



Critical Community Path Decisions

Route, Design, and Funding to be Determined in the Next Six Months

By Vincent Stanton, Jr.

The design of the Belmont Community Path, last reviewed in the May/June 2018 and July/August 2018 issues of the *BCF Newsletter*, has moved closer to reality in the last six months with leadership from the Belmont selectmen and financial support from Town Meeting. However, further important decisions loom in the next six months. The selectmen will make a final decision about the route in eastern Belmont (the focus of this article); Annual Town Meeting will vote on design funding for the path segment from Brighton Street to Clark Street; and the newly formed Community Path Project Committee (CPPC) will hire an engineering consultant to begin 25 percent design.

The decisions that lie ahead are shaped by these recent developments:

- On July 12, the Belmont Community Path was accepted as an official Massachusetts Department of Transportation (MassDOT) project (not to be confused with a funding decision by the Boston Metropolitan Planning Organization, which will only come after the town has submitted a design). The town's application covers the eastern half of Belmont, from the Clark Street bridge to Brighton Street, designated "segment 1" and prioritized because: (i) design of the path needs to be coordinated with design of the new grade 7–12 high school campus, and (ii) there is already a connecting path from Brighton Street to Alewife Station. (A future application will address "segment 2," in the western half of



Figure 1. This illustration shows two alternative routes for the Brighton Street crossing. It reproduces a map the MBTA sent to Belmont Town Administrator Patrice Garvin that expressed "dire concerns" about a path crossing the Fitchburg Line tracks at Brighton Street (represented by the curved line across the tracks). This southern route was dismissed as unsafe, and the MBTA further noted that "this accident scenario would be avoided by keeping the bike path on the north side of the track." The double black line shows the northern route.

Belmont Citizens Forum

Officers

Grant Monahon, President
John Dieckmann, Vice President
Evanthia Malliris, Secretary
Radha Iyengar, Treasurer

Directors

Sumner Brown
David Chase
Vincent Stanton, Jr.

Newsletter

Mary Bradley, Co-Editor
Sara McCabe, Co-Editor
Sue Bass, Newsletter Committee,
Director Emerita
Meg Muckenhoupt, Columnist

Belmont Citizens Forum Inc. is a not-for-profit organization that strives to maintain the small-town atmosphere of Belmont, Massachusetts, by preserving its natural and historical resources, limiting traffic growth, and enhancing pedestrian safety. We do this by keeping residents informed about planning and zoning issues, by participating actively in public hearings, and by organizing forums.

The *BCF Newsletter* is published six times a year, in January, March, May, July, September, and November. Published material represents the views of the authors and not necessarily those of the Belmont Citizens Forum.

Letters to the editor may be sent to
P. O. Box 609, Belmont MA 02478 or to
bcfprogramdirector@gmail.com

belmontcitizensforum.org

© 2019 Belmont Citizens Forum. All rights reserved.

Belmont, from Clark Street to the Waltham border.)

Segment 1 has two components: 1A, covering a tunnel beneath the Fitchburg Line tracks at Alexander Avenue and extending across the high school campus to Concord Avenue, and 1B, covering Brighton Street to the Clark Street bridge along the tracks. The details of the 1B route were left open. MassDOT acceptance of the Belmont project starts a two-year clock on initiation of 25 percent design; otherwise Belmont will lose its place in the project funding queue.

Three key assumptions of the Pare study have changed since mid-2017 when Pare completed its work.

- On October 5, the Community Path Implementation Advisory Committee (CPIAC), at its final meeting, voted 3–2 in favor of the route recommended in the Pare Corporation–K3 Landscape Architecture feasibility study. That route traverses the north side of the railroad tracks from Belmont Center to Alexander Avenue, crosses to the south side via an underpass, then continues on the south side of the tracks past the Purecoat North property to Brighton Street. CPIAC members disagreed about how to act on new developments since the Pare report (discussed below).
- On November 13, Town Meeting appropriated \$400,000 from the Community Preservation Act (CPA) fund for design of segment 1A. Town Meeting was informed that the selectmen intend to sponsor another article at spring Town Meeting to appropriate another \$1 million in CPA funds for design of segment 1B. Town Meeting also approved borrowing authority of \$295 million for construction of

the new 7–12 school.

- On November 16, MBTA Assistant General Manager for Commuter Rail Operations John D. Ray sent a letter to the Belmont town administrator expressing strong support for the Alexander Avenue underpass but reiterating MBTA’s previously communicated “dire concerns” about a path crossing the Fitchburg Line at Brighton Street (i.e., about the top recommendation of the Pare feasibility study). (See Figure 1.)
- On November 19, the selectmen, after 90 minutes of public input, indicated that they will make a final decision about the route for 1B in the next few months.
- On November 28, the new CPPC held its first meeting and in December elected Russ Leino chair and Bonnie Friedman vice chair.

Revisiting the Pare Study Recommendations

The Pare feasibility study identified 14 route segments between Belmont Center and Brighton Street (three options from the center to the high school football field, three options for an underpass, five options from the football field to Brighton Street, and three options for crossing Brighton Street). These segments could be connected in dozens of configurations providing a through connection. To simplify route prioritization, Pare ranked each of the 14 route segments separately, using 23 criteria (established with extensive public input) relating to user experience, environmental and cultural impacts, design attributes, transportation, and cost.

The northern route from Alexander Avenue to Brighton Street (segment E3a) scored 4.60 (out of 6.0) while the southern route (segment E3b) scored 4.71. However, a review of the Pare route ranking matrix makes it apparent that three key assumptions of the Pare study have changed since mid-2017 when Pare completed its work:

Please see the online version of this article for links to all cited documents, including the Pare route ranking matrix and the full version of the author’s annotations to the matrix. The Pare report is also available at belmont-ma.gov.

SARA MCCABE



Pedestrians and cyclists on the Fitchburg Cutoff path near Brighton Street.

1. Pare assumed that funding for an underpass at Alexander Avenue could only be assured by routing the path through the underpass.

In the concluding section of the feasibility study, under “Recommended Route,” Pare wrote (on page 49) that if an all-northern route was selected, “The Alexander Avenue underpass may not qualify for path funding.”

New information: MassDOT has formally accepted Belmont’s proposal to separate segment 1A (underpass and path to Concord Avenue) from segment 1B (Brighton Street to Clark Street bridge). Since the underpass does not have to be part of the main east-west route to qualify for funding, Pare’s scoring matrix should be adjusted in the subcategory “Qualify for Funding.”

2. Pare believed that the MBTA would accept an at-grade crossing at Brighton Street.

The feasibility study, in discussing an at-grade crossing of the Fitchburg Line at Brighton Street, notes (on page 38) that it will be necessary to “... provide the safest at-grade crossing possible for the path,” and indeed, two bridges over Brighton Street were evaluated (E4b, E4c) to address this concern. However, in the scoring matrix used to rank path alternatives (see Figure 2), in the “Rail

Figure 2. The author annotated the Pare study route scoring matrix (eastern segment) to illustrate just a few of the criteria that have had significant changes since Pare’s original rankings of the southern (E3b) and northern (E3a) routes from Belmont Center to Brighton Street. For the complete annotated matrix, please go to belmontcitizensforum.org.

CRITERIA	E1a	E1b	E1c	E2a	E2b	E2c	E3a	E3b	E3c	E3d	E3e	E4a	E4b	E4c
Transportation														
Connectivity to Destinations (Resources, Amenities and Transit)	4	4	4	5	4	5	1	2	4	5	3	5	2	
Ease of universal public accessibility	5	3	5	4	3	4	5	5	5	5	5	5	3	
Consistency with regional plans (MCRT/Wayside Trail)	5	5	1	5	5	3	5	5	3	1	1			
Impact on existing traffic/transportation	5	5	2	4	4	4	3	3	3		4	1		
Rail conflicts/proximity	4	3	5	4	3	4	4	4	5	5	5			
Subtotal	23	20	17	22	19	20	18	19	20	18	18			
Score (out of 1)	0.92	0.80	0.68	0.88	0.76	0.80	0.72	0.76	0.80	0.72	0.72			
Cost														
Range of Construction Costs	1	2	2	2	3	3	1	4	5	4	4	5	1	
Operations and Maintenance Costs	2	2	3	3	3	4	2	4	5	4	4	5	1	
Quality for Funding	4	3	1	4	3	3	4	4	5	2	2	4	3	
Value Added	4	3	1	5	2	5	4	4	4	2	2	3		
Subtotal	11	10	7	14	11	15	11	16	19	12	12			
Score (out of 1)	0.55	0.50	0.35	0.70	0.55	0.75	0.55	0.80	0.95	0.60	0.60	0.85		
FINAL TOTAL SCORE	4.69	4.20	3.61	4.90	3.99	4.60	4.60	4.71	4.92	4.22	4.25	4.80	3.61	3.61
(TOTAL SCORE / 6) x 100 = FINAL AVERAGED SCORE	78%	70%	60%	82%	67%	77%	77%	79%	82%	70%	71%	80%	64%	60%
FINAL SCORE (100 POINT DISTRIBUTION)	67%	37%	0%	81%	26%	63%	63%	70%	81%	37%	41%	74%	15%	19%

Pare assigned no penalty to the RR crossing at Brighton required with southern route.

