



THE POWER OF THE LAMPREY RIVER

"The real New Hampshire is ... a place of mills and factories, of powerful streams harnessed in the service of industry, of working villages and cities. The hard work and resourcefulness of New Hampshire people in the mill and factory made our state what it is. This same enterprise transformed our society. The bells of our mills taught an agricultural people to work by the clock rather than by the sun."

James Garvin, New Hampshire State Architectural Historian

This photo, circa 1885, shows the water-powered sawmill that brothers Issachar and Moses Wigginn built here in the late 1830s. Collection of Thomas Palmiter

Prior to the advent of mass-produced electric power, mills were often built near rivers to harness the driving force of rushing water. These mills were built throughout New Hampshire, including two near this spot. If you had visited this site in 1870, you would have heard the grind and roar of machinery housed in large buildings and seen men and women hard at work, a scene very different from today's quiet and wooded park. Today, little more than granite foundations and retaining walls remain to remind us of a busier, more industrial past.

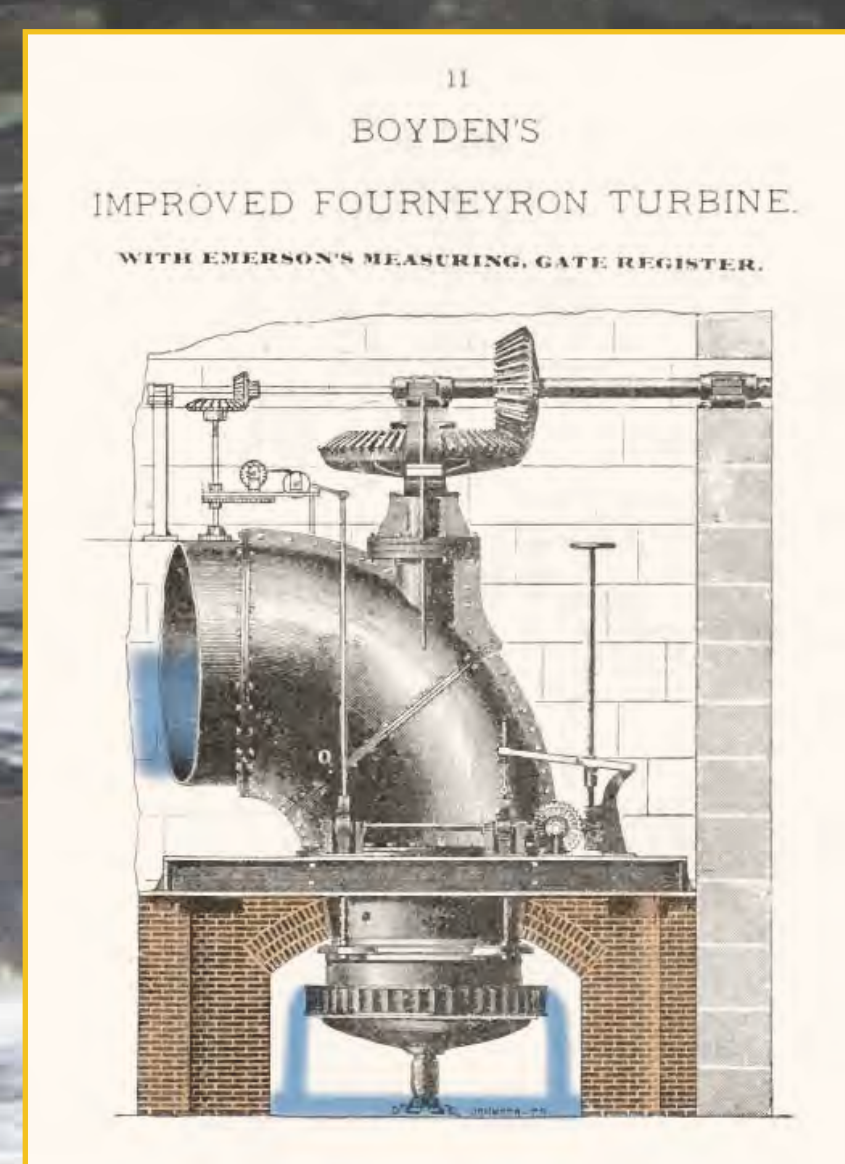
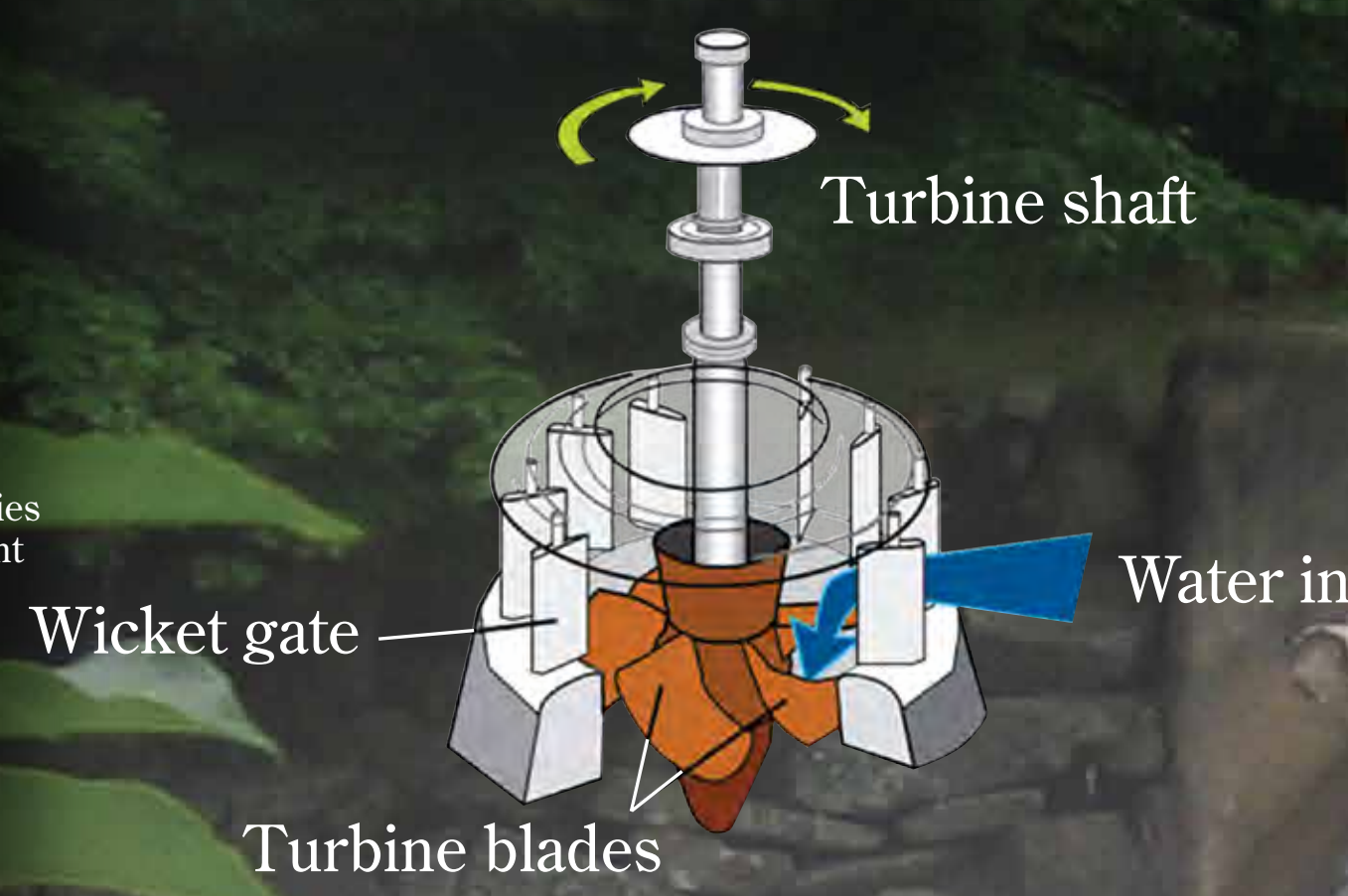
The Pursuit of River Power

In the early 1600s, some of the first colonists of New England petitioned the British king for exclusive rights to use the power of flowing water for mills. Such rights, when granted, often also included the land adjacent to the sites so that timber or grains could be harvested for processing at the mills.

