

# the TIDE MILL TIMES

NO. 16 SUMMER 2016

Committed to Sustainable Industrial Heritage

**TIDE MILL INSTITUTE**

[www.tidemillinstitute.org](http://www.tidemillinstitute.org)



## 12<sup>th</sup> TIDE MILL CONFERENCE – BOSTON NOVEMBER 12

TMI's 12th conference, *BOSTON'S TIDAL POWER: PERIODIC & PERPETUAL*, will be held on Saturday, November 12th, at the Metropolitan Waterworks Museum in Boston's Chestnut Hill district. As a follow-up to our last event's discussion of Boston's early tidal power, this year's gathering will focus on the city's mills. Tide mill relics from the 18th century were found in the area of the former Mill Pond during the famous "Big Dig." Their fascinating details, carefully studied, measured and recorded, shed light on the mechanical wizardry of colonial industrial design. These will be explained, put in historical context, and illustrated with intricate CAD drawings. We will also look at a Boston tidal power project from the 19th century: the famous Back Bay scheme that was designed and built to provide "perpetual power" but didn't work out as well as planned. Other invited speakers, from outside New England, will describe millstone quarries, and tides and tidal power around the world.

A tour of the fascinating Waterworks Museum will be included. The Museum uses its architecturally magnificent building, mammoth steam pumping engines, and the adjacent historic Chestnut Hill Reservoir to interpret unique stories of one of the country's earliest metropolitan water systems. The original station was built in 1887, but by the 1890's, it was clear that demand had quickly outstripped the ability to transport sufficient water. The need for more water resulted in the installation of increasingly powerful (and enormous!) pumping engines, which operated every day until the 1970's.

**INFORMATION ABOUT REGISTERING FOR THE CONFERENCE ON PAGE 2**

**SPACE IS LIMITED !! - SAVE THE DATE AND REGISTER EARLY**



## 12th TMI CONFERENCE PROGRAM REVIEW

8:30 Registration - Coffee & Breakfast Snacks  
(with some healthy options).

Exhibits on view through the day

9:00 Welcoming Remarks and Introduction  
to the Waterworks Museum

9:15 Tides – Jonathan White.  
*A two year international voyage exploring  
the cultural and technological impact of tides*

10:15 Break – more coffee, snacks & conversation

10:30 Mill Stones – Charles Hockensmith.  
*Quarrying and creating them*

11:15 Boston's Mill Cove – Nancy Seasoles.  
*The history and significance of an impressive  
tidal power system from the colonial era*

12:00 Lunch and time to view the museum exhibits

1:00 Archaeology at South Mills – Leith Smith.

Tide mill artifacts discovered during  
*Boston's "Big Dig" project*

1:45 Mill Cove, City Mill & Back Bay: Chuck Parrott  
*Changing Waterwheel Technology:  
Vertical Waterwheels at Boston's Mill Cove  
& Back Bay*

2:30 Perpetual Power in the Back Bay  
*History and technology of an overly optimistic  
tidal power scheme*

3:30 Annual TMI Meeting.

3:45 Guided tours of the Waterworks Museum –  
Dennis DeWitt and Eric Metzger

4:30 Adjourn

### CONFERENCE REGISTRATION

**Space is limited at the Waterworks  
Museum, so *REGISTER EARLY!***

**Contact TIDE MILL INSTITUTE:**

**[info@tidemillinstitute.org](mailto:info@tidemillinstitute.org)**

**207-946-4156**

**18 Hummingbird Hill – Greene ME 04236**

**Please indicate your email address and  
phone number**

A historical map of Boston, Massachusetts, showing the South Mills area. The map is sepia-toned and features various streets and landmarks. The text of the conference is overlaid on the map. The map shows the Mill Pond area, South Mills, and Back Bay. The text is centered and reads: "TIDE MILL INSTITUTE'S 12th Annual Tide Mill Conference BOSTON'S TIDAL POWER: Periodic & Perpetual TIDES & MILLSTONES MILL POND SOUTH MILLS BACK BAY At the METROPOLITAN WATERWORKS MUSEUM Boston NOVEMBER 12, 2016 - 8:30-4:30 REGISTER EARLY - Fee: \$50 Space Limited!! - Lunch Included info@tidemillinstitute.org 207-946-4156 IMAGE © The British Library Board, Maps.CC.2.c.5".