Channing Rd highway wall drives higher cost for northern route; Purecoat acquisition cost not considered on south.

No budget for property acquisition.

Not clear why north should cost more to maintain.

The expectation that north and south options are equally fundable is not true with MBTA opposition to the southern route.

Final averaged scores ranged from 60–82 percent. Those scores were rebased (subtract 60 from all scores) and multiplied by 3.7 to produce a broader range of scores.

conflicts/proximity” subcategory, Pare ranks the northern and southern routes equally (4 points each), despite the fact that the southern route requires crossing the Fitchburg Line to reach the Fitchburg Cutoff path, while the northern route does not.

New information: As noted before, the MBTA’s head of commuter rail operations, John D. Ray, has recently expressed strong opposition to a path crossing the Fitchburg Line. His views are in line with MassDOT input to CPIAC at a meeting in June 2018, and with MassDOT views expressed to town officials and State Senator Will Brownsberger in several meetings and phone calls over the summer (summarized in a blog post on Brownsberger’s website, willbrownsberger.com). MassDOT officials contacted by Pare did not include senior railroad operations personnel, accounting for Pare not rating the Fitchburg Line crossing at Brighton Street a “fatal flaw.”

3. Pare assumed that path money would not be needed to acquire the Purecoat site or an acceptable easement.

The southern route recommended in the Pare feasibility study runs along the south side of the Fitchburg Line tracks east of Alexander Avenue, behind the present high school and tennis courts. From there, it traverses land owned by Purecoat North and would require demolishing the northern wall of the Crate Escape building to comply with MassDOT design requirements (23 feet minimum from the rail). The feasibility study hypothesized that the Purecoat site might be acquired by Belmont for the new 7–12 school, but noted (on page 49) that it was uncertain, and a contingent route was therefore necessary:

“Due to the ongoing nature of the Belmont High School feasibility study being conducted with the MSBA, which may or may not entail future purchase of all or part of the Purecoat North/

Crate Escape parcel by the Town for school expansion purposes, there is no assurance that this site will be able to accommodate the path as recommended. Should the high school property be unusable between Alexander Avenue and Brighton Street, the route is recommended to defer to Alternative E3a in this stretch, utilizing the Belmont Citizens Forum property on the north side of the rail between Alexander Avenue and Brighton Street. This may alter the funding capability of the Alexander Avenue underpass, as described in the subsequent Funding Section of this report.”

Crucially, the feasibility study did not assign any cost for property acquisition, wall demolition, or reconstruction associated with the southern route (E3b). This is important because the southern route scored higher than the northern route (E3a) only because it ranked significantly less costly (16 vs. 11 points) in the scoring matrix. In the other four main categories, the northern route scored slightly higher.

Note that northern route costs are high (from \$4.24 to \$5.43 million) mainly because of the cost of a 10-to-15-foot-tall highway-type wall (preferred by many Channing Road residents if the northern route is selected). Pare assumed (per CPIAC instruction) the highest cost option for each path segment, and along the northern route, the highest cost option is the highway wall.

New information: Now that Town Meeting has voted \$295 million for

design and construction of a new 7–12 school on the high school campus, it is 100 percent certain that acquisition of the Purecoat site will not be part of that project. The Purecoat property could in theory be acquired by Belmont for the path, but there is no plan or budget to accomplish that. Further, state and federal funding would not be available for that purpose; right-of-way acquisition is the responsibility of the town. Therefore it is no longer defensible to evaluate the southern route option without any budget for the Purecoat site. The asking price for that property was about \$8.5M in 2011, when Belmont sought to purchase it as a site for the new electric substation. The cost of an easement plus demolition and reconstruction of the Loading Dock restaurant might be less, but still would likely match or exceed even the most conservative costs associated with the northern option.



Above, the Purecoat North office building on Hittinger Street looking towards Brighton Street, and left, Crate Escape at the corner of Hittinger and Brighton. A southern route for the path would require complicated and costly easements affecting these two businesses.



View of 55 Wheeler Street, behind the Fresh Pond Trader Joe's store, where advocates for a south side route claim that a new pedestrian connection to Alewife Station could be built.

In summary, the new developments outlined above compel a re-think of the Pare feasibility study recommendations for eastern Belmont. The northern and southern options ranked very closely in the Pare study, but in view of new facts, the northern route is almost certainly less expensive and (by Pare's scoring matrix) higher ranking.

More important, the vigorous opposition of the MBTA to a crossing at Brighton Street is very likely to compromise Belmont's chances for obtaining construction funding from the Boston Region Metropolitan Planning Organization (MPO). The 22-member MPO evaluates and votes on applications for Transportation Improvement Program (TIP) funds. Three members are appointed by the secretary of transportation and two members come from the MBTA (one from the advisory board). Most of the other members are planning directors or selectmen from cities and towns inside Route 495 (the area covered by the Boston MPO). Thus the views of the MBTA are definitely heard in the MPO evaluation process, which is highly competitive.

Vincent Stanton, Jr., is a Belmont Citizens Forum board member and also a member of the newly appointed Community Path Project Committee. However, the views expressed in this article and sidebar are entirely his own.

Reviewing Recent

At its final meeting, CPIAC split three to two on how to proceed in view of some (but not all) of the recent developments described in the accompanying article. The view of the majority included the following points:

- (i) The MBTA's objections could eventually be circumvented by extending the route on the south side of the Fitchburg Line into Cambridge, and connecting it to an envisioned pedestrian bridge over the Fitchburg Line, starting at 55 Wheeler Street (one block west of Fresh Pond Parkway, behind the Trader Joe's store). This would provide an alternate route from Belmont to Alewife Station.
- (ii) Since the Belmont path is a high-priority segment of the Mass Central Rail Trail, MassDOT and the Boston MPO would bend to Belmont's wishes.
- (iii) The concerns of some Channing Road abutters deserve strong consideration.

CPIAC chair Russ Leino and I voted against a motion to recommend that route along the south side of the tracks in Cambridge for the following reasons:

- (i) It would imperil Boston MPO funding for construction of the Belmont Community Path, given the voice of the MBTA in MPO deliberations and the competitive nature of the funding process (far more projects are reviewed than can be funded).
- (ii) It is a purely hypothetical route—Cambridge has no plans for such a path; indeed, the concept has never been discussed. And it seems nearly impossible that such a plan could be designed and accepted within 18 months (Belmont's deadline for

Arguments for the Southern Route

- initiating 25 percent design of a final route to keep its current place in line).
- (iii) Belmont would be delegating to Cambridge the design and funding of a crucial connecting link, without which the Belmont southern route would not address the MBTA's concerns.
- (iv) The route to Alewife via Trader Joe's, through an industrial area of Cambridge, would be inferior from aesthetic, transportation, and accessibility perspectives to the existing Fitchburg Cutoff Path, which passes through a landscaped park. From a transportation perspective, the southern route to Alewife would be about 40 percent longer than the existing northern path, and would probably be partly along roads. From an accessibility perspective, the route would have to clear the Fitchburg Line by 22.5 feet, requiring a greater-than-45-foot vertical rise and descent.
- (v) It may be difficult to obtain MPO funding for a duplicative southern route along the Fitchburg Line in Cambridge when a direct path from Brighton Street to Alewife already exists.

At the November 19 Board of Selectmen meeting, Brian Burke, a CPIAC member, repeated arguments he had made at the CPIAC meeting on October 5, including many demonstrably false claims about the status of land holdings and project planning. Here is an example (bracketed text inserted for clarity; see a video of the entire meeting at the Belmont Media Center website, belmontmedia.org):

"We [Belmont] own a right-of-way [along the south side of the tracks] from Brighton Street all the way to the other end [the Cambridge electric

substation] because we bought it from the City of Cambridge for the electric power lines," Burke said, implying that Belmont had control of the land for a southern path through Cambridge. He further stated that he had spoken with two Cambridge planning officials, including director of community planning Melissa Peters and that, "Both of them were surprised that we [Belmont] didn't already realize that we had a right-of-way. We own a right-of-way from Brighton Street all the way to the end [Alewife], because we bought it from the City of Cambridge."

Town planner Jeffrey Wheeler corrected Burke, pointing out that Belmont Light had only secured a limited easement to a 16-foot-wide corridor for construction and maintenance of underground cables. (The easement, recorded in Middlesex South Registry of Deeds, book 60825, page 425, was obtained from the MBTA, which is the actual owner of the land, and specifies that the easement is: "... for the purpose of laying, constructing, inspecting, reconstructing, operating, maintaining, repairing, replacing, rebuilding and or upgrading said Grantee's Improvements... such upgrading to be limited to adding additional lines and/or cables within existing ductbanks or conduits...") The Belmont Light easement

A route along the south side of the tracks would imperil Boston MPO funding for the construction of the Belmont Community Path.

was not secured from Cambridge—which never owned that land—and would not permit construction of a path, which raises questions about the accuracy of Burke's recollections of his conversations with Cambridge planning officials.