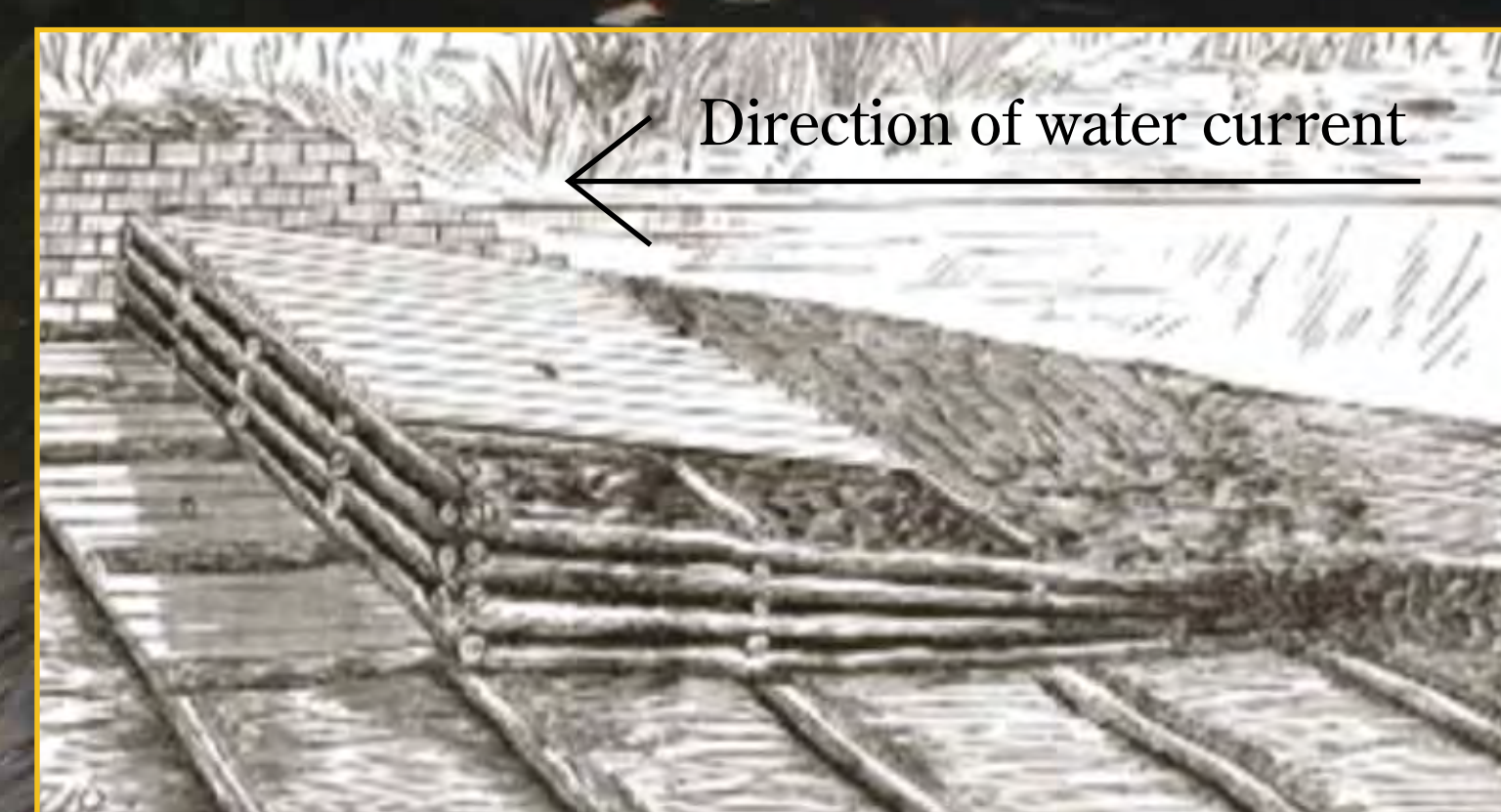
In 1831, Issachar and Moses Wigginn inherited land and associated water rights along the Lamprey River in this area. They built a two-story sawmill to help fill the demand for lumber for local houses and shipbuilding in Durham and Newmarket. By 1834, the brothers had built a wooden crib dam spanning the river. They also installed two turbines to capture water energy more efficiently than traditional water wheels could. In 1836, they added a grist mill and leased space in both mills for the manufacture of gingham cloth, axe handles, nuts and bolts, and sleighs. The sawmill was the largest in the area; at one point, the Wiggins had 249 tons of ship timber ready for delivery. However, shipbuilding declined in the 1840s, and the brothers turned to making shingles and barrel staves. It was not enough. After Issachar died in 1844, Moses struggled financially.

