ask for a contribution, he made out a large check before I had the chance to finish my request.

Bill also funded the 1986 *Walker's Guide to The Old Croton Aqueduct*, which was produced by the New York State Office of Parks, Recreation and Historic Preservation, Taconic Region, and was written by Linda Gilbert Cooper, then a journalist, now director of the Taconic Region.

A graduate of Harvard, Yale Law School, and Harvard Graduate School of Public Administration, Bill entered the State Department and served in a number of overseas countries. Upon returning to the U.S., he became, for the next thirty years, the president of the Lucius N. Littauer Foundation which supports Jewish causes, as well as educational and civic projects throughout the world.

Bill had wide ranging interests. His great joy was what he called rambling, whether in Manhattan, Scotland, or the Rockies, and singing as he strolled along. Whenever we talked together, whether in his office or on the phone, we sang the Brahms *Lullaby*. Aside from the OCA, he loved the Bronx River and Hutchinson River Parkway Trails, the Erie Canal, Old Dutch New York City, and the Adirondacks. He served as a trustee on the Boards of the Brearley and Collegiate Schools, and Marlboro and Radcliffe Colleges. He chaired the New York Heart Association, and the New York State Archives Partnership Trust, and he held various posts at Harvard University.

He was a member of innumerable organizations. But those who knew him remember him primarily as a wonderful friend, and as a man of boundless good will, enthusiasm, and generosity.

—Cornelia Cotton

Keeper Must Be A Mason

CROTON AQUEDUCT BOARD

MAY 2, 1857

AT A MEETING OF THE BOARD, ALL THE MEMBERS PRESENT.

MR. CRAVEN OFFICIALLY ANNOUNCED THE DEATH OF JOHN GEARY, KEEPER OF THE RECEIVING RESERVOIR.

MESSRS. SIMEON POMEROY, RALPH ELLIS, WILLIAM GEARY WERE ANNOUNCED AS CANDIDATES FOR THE VACANCY, AND, AFTER DUE CONSIDERATION, RALPH ELLIS WAS APPOINTED.

THE FOLLOWING RESOLUTION RECEIVED THE UNANIMOUS CONSENT OF THE BOARD, VIZ.:

RESOLVED. THAT ON ALL APPOINTMENTS OF SUPERINTENDENTS ON THE AQUEDUCT, IT SHALL BE CONSIDERED POSITIVELY REQUISITE THAT THE PERSON APPOINTED SHALL BE A PRACTICAL MASON.

ADJOURNED.

THEO. R. DE FOREST, SECRETARY

A Mason? Really?

From THE NEW YORK TIMES June 2, 1895

WERE CIVIL SERVICE RULES VIOLATED?

The Appointment of a Croton Aqueduct Superintendent Raises a Storm.

SING SING, N.Y. June 1.—William Purcell, for a long time Superintendent of the section of the old Croton Aqueduct which passes through this town, has been removed, and Frederick G. Mead appointed to his place.

Mr. Purcell is a Democrat, and there is a Republican administration now in power, supposed to be governed by civil-service rules. Mr. Mead is a Republican. Mr. Purcell is a practical mason and builder, and in superintending the aqueduct, which is built of brick and mortar, he was a valuable man. He passed a rigid examination as to his capabilities previous to his appointment.

It is charged that the Civil Service Commission suspended all regular civil-service rules for the purpose of making it easy for Mr. Mead to pass the examination which consisted of one simple example in addition, subtraction, and division, and a few ordinary questions, not, however, about mortar, brick or stone, or how to stop a leak.

Of all the keepers along the line Mr. Purcell was the only one who had passed a civil-service examination to secure his place. Of the large number who applied for the position there was a majority of men familiar with mason work and with the aqueduct. Mr. Mead is a young man, belonging to a wealthy family.

Marathons Not Allowed on Aqueduct in Van Cortlandt Park

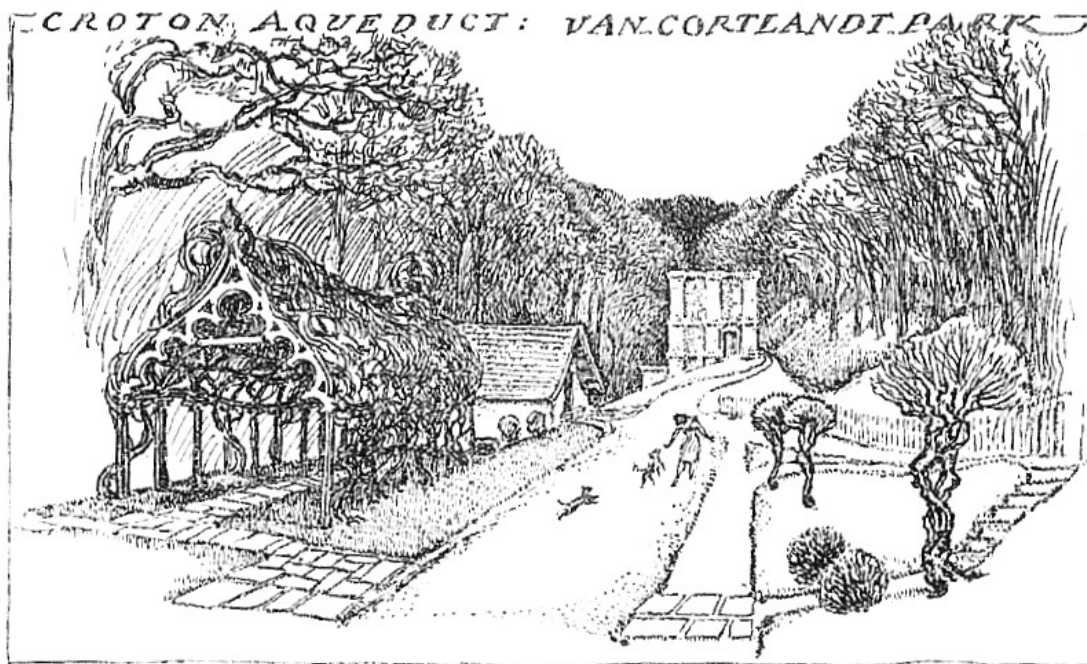
Free, noncompetitive marathon races in a public park on holidays may have their appeal. But selecting the Aqueduct trail in Van Cortlandt Park for such an event has been questioned because of the harm so many runners could inflict on the Aqueduct's sensitive infrastructure. Yet this is what the Holiday Marathons organization had planned. Having held races for almost a year without permission, the organizers received permits for Halloween and Thanksgiving last year but were unable to use the Aqueduct trail because of storms. After the park's community council weighed in on the issue, Parks Department officials decided against future use of the Aqueduct for such races at any time.