Continued on next page

When told by Wheeler that the easement was not suitable for a path, Burke responded that, "The entire western bike path, which is almost complete, is entirely on the electric light company property. They paved it and they built it. They will pave it for you [Belmont]."

This statement is also untrue. The MBTA owns the former Massachusetts Central Railroad right-of-way (acquired after the Boston and Maine Railroad filed for bankruptcy in 1970). In 2010, the MBTA granted a 99-year easement to the Massachusetts Division of Conservation and Recreation (DCR) for construction of a rail-trail along a 19-foot-wide corridor between Beaver Street in Waltham westward to the town of Berlin. DCR obtained a waiver from full environmental review and has been working with towns along the right-of-way to advance the path.

Eversource holds a power transmission easement from the MBTA along sections of the Mass Central Rail Trail (MCRT) corridor, but not in Belmont. Eversource will pay for grading and a gravel subsurface for four miles of the MCRT in Weston and Wayland (in order to access its transmission line), while DCR will pay \$1.5 million to pave that section.

The misrepresentation of this arrangement by Burke, along with other misstatements—for example, suggesting that contamination of railroad land north of the tracks is a big problem while similar contamination on the south (perhaps worse because of Purecoat North waste) is negligible—tend to undermine his credibility.

—Vincent Stanton, Jr.

How Laterals Get Lined

Fixing Water Pollution at the Sewer Source

By Sumner Brown

Sewer leaks get fixed only by physical work on sewer pipes by people with tools. For years Belmont has been lining leaking sewer pipes in the streets, to keep sewage out of our streams. The down-and-dirty of sewer work has been described in this newsletter ("How do Sewers Get Relined?", *BCF Newsletter* July/August 2007), a counterpart to former BCF director Anne-Marie Lambert's articles on the top-down issues of environmental motivation, legal pressure, schedules, progress, and costs.

Many of the leaks in streets have been repaired, according to Glenn Clancy, director of Community Development. However, repeated water sampling still finds evidence of leakage in our stormwater runoff. Identifying these sources entails tracing the sewer lines back to the laterals; pipes that connect the sewer pipes under the street to the individual homes. The town's Engineering Division is now fixing these leaking laterals. This is trickier and more difficult than lining the sewer in the street because there are no manholes for access at the lateral endpoints under the street.

If your home's lateral leaks sewage into a storm drain, your sewage ends up in a stream. The present town program fixes your laterals and makes it a pain-free experience for you. The town will notify you if they suspect your home may have a leaking lateral. To check for leaks, a dye will be washed down your

lateral. That is one of two interruptions you will experience. If the dye introduced from your house shows up in a storm drain, you will be told at a later date to not use much water, such as showering or washing clothes, for two hours or so on a certain day. Then your lateral is fixed. No one has spent more than perhaps five minutes in your house. That was for the dye test. Your yard has not been dug up. Your lateral is now as good as new.

Out in the street, a roughly four-person crew has been working, with access through manholes but without people going into the manholes. They use remote video cameras to locate where the leaking lateral enters the main sewer, inspect the lateral to make sure it is sound enough for lining, measure the lateral, and guide tools that clean the lateral and place the lining into the lateral. The cameras are fantastic.

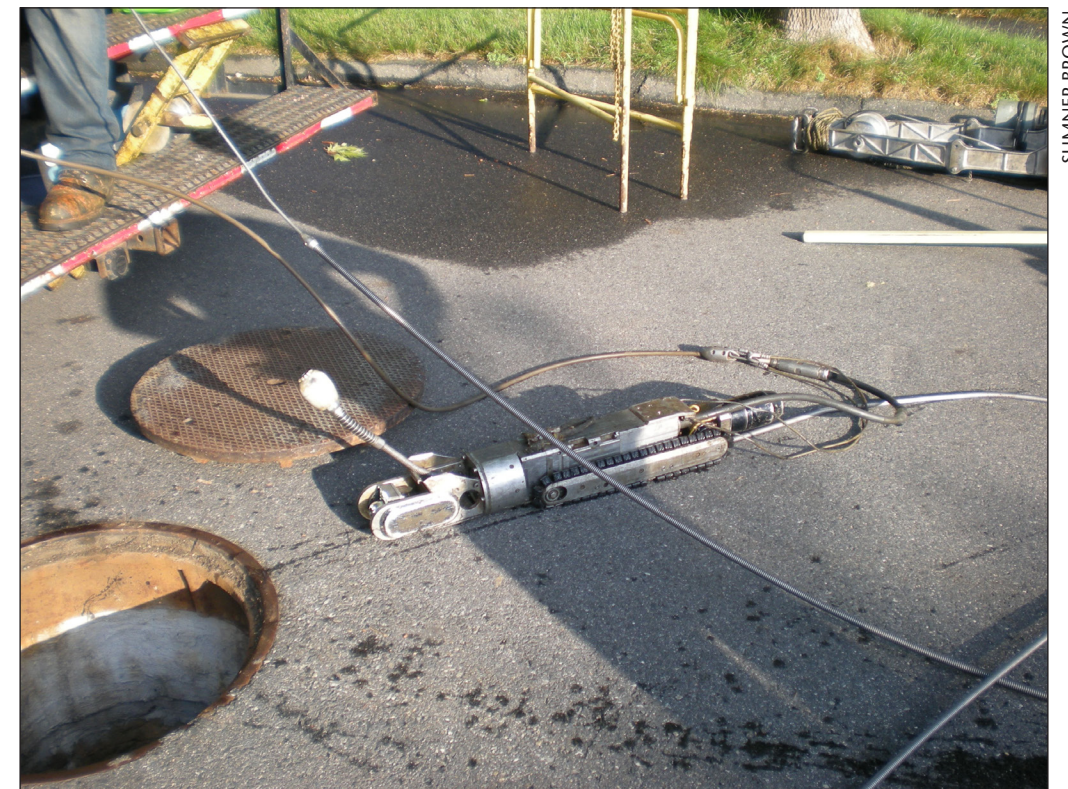


Figure 1. The mother camera has treads for propulsion through the main sewer. The daughter camera extends from the mother and can explore laterals at angles off the main line.

Thank you for your continued support.

Your contribution makes a difference!

Each *BCF Newsletter* issue costs about \$4,000 to publish. **Thank you for your support!**

\$50 \$100 \$150 \$250

Name _____

Address _____

Phone _____

Email _____

- Check here if your employer has a matching gift program.
- Check here if you would like to learn more about volunteering.

Make checks payable to Belmont Citizens Forum and mail to:
PO Box 609, Belmont, MA 02478

Or give securely online:
www.belmontcitizensforum.org

Contact us:
info@belmontcitizensforum.org

The Belmont Citizens Forum is a nonprofit 501(c)(3) organization. Your donation is deductible from federal taxes to the full extent provided by law.

SUMNER BROWN



Figure 2. Crew member Chris Gouveia leads two camera cables into a manhole on Hoitt Road from the National Water Main Cleaning Company camera truck. Inside the truck, the crew foreman runs the mother camera.

Earlier-version cameras could be placed into a sewer and moved in a straight line to see things of interest inside the sewer, but they could not make a turn into a connecting pipe. The cameras used for lateral work are actually dual cameras. The mother camera is self-propelled. When it comes to a lateral, it can release a daughter camera to enter a lateral at a right angle from the main line, and then push the daughter camera through the lateral to inspect and measure the length of the lateral.

Figure 1 shows the mother camera with her daughter sticking out and up about a foot. The main camera points straight ahead, mostly hidden between side plates that protect the camera while it is dropped into manholes. The treads on the mother are for propulsion in the main sewer. The range of the mother camera

is limited by traction of the treads on the sewer interior and friction of the cables that must be dragged by the mother behind her. The range is hundreds of feet. Once the daughter is ready to enter a lateral, the mother flips open and pushes the daughter at an appropriate angle to enter the lateral, then pushes the daughter's cable. The first hundred feet or so of the daughter's cable is wrapped by a spiral of spring steel, so that it is flexible but it can be pushed hard. The amount of daughter cable the mother has pushed out is a measure of the lateral, so the lining can be cut to the correct length.

Figure 2 shows National Water Main crew member Chris Gouveia leading two camera cables into a manhole on Hoitt Road. One cable is for the mother camera and the other is for the daughter camera. Chris stands behind a National

SUMNER BROWN



Figure 3. The lining truck carries the fabric and chemicals for the liner, as well as the steam curing equipment. The water trailer in front is for cleaning the lateral.

Water Main Cleaning Company camera truck, inside which the crew foreman runs the mother camera. Another National Water Main truck has a water trailer for cleaning the lateral, and a third, the lining truck, carries the fabric and chemicals for the liner, and the steam curing equipment. The water trailer and lining truck are shown in Figure 3.