*TIDE MILL INSTITUTE'S*  
*12<sup>th</sup> Annual Tide Mill Conference*

**BOSTON'S TIDAL POWER:  
Periodic & Perpetual**

**TIDES & MILLSTONES**

**MILL POND**

**SOUTH MILLS**

**BACK BAY**

At the METROPOLITAN WATERWORKS MUSEUM  
Boston

**NOVEMBER 12, 2016 - 8:30-4:30**

**REGISTER EARLY – Fee: \$50**

**Space Limited!! – Lunch Included**

**[info@tidemillinstitute.org](mailto:info@tidemillinstitute.org)**

**207-946-4156**

IMAGE © The British Library Board, Maps.CC.2.c.5

# TIDE MILL INSTITUTE AT WORK

Except for its annual conferences, TIDE MILL INSTITUTE, a non-profit research and educational organization, operates informally, sharing information and corresponding with those interested in tide mills, encouraging research and answering questions, and issuing our newsletter. Here are a few descriptions of the ways a few of our members and friends have recently been busy in the fascinating world of tide mill research. If you've been involved in any kind of tide mill activity, let us know what you've been doing, and we'll share your story with others through TIDE MILL TIMES. Send pictures, too, to [info@tidemillinstitute.org](mailto:info@tidemillinstitute.org) !

## TMI's Essex County Group

(Submitted by Jack Grundstrom)



Our Group continues to be very active, meeting on a somewhat regular basis and working on several projects at this time.

The Connecticut Tide Mill Model that was donated to our group to repair has received repairs to all of the visible damages and will be on display at the Rowley Town Library for the entire month of September.

With so much still to

learn about the operation of this model, we plan to visit and study a working up and down saw mill in Salem NH.

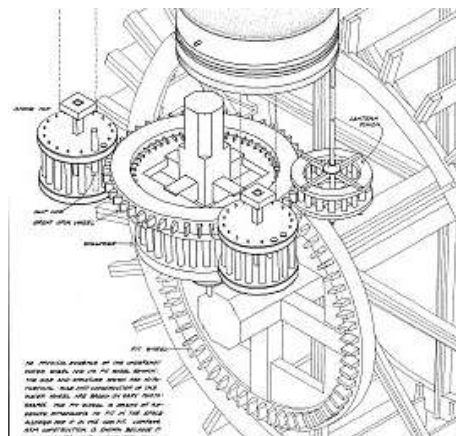
Exploration and registration of the Rowley River tide mills in Ipswich is in process, and all the necessary information has been gathered and forwarded to the Massachusetts Historical Commission for their review. The display will also include a full size replication of the section of the Harris Grist Mill wheel that was donated early in the 20<sup>th</sup> century to the Rowley Historical Society. *Editor's note: Several TMI experts including **CHUCK PARROTT** and **DAVID PLUNKETT** have weighed in with helpful comments about this early tide mill artifact.*

The Ipswich Town Historian, **Gordon Harris**, has joined our group. He has shown great interest in the Ipswich Kimball tide mill up and down saw. **Ron Klodenski**, **Nat Pulsifer**, **Jack Grundstrom** and others are involved in our efforts.



The arc of a wheel from the Harris Tide Mill in Rowley MA. Experts say the wheel was about 30-feet in diameter!

(Image courtesy of Jack Grundstrom)



(Image -HABS-HAER –Library of Congress)

Wooden machinery at the Van-Wyck Lefferts Tide Mill in Huntington NY, though different in detail from what was found at the Harris Grist Mill, exhibit similarities in form and highlight the intricacy of craftsmanship necessary to build such devices



## TIDE MILL INSTITUTE AT WORK – (CONTINUED)

**JOHN GOFF, the tide mill Energizer Bunny, wrote this letter recently. It was too good not to share with readers of TIDE MILL TIMES!**

I thought you might enjoy the attached [photo] taken here in Salem, MA today. They show a first attempt to measure & record the dimensions & belt-spacing of some old [ca. 1870-1890?] small metal buckets that worked within one of the water-power-activated grain elevators within Maine's Last Tide Mill...the Perkins Mill of Kennebunkport, ME...before it was lost to fire in 1994.