In an urgent letter to Parks Commissioner Adrian Benepe and Bronx Parks Commissioner Hector Aponte, Charlotte Fahn made the following points:

—*The intensive pounding by runners would damage any trail, but even more seriously this trail with its unique masonry infrastructure underfoot. Compaction, erosion, damage to the trail surface and to plants, and trail widening are likely, as well as risk of damage to the historic aqueduct structure.*

—*Ten races with hundreds of participants were planned. Though apparently relatively few cover the full 26 miles, to do so, a runner would have to repeat the Aqueduct route about six times in each race.*

—*If marathons were allowed, a Parks Dept. capital project to address erosion and drainage problems on the section of the Aqueduct in the park, based on several years of field work, study, and design and planned for a January 2012 start, would become problematic.*



*The Aqueduct in Van Cortlandt Park, with weir in the distance, drawn by R. L. Dickinson.
From the New York Walk Book, 1st ed., American Geographical Society, 1923.*

—*The designation of the Aqueduct as a National Historic Landmark includes all elements of the Aqueduct — the entire trail and adjacent areas. These all warrant an extra level of protection.*

The path on top of the Aqueduct functions well today as a nature trail with low-intensity use shared by hikers, individual joggers and others. It was engineered in the 19th century for security personnel and water supply workers, never for the heavy-intensity use being proposed. Margot Perron, the Park Administrator, noted at the November 17 Community Council meeting that some 800 people had already registered for the Thanksgiving race. Park users at the meeting also pointed out the numerous practical difficulties races on this scale would present, like the need for toilets and the ability to deal with medical emergencies.

The Friends recognize the New York City Parks Department's outstanding Aqueduct stewardship.

For inquiries about Old Croton Aqueduct State Historic Park or to report trail conditions, call Park Manager Gary Ricci at 914-693-5259; mailing address: 15 Walnut Street, Dobbs Ferry, NY 10522.

Friends of the Old Croton Aqueduct
Keeper's House
15 Walnut Street
Dobbs Ferry, NY 10522

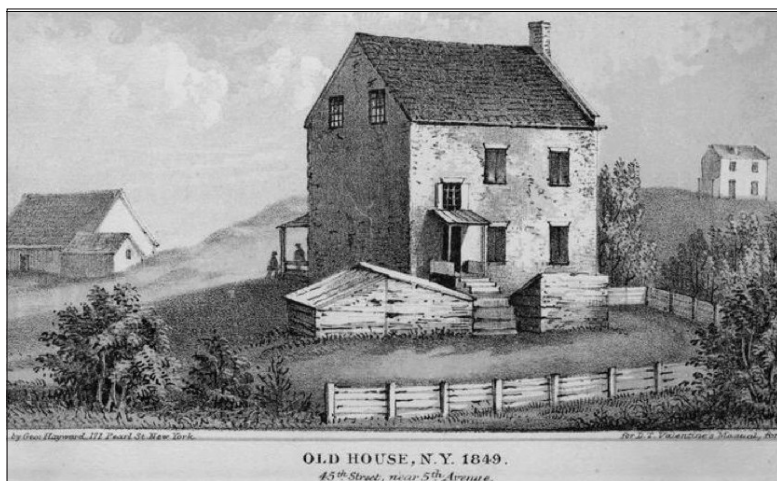
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White Plains, NY

Friends Annual Meeting
March 25, 2012 2 pm
See page 3



Newsletter: Ruth Gastel, *Editor*. News items, reminiscences, and comments welcome: 914-479-1414 or ruthg@iii.org or by mail c/o the Friends.

Newsletter No. 40 Winter 2012



Manhattan Island was largely undeveloped in the early days of the Croton Aqueduct. Do you recognize this neighborhood? It is an old house on 5th Avenue and 49th Street. Photo courtesy of the New York Public Library. www.nypl.org

Friends of the Old Croton Aqueduct is a private, non-profit, volunteer organization formed to protect and preserve the Old Croton Aqueduct. The Friends work to raise public awareness of the Aqueduct and trail, and to secure the resources that will enable this historic greenway to remain unspoiled in perpetuity. *Address:* Keeper's House, 15 Walnut St. Dobbs Ferry, NY 10522-2109; *telephone* 914-693-4117, www.aqueduct.org

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