To clean a lateral, a high-pressure hose with a back-pointing spray head is pushed into the sewer with its water supply turned off. The hose is about as thick as a garden hose. The very tip of this hose is slightly bent sideways. A crew member pushes the cleaning hose with his hands; the mother camera shows him where the tip is relative to the lateral, and whether its bent tip is pointing in the correct direction. The camera can nudge the cleaning hose tip. The person pushing the hose can feel if the tip starts into the lateral. When that happens, he turns on the water and cleaning begins. The high pressure water leaving the hose points backward, which pushes the hose forward while cleaning the lateral. When the hose reaches the end of

the lateral, the water is turned off and the hose is pulled out.

Next the lining gets prepared. The fabric that will be part of the lining is cut to the length needed, and the epoxy chemicals are measured, mixed, and applied to the fabric. The liner enters the sewer inside out. At the sewer main junction the liner is anchored to the lateral, and is then blown into the lateral with gas pressure. Once in place, steam is used to heat and thus cure the lining, a process which takes about an hour and a half.

Costs to the town have two components. Belmont's contract with National Water Main specifies availability, so when the town requests a lateral relining, the work occurs within a specified time period. The second component involves how much work is needed for each lateral lined. Longer laterals cost more. The cost of lining each lateral is covered by the town budget. If a homeowner pays for a lateral relining, the cost is in the ballpark of \$10,000.

Sumner Brown is a director of the Belmont Citizens Forum.

Frozen Water in Belmont: Stories of Imagination and Unexpected Consequences

By Anne-Marie Lambert

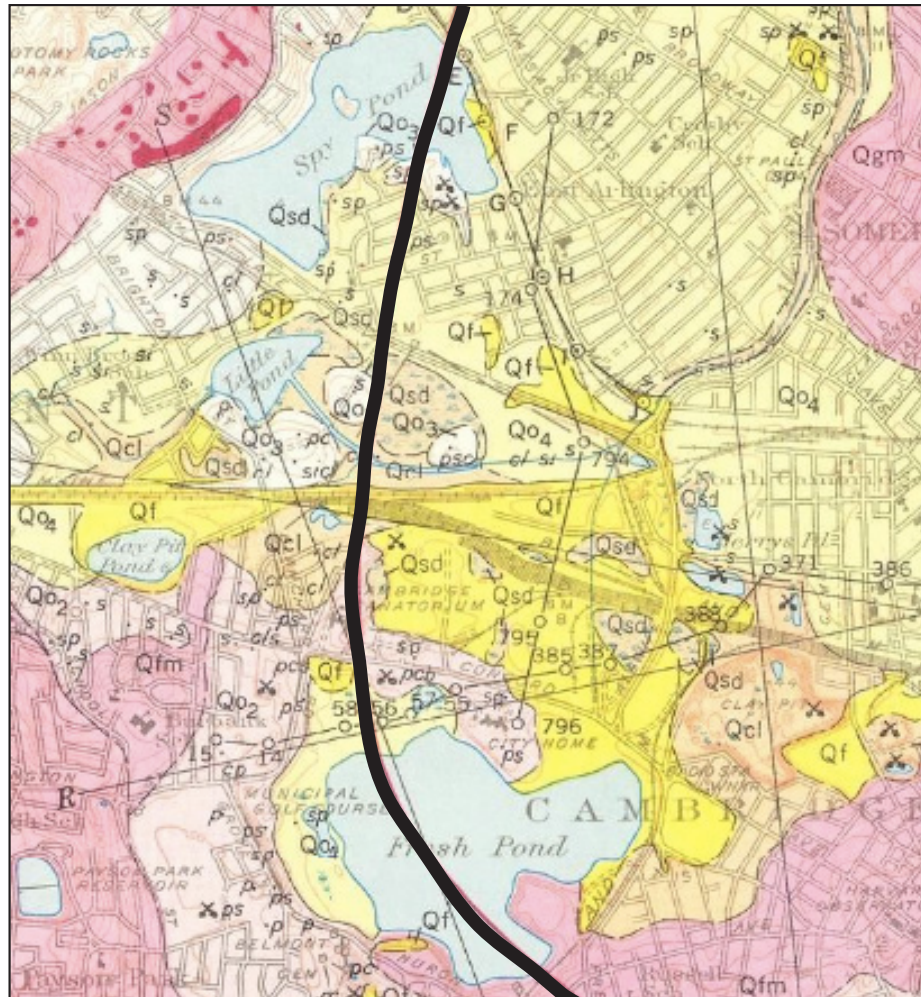
Belmont would not be the town we know today without ice. Glaciers a mile high carved local hills and valleys to create a wetlands attractive to migrating wildlife. The unusual behavior of frozen water molecules ensured not just game-hunting but also ice fishing would support a substantial Native American population for thousands of years. Harsh winters necessitated both innovation and cooperation among tribes to ensure survival.

By 1820 local ice men descended from European settlers started to innovate in different ways. They shipped ice to warm places as far away as Calcutta, employing local farm hands to cut ice in winter and coal delivery men to make local ice deliveries in the warmer months. In 1841 the new railroad added a dog leg to pick up ice in Fresh Pond on its westward route to Fitchburg. That railroad and one of those ice men led to the incorporation of Belmont as a town in 1859, with tax revenue contributions from Frederic Tudor, Jacob Hittinger, and other local ice men.

Even today, when citizens can easily move to warmer climates, cold New England winters—and the potholes they create—test the mettle of residents attracted to the rich natural, educational, and business ecosystem of this region. Stories from Belmont’s history can give one new perspective on today’s innovations and communities.

Ice Forms the Land of Belmont

Over a million years ago, an ancient ocean extended as far as today’s Route 495. About 50,000 years ago, the ocean receded as its waters gathered into the polar ice caps, exposing the layered bedrock and blue clay at the bottom of the ocean. Also exposed during the last Ice Age was the land bridge that connected Siberia with Alaska and gave people from Asia an ice-free corridor into present-day Canada. These are thought to be the ancestors of the Native Americans who first lived in this area.



This geological map shows that Fresh Pond, Little Pond, and Spy Pond are all kettle ponds formed by the retreat of the Laurentide Ice Sheet. The curved line marks the middle of a buried valley formed as the glacier retreated.

In the newly formed watershed, any rain that fell on the land that became Belmont drained through both surface and underground streams into what became the Charles River. About 15,000 years ago, the Laurentide Ice Sheet in the Arctic started melting after moving so far south that the land that became Belmont was compressed under one mile of ice. The kettle ponds that mark the final resting place of the glacier include Spy Pond, Fresh Pond, and Little Pond. The moraines and eskers left in the glacier’s wake blocked tributaries like the Menotomy River (now Alewife Brook) and diverted the meltwater and surface drainage towards the Mystic River. Certain underground flows unaffected by the glacier still drain to the Charles River today.

Because of the blockages, a wetlands ecosystem developed on top of the bedrock and clay. Eventually known as the Great Swamp, its peat moss and rich biodiversity were treasured by Native Americans and early European settlers alike, as was the underlying clay.

Native Americans and European Settlers Adapt to the Seasons

In their Algonquin language, Native Americans who used to live here called themselves “The People of the First Light,” and the Northeast coast land where they lived “Dawnland.” Based on a tusk found in 1959 in Spy Pond, we can imagine that at least one mastodon roamed near here about 42,000 years ago. While the tusk may have been dragged here by the glacier, I like to think the People of the First Light followed both the rising sun and descendants of that mastodon into what we now think of as our neighborhood when they arrived in New England about 12,000 years ago.

The People of the First Light, now known as the Wabanaki Conference, lived here for thousands of years, changing their location with the seasons in order to hunt and fish, including ice fishing for freshwater fish like



“The frost covers the windows, the wheels creak, the boys run, winter rules, and \$55,000 worth of ice now floats for me upon Fresh Pond,” the famous 19th-century ice-industry entrepreneur Frederic Tudor wrote in his diary on January 22, 1828.

pickerel in the winter. They would move inland to find shelter from harsh coastal storms. Their trails would follow the easier grades of our topography, favor the sunny side of local hills, and stay leeward of prevailing winds. Their trails were adopted by Europeans and now mark many of today’s highways like Route 60 and Route 2.

Little Ice Age (1600s–1800s)

Frederic Tudor’s grandfather would have told him that Boston Harbor froze over in 1740 and 1741, part of the “Little Ice Age.” Particularly cold winters lasted for a few centuries in much of the northern hemisphere. During the “Year Without a Summer” in 1816, there were food shortages throughout the area. While conditions in that particular year are now attributed to the 1815 explosion of Mt. Tambora in Indonesia, scientists have been exploring other factors besides volcanoes to explain regional dips in average temperature during the Little Ice Age.

The rapid deforestation and reforestation of Europe and the Eastern United States may have contributed to the unusual climate pattern by releasing or trapping a large enough quantity of carbon dioxide to affect the climate. The long-standing tree-clearing practices in our area were rapidly curtailed by the death of over 90% of the Native American population from European diseases, after the bubonic plague had similarly killed one-quarter of the farming populations in Europe a few centuries earlier. Most of the

Once the ice was thick enough, workers would scrape away snow and use horse-drawn ice cutters— invented by local ice man Nathaniel Wyeth—to score the ice with a grid for harvesting. Men would then cut the ice by hand with special saws.



forests that grew back here were eventually cut down again by European settlers and their descendants, not just for agriculture but also for lumber to build homes, ships, and commercial buildings, including the suburban developments we live in today.