The buckets are mostly shaped each like a quarter-circle in section...and they are typically 5 inches deep, with a 4 inch projection from the back belt...also 5 inches wide on the belt...and were spaced at 16 inches from corresponding point to corresponding point on a long canvas belt---5.25 or 5.5 inches wide.

The way I happened across these photos (and the buckets) was as follows: In 1994, I was under contract with the City of Quincy, MA to produce a Restoration Plan for the Souther Tide Mill complex...and we then did not know exactly how all the machines once worked within the Quincy tide mill.

In August, 1994 (I believe it was) my wife & I were heading north from Salem, MA to Orr's Island, ME for a summer weekend---when we had to leave the highway to deal with a baby's diaper change. I wanted to find a private & quiet place for that...and we were very near the Kennebunkport exit on the Maine Turnpike...

...it occurred to me that if I made my way towards the old Perkins Mill (by then converted into a restaurant) maybe we could deal with the baby in a quiet setting...while I also might get a chance to inspect and/or photograph the old Perkins Mill.

I don't recall anyone else being present at the site when I was there---and the place turned out not to have been locked at all. So I wandered in with my camera and took some really nice color photos of the old millstones and grain elevator and other details in the wonderful old mill / restaurant and was able to use one of the color photos later to show traditional hopper & millstone details for the Souther Tide Mill Report.

\* \* \* \* \*

Not long afterwards, I was horrified to hear that an arsonist had evidently attacked the beautiful old Maine mill...and the authorities then were saying that it was a "total loss"...

I was skeptical that the fire truly had destroyed everything because I recalled from our earlier 1990s work on the Souther Tide Mill that we had discovered that an 1840s fire had evidently destroyed many things ABOVE the first floor level [heat rises] but not damaged much of anything below---which is

how we had found & photographed the so-called Tub Wheel---down in the mud.

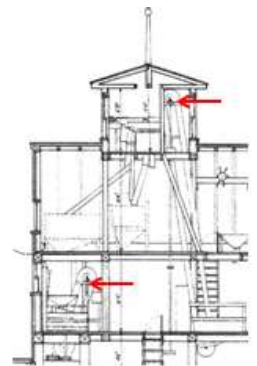
\* \* \* \* \*

So I decided I would try and swing past the Perkins Mill again on another one of our Maine trips---and I would go see what the post-fire situation was...down in the mud.

I did so---and it confirmed what I had thought: Yes, the fire had destroyed a whole bunch of things ABOVE the first floor level...but the first floor floor structure itself was far from being wholly destroyed---and I thought a restoration-minded team might then and there have a lot to work with.

Most tellingly, lying lightly in the mud was the small assemblage of two tin buckets that I finally photographed today. You could tell that they had during or after the fire dropped down into the mud from wherever they were overhead---when the flames went up. [At the Perkins mill, one very large Belt-And-Buckets-Elevator went from the first floor up into the Cupola above roof level---to bring meal up for bolting....while a second much smaller B-&-B-E just lifted meal from near the first floor millstones to the top of a nearby meal-or-flour bagging machine. So there had been (and I photographed) TWO different old belt-and-buckets elevators in the Perkins mill before the fire.] Both had wood casings surrounding the core part with the canvas belts and attached metal buckets. The buckets themselves appeared to have been made of tinsplate, or maybe galvanized steel. They were typically bolted to the canvas-strap backing.

The canvas belt section that I found with the 2 small buckets appeared burned on one end. But the two buckets were in quite good shape. So I liberated them, thinking we might need them to use as patterns should the time come when we might wish to replicate similar 19th century style grain elevator(s) for the Souther Tide Mill.



Perkins Grist Mill – KennebunkporME

Red arrows point to the two belt & bucket systems described in John Goff's message.