The Lamprey River Watershed

Even small streams sometimes had enough capacity or flow to power seasonal mills. Over 100 mills sites have been identified in the Lamprey River watershed, as shown on this map.



Above, a turbine at Piscassic Falls in Newmarket, NH. It is similar to what was used at Wiswall. At left, an illustration for a turbine from the mid-19th century.



Wooden crib dams were simple to construct and effective at impounding water, but they had high maintenance requirements and were often damaged by spring melt and floods. The wooden dam here was rebuilt many times until a higher concrete dam was built in 1912. That is the structure seen today.



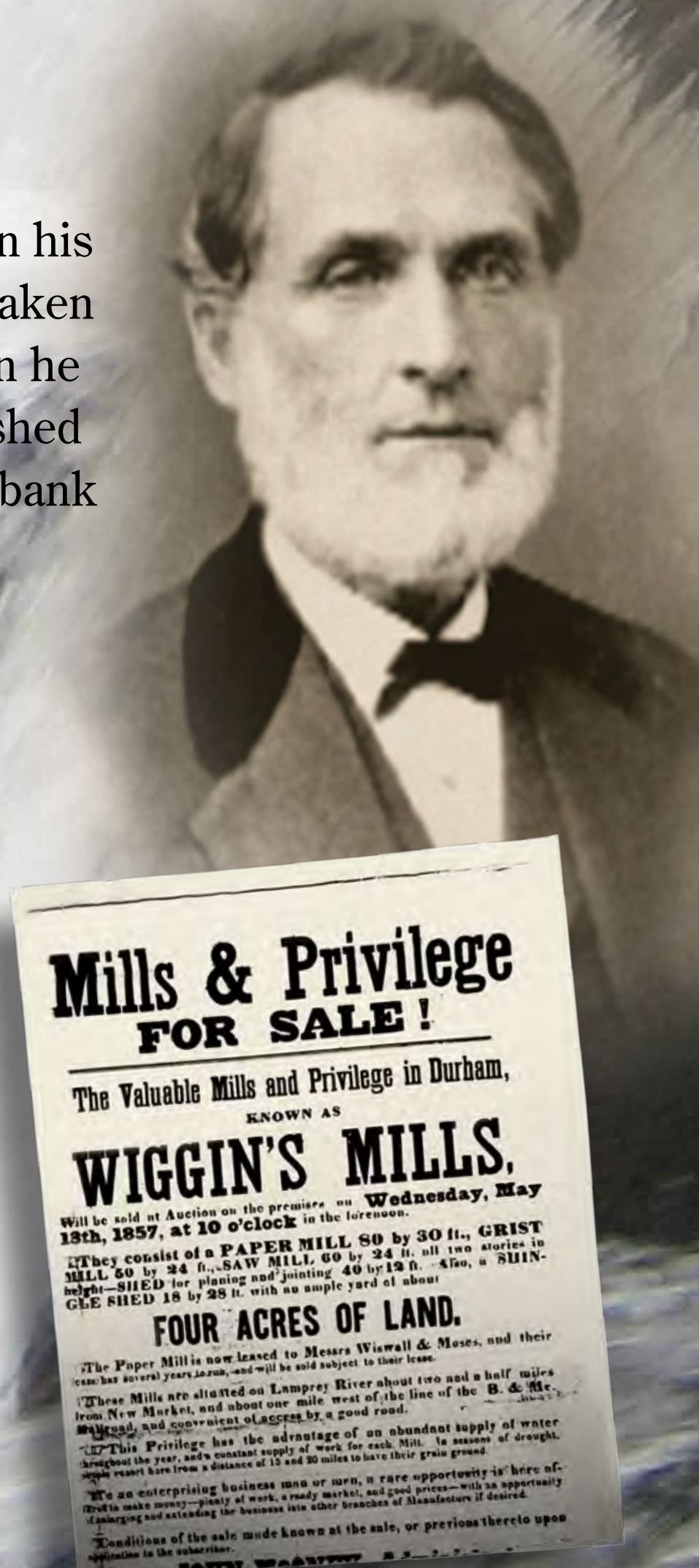
The remains of the previous wooden dam, usually covered by water, became visible here in 2009 when the level of the Lamprey River was lowered to allow for bridge construction.