Another cold winter came in 1844. The firms of Belmont's own Jacob Hittinger, along with his former partner John Hill, were hailed as heroes when they used their ice-cutting skills and equipment to cut a 200-foot-wide passage from the wharf at East Boston through the frozen Boston harbor in three days. Their efforts enabled the Cunard steamer ship *Britannia* to proceed to sea on schedule, extending Boston's reputation as a reliable commercial port for a few more years. Soon afterwards, though, New York took over as the major commercial shipping port of the Northeast.

In most ways, winter was a more difficult season for both Native Americans and European settlers, requiring extra effort to find and preserve food, to stay warm, and to keep merchant ships on schedule. However, some things improved in winter. Fresh Pond eventually became a popular skating destination

for Harvard students, for example. In the 1870s, one famous student who skated for hours on Fresh Pond was Teddy Roosevelt.¹

When snow and ice could support a sleigh, land transportation became much easier than in the muddy spring. Bundling up for a holiday sleigh ride between Arlington and Belmont was a tradition for local families. Lydia Maria ("mar-EYE-a") Childs, a local Watertown author, later captured the magic of a winter sleigh ride in her famous 1844 poem "Over the River and Through the Woods." As the daughter of a housewife—a trained domestic engineer—I was especially interested to read Child's 1829 book, *The American Frugal Housewife*, with such tips as how to prevent a frozen pump.

A different kind of transportation eventually changed our local landscape. Dreams of a "frozen water" industry facilitated by new steam-driven engines started Belmont on the path to becoming a railroad suburb.

Local Ice Industry: Tudor and Wyeth

By the late 1700s, New England farms and country estates would harvest ice for their own use from local ponds and store it in

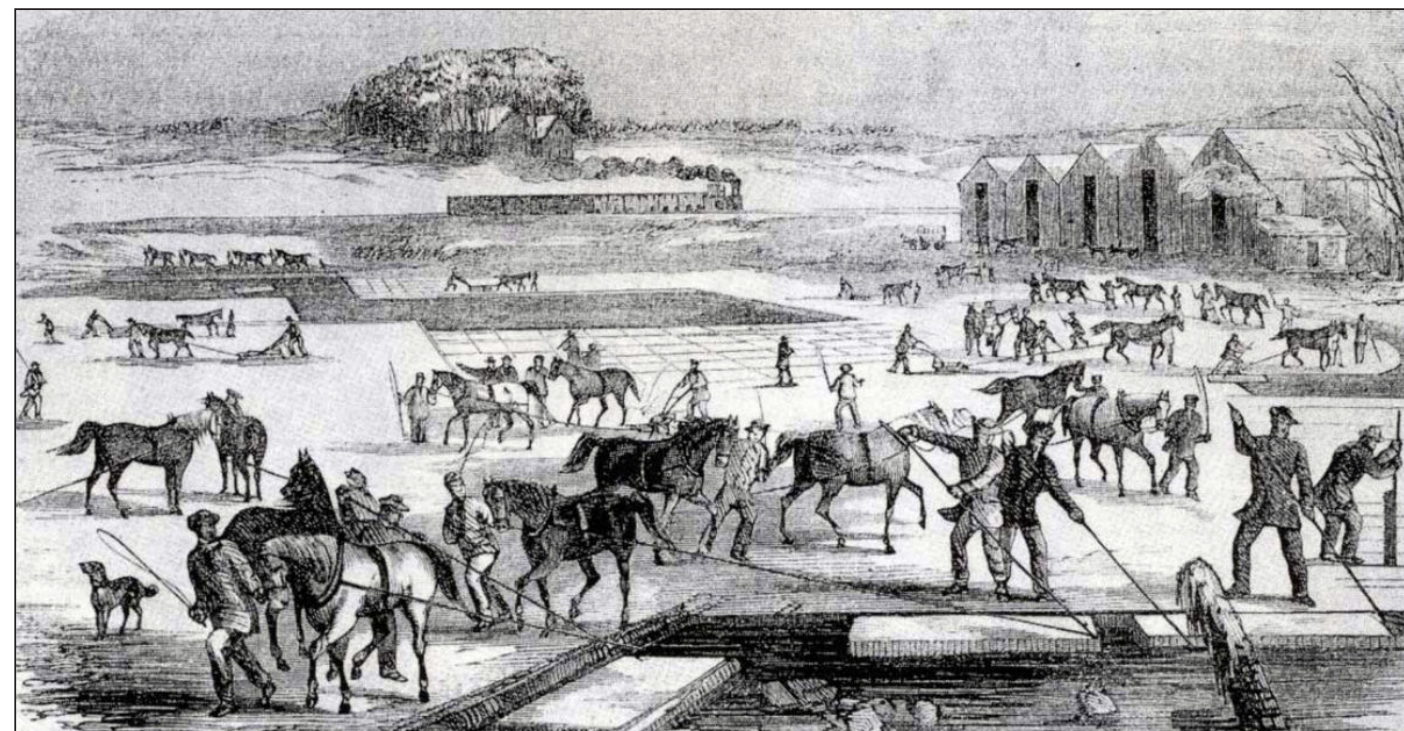
underground ice sheds. This was the practice at estates in what is now Belmont and at the Tudor family estate in Saugus. Legend has it that while sipping an ice-cooled drink in the summer of 1805, Frederic Tudor decided to try shipping New England ice to hotter climates. An impressive marketer, Tudor made headlines with his 1806 shipment of ice to Martinique. He and his brother learned important lessons: build an ice house before the ice arrives; negotiate lower shipping costs by proposing ice as ballast on an empty ship's journey from Boston; consider layering the ice with local Baldwin apples to increase revenue.

Financially, the Martinique adventure was a failure. Subsequent ventures yielded more lessons in how to invent and establish the "frozen water" trade; one even took Tudor to debtors' prison. With the help of his family, his inventive supplier and eventual partner Nathaniel Wyeth, and the many business relationships he forged around the world, Tudor traveled a long road to pay off his many debts. As Tudor's foreman, Wyeth invented the horse-drawn ice-cutter in 1827, at age 25. He also invented many of

the iron ice tools used throughout the area. In Arlington, William T. Wood & Co. became one of the chief manufacturers of such ice tools throughout the region and the country.

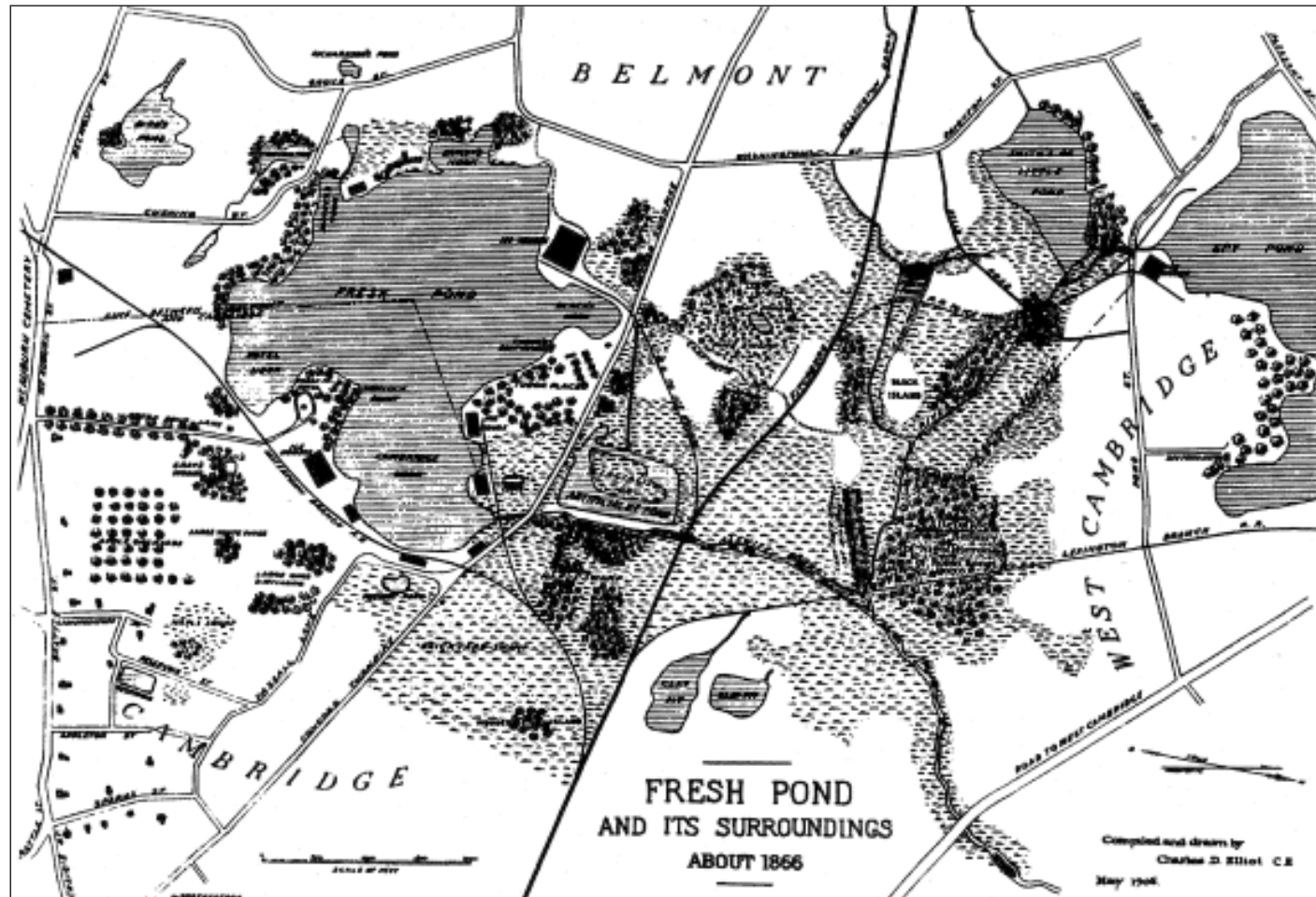
Eventually, Tudor shipped ice to Calcutta, Bombay, and Barbados, as well as to New Orleans and many other ports in the southern US. Still, economics scholar David G. Dickason estimates that it wasn't until 1847, at age 65, that Tudor was finally in the black. Moreover, Dickason concludes, Tudor became one of the country's early millionaires by the time he died at age 80 in 1864 mainly because of the real estate he had purchased for storing ice locally and around the world, and not so much because of selling ice at a large profit.