(Photo and drawing above from HABS-HAER )

( MORE . . . . . > )

### BELT & BUCKET

The top of one of the two belt & bucket lift systems at the Perkins Tidal Grist Mill in Kennebunkport, Maine. Each ran in a long wooden casing. The bucket showing in the opening of this one in the cupola of the mill is positioned such that it would have reached the top of its run and had just dropped its load of grain into the hopper (lower left). The rod and bevel gears that drove the mechanism are clearly visible.

(John Goff photo)



**OUT OF THE MUD!** Salvaged from the fire, one of the buckets still attached to its canvas belt.

(John Goff photo)

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**JOHN GOFF** – continues his tide mill activities in a myriad of tide mill study areas:

### PROPOSED RENEWABLE ENERGY TRAIL IN BEVERLY MA:

The concept of a renewable energy trail centered on the Friend Tide Mill on Bass River in Beverly MA and taking advantage of the area's early uses of renewable energy grew out of last fall's conference at Cummings Center. **JOHN** has been busy working with a number of interested parties from the Town of Beverly, Cummings Center, Beverly Historical Society, SOLAR NOW and other local groups in planning sessions. Support has been gained, and a possible trail route has been laid out, with markers shaped like small milestones to identify each stop, including historic locations associated with tide mills in the area. Of particular interest is the original tide mill site on Cummings Center property, where a condominium apartment location now stands.

### SALEM TIDE MILL RELIC:

Along with **JOHN**'s footprints in the mud, the following low tide photo shows an old millstone he found near the site of the 1700-1800's Gardner-Wyman-Peabody tide mill near the mouth of the Forest River, near the Marblehead/Salem MA line.



( John Goff Photo)

### MUSSEL COVE TIDE MILL

– FALMOUTH MAINE:

As at many other tide mill sites, there appears to have been a series of mills here since the 1600's. **JOHN** and **BUD WARREN**, have uncovered a number of 19th century connections with several other Portland area tide mill owners. Both John and Bud have visited the site to study its layout, and artist **LESLIE SAFFORD** who grew up beside the mill, has supplied old photos taken there during her youth. Plans are afoot for TMI to take an active role in researching and highlighting tide mills of the Portland/Falmouth area.



Remains at Mussel Cove – Bud Warren photo



A Google Earth view of Mussel Cove, showing features of the tide mill site.

(Courtesy of John Goff)

## THE PRESUMPCOT RIVER TIDE MILL WAS NEVER BUILT

According to **FORD REICHE** a never-developed early 19<sup>th</sup> century Falmouth area tide mill was proposed in the tidal area below the falls of the Fore River near Portland Maine. Some work was done to cut a canal-like reservoir, and a watergate was apparently designed, but nothing ever came of the project. This image shows seems to be an early conjecture of what was planned.



Left -The proposed tide mill complex in Falmouth, ME. The canal-like reservoir and the stone abutment were built, but not the two buildings. Right - A fresh water mill below the dam.

(Image courtesy of Ford Reiche) - -

In July this summer, **BUD WARREN** and **BOB GOODWIN** traveled downeast to Washington County, Maine, snuffling out old tide mill sites in Addison and Machiasport.

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Last spring **BUD** taught an 8-week “Ocean Power” course at Mid Coast Senior College in Brunswick ME, featuring historic Maine tide mills and focusing on today’s international efforts to harness tidal, current and wave power. Through class discussion and research we became painfully aware that use and public awareness of tidal energy (though being widely researched and developed) is well behind solar and wind energy, where perception, financing, political support and actual installations are in the lead. Technologically, tidal power makes sense, and hopefully its cost-benefit will improve to once again allow take its place as a viable alternative.

## RAISING PUBLIC AWARENESS OF TIDE MILL HERITAGE



Faithful readers of **TIDE MILL TIMES** are familiar with Maine’s Winnegance, once the tide mill capital of the country. Ten tidal mills, sporting nineteen saws once produced millions of board feet of lumber a year here. Recently, with the assistance of **TIDE MILL INSTITUTE** and research by **JOHN GOFF**, the City of Bath Maine produced and mounted information plaques overlooking the site. This sort of thing could be done along many other areas of the Atlantic Coast.



(John Goff Photos)