In Tudor's day, Fresh Pond was divided between Cambridge and Watertown. Wyeth's family operated a famous hotel on Fresh Pond and owned a substantial portion of the shoreline. In 1838, Tudor bought Fresh Pond Farm in Watertown specifically for its access to the pond in winter. In 1841, as the industry was thriving, a carefully engineered map divided up the ice among ice "farmers" based on the



This 1854 print shows ice being harvested from Spy Pond in Arlington, then stored in the ice houses on the right. The railroad in the background ran along what is now the Minuteman Bikeway and transported the ice to Charlestown to be loaded onto ships.

ARLINGTON HISTORICAL SOCIETY COLLECTION



WILLIAM BREWSTER, BIRDS OF THE CAMBRIDGE REGION, 1909

This mid-19th-century map of the area around Fresh Pond shows the Watertown branch railroad, an 1849 passenger line that ran parallel to the freight rail built in 1842 to carry ice into Boston. The freight train soon became a passenger line as well. In 2018, construction began to convert the Watertown line into a bike path.

percentage of shoreline each stakeholder owned. Local land values soared. In 1859, the Watertown portion of Fresh Pond became part of the new town of Belmont, including both Tudor and Wyeth's portions. In 1880, Cambridge successfully petitioned to acquire the Belmont portion of Fresh Pond in order to protect its water supply.

Before and after he died, Tudor's role in the ice industry received a lot of attention, with several books written about his personality and entrepreneurship.² As an engineer's daughter, I find myself curious to understand the path of the inventive Wyeth, as well as other local "ice men" who were not all born with Tudor's privilege, his colorful personality, or his family connections and wealth.

After trying to make his fortune by opening trading posts in Oregon in the 1830s, Nathaniel Wyeth returned just as the railroad was taking off in Boston. Wyeth became an ice merchant in his own right after a dispute with Tudor over an 1829 patent for the ice plow. An "engineer's engineer," Wyeth was responsible for bringing a spur of the now abandoned Charlestown railroad to the shores of Fresh Pond in 1841 to transport large blocks of ice to Boston Harbor. A similar spur on the Lexington line soon picked up ice from Spy Pond and Little Pond in what was West Cambridge (now Arlington).

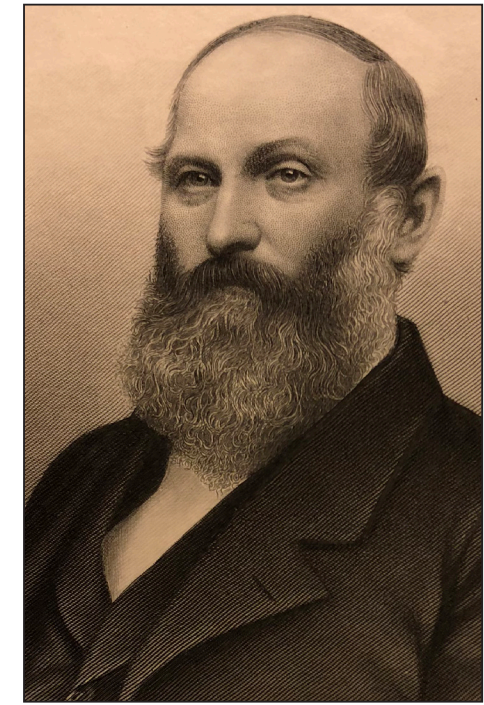
Wyeth designed specially insulated cars for ice to travel by train. He also played a role in designing steam-powered conveyor belts to deliver the ice to new double-insulated, above-ground ice houses, and in engineering the

shoreline of Fresh Pond to create more shallow waters so the ice "harvest" would be available earlier in the winter.

The potential to harvest ice on Walden Pond was one reason for building a new railroad from Boston to Concord by way of Waltham. By 1843, the Fitchburg line ran parallel to the

In Concord, Henry David Thoreau reflected on Tudor's ice harvesting on Walden Pond in 1847 with mixed feelings.

Charlestown line, stopping, as it does today, in Porter Square in Cambridge and Plympton's Crossing (now Waverley) in what was then Watertown. In Concord, Henry David Thoreau reflected on Tudor's ice harvesting on Walden Pond in 1847 with mixed feelings. Delighted to contemplate that while he was "bathing his intellect" in the philosophy of the "Bhagvat Geeta," residents of Calcutta might be "sharing his well" with him, he was unhappy about the removal of "the only coat, ay, the skin itself, of Walden Pond."³ Meanwhile, in Calcutta, while most of the ice was consumed by the British in India, the Hindu mystic Ramakrishna (1836–1886) did start to use the image of blocks of ice, a recently introduced American product, to contemplate the theistic question, "If God has a form, why does He have so many forms?"⁴



PORTRAIT FROM *THE HISTORY OF MIDDLESEX COUNTY, MASSACHUSETTS, WITH BIOGRAPHICAL SKETCHES*, BY THOMAS W. DAVIS, COMPILED BY D. HAMILTON HURD

Successful ice merchant Jacob Hittinger worked for many years to incorporate the Town of Belmont and was elected as one of Belmont's first selectmen.

The freight trains soon became popular for passengers too. By 1855, the Waverley Land Company had laid out a subdivision near Plympton's Crossing, and the prestigious railroad suburb we now know as Belmont had begun. By naming the new subdivision after the popular 1814 novel *Waverley* by Sir Walter Scott, the investors captured the imagination of future residents. By the turn of the century additional stops were added at Wellington (now Belmont Center) and at Hill's Crossing (at the Brighton Street end of the Alewife bike path).

Molecular Structure of Water, H₂O

Most materials are denser as solids than as liquids and "freeze" from the bottom up. Ice is unique due to the tetrahedral molecular structure that forms as negatively charged oxygen atoms simultaneously repel from each other and are attracted to the hydrogen atoms of neighboring water molecules.

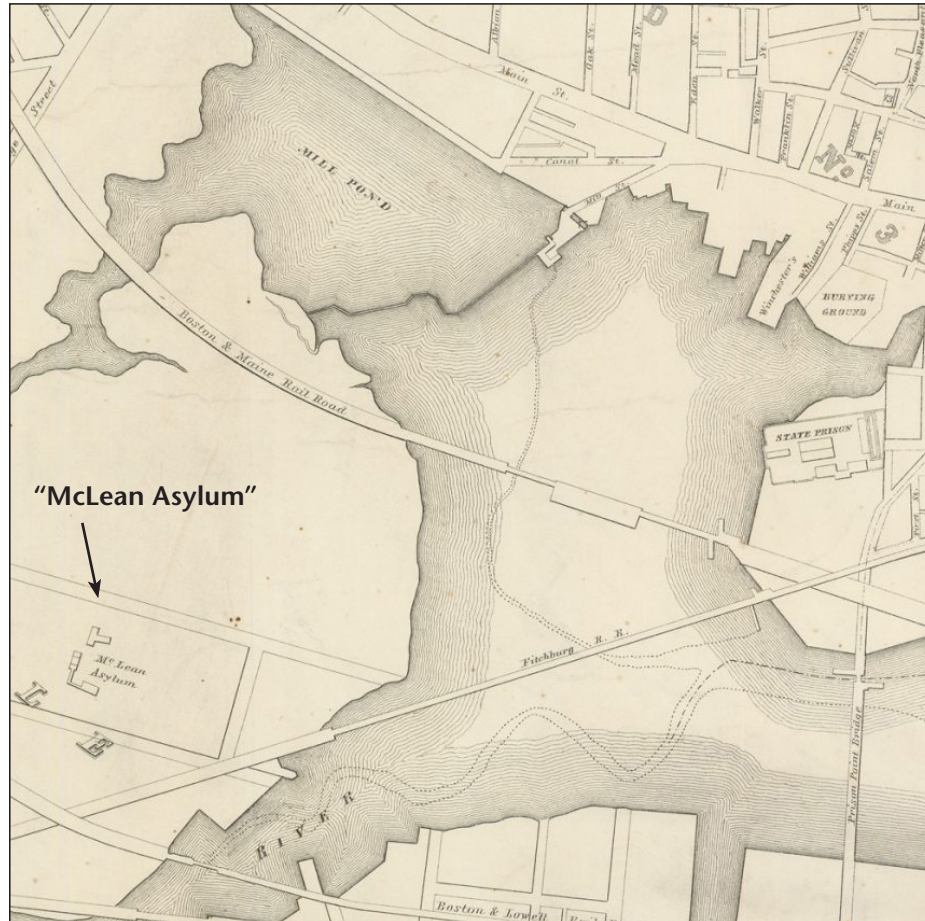
The coldest and densest water in a pond is still at the bottom, but then floats to the surface as the hexagonal ice crystals form. This cycle is a foundation of pond ecosystems in the Northeast, where amphibians hibernate in the bottom mud without freezing, and other creatures survive all but the harshest winters thanks to the oxygen trapped under the ice.

Local Ice Industry: Hittinger and Howard

Our most civic-minded Belmont “ice man” was the son of an English mother and a first-generation German father who died abroad when he was five years old. Jacob Hittinger began working at age 14 as a gardener, moving into the produce business in Boston by age 19, in 1825. A few years later, he partnered with John Hill to cut and ship ice from both Spy and Fresh Ponds, which he did for over 20 years in a series of partnerships with the local businessmen Hill, Gage, and Sawyer. Hittinger was involved in ice shipments to southern ports such as Mobile, Alabama, as well as one of the first attempts to ship ice to England. In 1842, he tried to sell Britons on the idea of mixed drinks with ice by training London bartenders in advance to create chilled cocktails like the sherry cobbler, juleps, and smashes. He gave up, and must have been frustrated when another competitor, Charles B. Lander, had better luck selling them “Wenham Ice” two years later.

Hittinger moved from Charlestown to Watertown in 1849, shortly after the arrival of the railroad. He pushed hard to incorporate Belmont as a town. He led five attempts to create Belmont from parts of Watertown, Waltham, and West Cambridge (now Arlington) starting in 1855 and only succeeding in 1859. He was elected one of the first Belmont selectmen, as were several of his seven sons. Court records suggest that he and others tried unsuccessfully to receive compensation for their four years of lobbying expenses.

Hittinger was a successful ice dealer, harvesting on Fresh Pond, Spy Pond, and Little Pond. Late in his life, however, he ran into financial difficulties. One winter was too warm for ice in Boston (1869–70), allowing Maine ice men to pick up the slack. A big fire



in December 1874 destroyed the Charlestown wharf he owned, as well as several nearby train cars on the Fitchburg railroad.⁵ Nonetheless, by the time he died in 1880, Hittinger had played a pioneering role in the ice industry and a strong civic role in the new town of Belmont. Several of his sons and grandsons carried on his Fresh Pond Ice Company from Charlestown. Other sons ran the Hittinger Fruit Company in Belmont, a return to Jacob’s gardening roots.

Our last ice man, William C. Howard, cut ice well into the 1890s on Mill Pond and Duck Pond, then known as Handyside Pond. In 1860, the Howard brothers purchased a Watertown company and followed a pattern common throughout New England of cutting ice from shallow ponds created by the dams associated with old mills. In September 1892, as one of the owners of Howard Ice Co., William Howard blasted out a large rock from the center of Mill Pond to create more surface area for ice to form. For the most part, this ice appears to have been used for stocking ice boxes and making ice cream, but not for consumption. Though fed



This 1835 map shows Jacob Hittinger’s wharves in Charlestown (now Somerville). Note the original location of McLean Hospital, which moved to Belmont after 1875 due in large part to noise from two railroads disrupting the otherwise tranquil environment envisioned for patients as part of their recovery.

by Beaver Brook just downstream of the famous Belmont Spring, such shallow mill ponds tended to have murkier water. I like to imagine what it was like when the ice man would deliver to each home or business, checking the signs left in each window to know what was ordered, removing the ice with huge tongs, and trimming it cleanly to fit each size of ice box.

Today

While the last ice was cut on Fresh Pond in 1891, Spy Pond ice cutting continued until a fire in 1930 destroyed the last ice house. With pollution of our local ponds becoming more evident, this was also the time when the regional water authority was set up to bring in cleaner water from suburban reservoirs, so it may have been a good time to stop shipping ice cubes for others. Even Spy Pond was eventually treated—in situ—with lime and copper sulfate to kill algae to improve the quality of the ice for consumption.

Chilled food and drinks are still as alluring as ever, even in winter: friends and families

visit Rancatore’s and Moozy’s for frozen treats and red-cheeked conversation; the energy and smiles as skaters zoom ‘round Vigliolo Skating Rink must recall the fun our predecessors had on frozen lakes, as well as at the DCR rink by Route 2, which attracted crowds through the 1950s; and the expertise of today’s Belmont bartenders, distillers, and beer-sellers includes more chilled drinks than Tudor and Hittinger could have imagined.

Tudor got the ice industry going, Wyeth connected it with the railroad, Howard kept it local, and Hittinger turned the new suburb into a town, our town. You can see Tudor’s grave at King’s Chapel Burying Ground in Boston, Wyeth’s and Hittinger’s at Mount Auburn Cemetery, and Howard’s at the Common Street Cemetery in Watertown. You can also think of these ice men the next time you drive on Hittinger Street by the Belmont High School, or look out on Spy Pond from Route 2, or stroll by the cascade at the Beaver Brook Reservation, or just notice the steam-powered locomotive proudly included in the Belmont town seal

depicted on our big new trash and recycling bins. As you witness people and nature adapting to winter, or contemplate the future of the town ice rink, don't just imagine what's possible with a public/private partnership, imagine what it took to survive the last Ice Age, and the bigger opportunities and adventures our next climate change might hold.

Anne-Marie Lambert is co-director of the Belmont Stormwater Working Group and has recently retired from the board of the Belmont Citizens Forum. She would like to thank Viktoria Haase of the Belmont Historical Society for educating her about the Howard Brothers and making the amazing resources of the Clafin Room at the Belmont Public Library available for this article.

Footnotes

1. Sinclair, Jill, *Fresh Pond, The History of a Cambridge Landscape*, 2009.
2. One such book is *The Frozen Water Trade, A True Story* by Gavin Weightman, 2003.
3. Thoreau, Henry D., *Walden, Or, Life in the Woods*, 1908. Chapter xvi, "The Pond in Winter."
4. Wilson, J. "Ganga and Hinduism," Appendix 2, in *E. Hillary, From the Ocean to the Sky*, 1979.
5. *Philadelphia Inquirer*, December 18, 1874.

Additional reference materials can be found with the online version of this article at belmontcitizensforum.org.

Readers Respond to LimeBikes

By Evanthia Malliris

The article about LimeBikes in Belmont in our November/December *BCF Newsletter* issue drew several responses from our readers. Authors Sumner Brown and David Chase—both engineers, expert all-weather cyclists, and BCF board members—took a LimeBike out for a spin and reported on their experience.

Rachel Berger expressed her concern that bike-sharing services don't include helmets, and she encouraged potential LimeBikers to buy a helmet before taking their first ride.

Sumner responded that he wore a helmet during his LimeBike test drive, though he "may be the only one." Helmets are not expensive and are a handy place to mount two additional lights. He thinks that helmets work best in protecting the brain in accidents where a rider falls headfirst from his seated height.

"There's something different about bike share," David added. "Because every trip is paid for, we know how many trips are taken, and we keep track of fatalities, and so far, bike share has been very, very safe—per trip, safer than driving, even. It's not entirely clear why, but bike-share users tend to be slower (which is safer) and bike-share bikes all have daytime lights (which studies show cut the crash rate). In at least one comparison of bike share versus other local cyclists around Washington, DC, a higher proportion (though still a minority) of bike-share users are women, and women tend to be much safer (whether biking, driving, walking, or motorcycling)."

David delved deeper and found that one particular problem with bicycle helmets has been their inability to reduce the per-cyclist death rate when they are made mandatory. (The per-cyclist risk stays the same or increases, though mandatory helmets tends to reduce cycling use overall, which can cut the overall rate of deaths and head injuries.) There are several hypotheses as to why this happens:

- Risk compensation by cyclists—helmet cyclists take more risks (approximately proven);
- Risk compensation by drivers—drivers are less careful around cyclists in helmets (proven);



The BCF Newsletter Team Grows

By Sara McCabe

Welcome, Mary Bradley, Co-Editor



KATHARINE ABRUZZI

Last year when I was working on the July/August issue of the newsletter, I had the pleasure of interviewing Mary Bradley, the founder of Belmont Porchfest. I was struck by her enthusiasm for all things Belmont, not even knowing at the time that she was also a Town Meeting member, a Recreation Commission board member, and co-president of the Belmont Dolphins swim team.

I immediately envisioned putting all that energy to work for the Belmont Citizens Forum (BCF) and somehow managed to convince Mary to lend her talents to the newsletter. After working on the November/December issue together, we decided to create a formal job-share and name Mary as co-editor.

While we will both work with writers in shaping articles, she will most often take the lead in tracking down new stories, and I will focus on seeing them through to completion

with graphics and layout. On behalf of the BCF board and newsletter committee, I'd like to welcome Mary and thank her for helping us get 2019 off to a lively start.

Welcome back, Meg Muckenhoupt, Columnist

As many will recall, Meg Muckenhoupt was editor of this newsletter from 2004 to 2016. But honestly, she never really left. As I was getting my feet wet in the role this past year, she often sent me notices of relevant news and events. I especially appreciated when she added her own amusing or incisive observations. As we started the new year, it occurred to me that I shouldn't keep all the Meg embellishments to myself. So welcome back, Meg, as our new "Belmont Roots" columnist—a fresh take on our longstanding Environmental Events section (see pages 22–23). We're looking forward to getting a piece of your mind every issue.



Sara McCabe is co-editor of the BCF Newsletter.

- Selection effects—the most careless cyclists just break the law;
- Selection effects—the most careful cyclists take helmet promotion as a signal that cycling is unsafe, and quit;
- Failures in helmet design—real world crashes are not lab crashes.

Note that LimeBike literature makes the point that if helmets are required by local ordinance, you must use a helmet.

Geoff Dutton wrote in to say that he found the article helpful; he'd been wondering about the bikes stranded all over town. However, he finds the subscription-based cost of LimeBikes to be too expensive, since many weeks might elapse between rides. He suggests that a payment model such as a prepaid phone card, cell phone, or FastLane-type device might make using LimeBikes more attractive. As Sumner reported in the story, he had enrolled in LimeBike's \$30/month plan, and it took quite an effort to remove himself from this plan. He had been unaware of an alternative pay option that charges per-ride. It appears that riders can use a credit card to purchase a minimum \$10 credit on the LimeBike app, after which they will be charged \$1 each time they unlock a bike plus five cents per minute for each ride. Students, faculty, and staff with a valid ".edu" email address can receive a 50 percent discount.

Look for an article in the spring about how to buy a bike. Sumner Brown will interview WheelWorks co-owner Peter Mooney, who rides to work and builds bicycle frames.

Belmont Roots

Environmental News, Notes, and Events

By Meg Muckenhoupt



Ah, January and February—regularly voted “months most likely to make me want to move far, far away from Massachusetts.” January’s cold and

February’s snow are hostile to human undertakings (continually testing our mettle, as mentioned in the “Frozen Water” article on page 12), but January is also the month when five different species of witch hazel trees bloomed at the Arnold Arboretum in 2017. (Check it out at arboretum.harvard.edu/witch-hazels-in-bloom/.) If there’s more than six inches of snow on the ground, voles, mice, and other rodents get busy digging subnivean tunnels in places like Rock Meadow and Habitat (outdoors.org/articles/amc-outdoors/under-the-snow). And on warmish

days in February—if there are any—maple trees start drawing sugary sap from their roots up to their limbs, launching maple syrup season. Perhaps it’s worth sticking around, if just for the pancakes. Here are some events to enjoy along the way.

Midwinter Walk

Saturday, February 2, 12:30–2:30 PM

Habitat Education Center and Wildlife Sanctuary, 10 Juniper Road, Belmont

Join a Habitat hike and look for animal tracks, and if conditions are favorable, tap the first sugar maple of the season. If the trails are snow covered, participants will trek on snowshoes (available at the sanctuary). Members: \$16; nonmembers: \$20. Register at massaudubon.org, call 617-489-5050, or write to habitat@massaudubon.org.

Humans tend to stay indoors in the winter, so there aren’t a lot of nature walks this season, but it’s a good time to think about our role in nature and the impacts of our actions. For example, if you’re trying to melt the snow off your front steps or walkway, think about whether something abrasive like sand or sawdust would do the trick without resorting to chemical de-icers. If you do need to resort to stronger stuff—and honestly, this is New England, we don’t blame you—stay away from rock salt, aka the stuff you sow on the land of your enemies so they can’t grow crops. Potassium, magnesium, and calcium chlorides are kinder to plants.

You can make your ice melt more effective by spreading a small amount of it before the snow starts—the same way the town puts de-icer on the road. For maximum bang for the minimum ice melt buck, mix it with water and slosh it gently on your walk, getting as little on your lawn as possible. And if it’s under 5°F, don’t even bother—not even the perkier ice melts will work at that temperature.

No ice melt is entirely safe for pets. Consider getting your dog winter booties or a curious substance called “paw wax” if you’re a heavy ice-melt user. Newsletter co-editor Sara McCabe swears by “Musher’s Secret”

wax, available at LaundroMutt across from Fresh Pond. And remember: everything you spread on your walkways will eventually end up on your lawn or wash into the Mystic or Charles, depending on exactly where you live in Belmont, so use as little as you can. For more information about safe ice melts, see www.gardensalive.com/product/plantsafe-ice-melting for pro-plant tips and for doggy advice, <https://www.petmd.com/dog/care/pet-safe-ice-melts-are-they-really-safe>. Once you’ve cleared that ice, more events await you:

Diversify Your Lawn

Tuesday, January 15, 1–2:30 PM

Garden in the Woods, 180 Hemenway Road, Framingham

Who says lawns need to be only made of grasses? Learn how to identify the plants that already grow in lawn as “weeds” and to incorporate new plants that create a rich, wildlife-friendly tapestry. Member: \$20; nonmember: \$24. Register online at newenglandwild.org or call 508-877-7630.

Positive Eco-Ethics in a Human-dominated World

Monday, February 11, 6–7:30 PM

Cambridge Water Dept, 250 Fresh Pond Pkwy, Cambridge
Join Earthwise Aware to discuss the state of nature and environmental worldviews, including anthropocentrism, biocentrism, and ecocentrism. Donation requested. earthwiseaware.org.

This time of year tends to be a lot more exciting for wildlife than it is for humans. Dog walkers have already noticed that coyotes are busy setting up their mating territories, wandering farther and later in the day than in the fall. If they’re not moving away fast enough, John Maguranis, Belmont’s animal control officer, recommends shouting and waving your arms. He also recommends removing any pet-food bowls you have outside and cleaning up all the feed that spills out of your bird feeders. The seed attracts rodents, who attract coyotes. Owls are also out and about searching for mates and claiming territories—and they’re easier to see and hear when there aren’t any pesky leaves on the trees.



Barred owl.

MEGAN LORENZ

Adult Owl Prowl

**Sunday, February 17, 2019
4–6:30 AM**

Blue Hills Trilside Museum, 1904 Canton Ave, Milton
Make sure to set your alarm clock for this early Sunday morning program. Join Audubon staff and search the winter woods for signs of great horned owls, screech owls, saw-whets and other native owls, then warm up with bagels and coffee and meet some resident owls. Members: \$15; nonmembers: \$18. Register at massaudubon.org or call 617-333-0690.

Thank You to Our Contributors

WRITERS

Sumner Brown • Anne-Marie Lambert • Evanthia Malliris • Sara McCabe • Meg Muckenhoupt • Vincent Stanton, Jr.

PHOTOS/GRAPHICS

Katharine Abruzzi • Arlington Historical Society • William Brewster • Sumner Brown • Thomas W. Davis • Google Earth • Megan Lorenz • Sara McCabe • B.F. Perham via Wikimedia Commons • USGS

COPY EDITORS

Sue Bass • Virginia Jordan • Evanthia Malliris

NEWSLETTER COMMITTEE

Sue Bass • Virginia Jordan • Evanthia Malliris • Vincent Stanton, Jr.

MAILING MAESTRO

Ken Stalberg

Switch to digital delivery

Consider receiving the *Belmont Citizens Forum Newsletter* via email. You’ll be able to read the newsletter in full color, help us reduce our printing and mailing costs (among our biggest expenses), and also help save a few more trees.

Remember, you can always find printed copies at the Belmont Public Library and at the Beech Street Center. And if you are looking for previously published issues, you’ll find them on our website, going back to 2000, at belmontcitizensforum.org.

To request electronic delivery only, email us at bcfprogramdirector@gmail.com. Please use “Electronic” in the subject line. And thanks to everyone who has gone digital so far!

Belmont Citizens Forum
P.O. Box 609
Belmont MA 02478
Address Service Requested

Nonprofit Org.
US Postage PAID
Boston MA
Permit No. 56393

January/February 2019



Critical Community Path Decisions.....	1
How Laterals Get Lined	9
Frozen Water in Belmont: Stories of Imagination and Unexpected Consequences.....	12
The <i>BCF Newsletter</i> Team Grows.....	20
Readers Respond to LimeBikes.....	21
Belmont Roots	22

Please visit our website for updates and to read this issue in color: belmontcitizensforum.org.