America's early mills used large water wheels to capture the power of flowing water. By the early 1800s, however, most of these classic wheels were replaced with much more efficient water turbines. Many improvements in the design of these turbines occurred throughout the 19th century.

Engraving relative to the testing of water-wheels and machinery by James Emerson, 1855

Thomas Wiswall in his fifties, in a photo taken around 1870, when he was a well-established businessman and bank director.

Courtesy of the Newmarket Historical Society



New Owner, New Product: Wiswall and Wallpaper

In 1853, young Thomas Wiswall, son of an Exeter paper manufacturer, decided to start his own paper manufacturing business. He approached Moses Wigginn and the pair drew up a lease that gave Wiswall's company rights to the river's water. As part of the deal, Wigginn purchased and moved a 34 by 80 foot building from Newmarket to the site to house the paper mill and dug a mill race lined with granite blocks to divert water flow into the mill. Two years later, Moses Wigginn died, leaving \$13,000 in debts. Wiswall bought the site and greatly expanded his paper manufacturing company. By 1868 he had rebuilt the dam, built a stock house, and added a boiler house with a steam engine to supplement the five water turbines. By 1870, his company was producing a ton of wallpaper a day with more than \$30,000 per year in sales.

Water Power Runs Its Course

Fire, floods, and changing technology combined to make the mills here obsolete. Waterpower continued to be harnessed, but by 1900 it no longer drove mill machinery. Instead, it generated electricity for several local homes. The facility was abandoned in 1930. In the 1980s, a hydroelectric generating facility was again proposed but rejected. The site today is maintained by the Town of Durham as a recreational and historic area. The dam is maintained to create a reservoir for Durham's public water supply.

- Post Glaciation**
Land slowly rebounds from weight of ice and rises above sea level. Bedrock is exposed, soils are poor.
- Pre-Colonial**
Indigenous Algonquians make extensive use of rivers for food and transportation. Most have well-established settlements near estuaries in summer and farther inland in winter.
- 1649**
First Durham water privilege is granted to Valentine Hill at Oyster River Falls.
- 1852**
Valentine Hill is granted water privilege of Lamprey River.
- 1690**
Ongoing conflicts between Algonquians and English colonists over resource access along the Lamprey and Oyster Rivers result in casualties on both sides, including Noah Wiswall.
- 1700 - 1760**
Mills are developed downstream at Packers Falls. Abandoned around 1800.
- 1732**
Durham separates from Dover and is incorporated as a town.
- 1776 - 1835**
Significant shipbuilding occurs on Oyster River where 78 ships are built.
- Early 1800s**
Timber is harvested for building local houses and businesses and to supply the shipbuilding industry, resulting in more sawmills.
- 1824-6**
First large cotton mills are built on Lamprey downstream in Newmarket.
- 1831-4**
Wigginn brothers build this site's first wooden dam, sawmill, and grist mill.
- Mid 1800s**
Shipbuilding wanes, local timber supplies are low. New, massive factories and factory towns increase the amount of manufacturing along rivers.
- 1852**
First town road and bridge are constructed at Wiggins mill site.
- 1853**
Thomas Wiswall leases mill and water rights for paper manufacture.
- 1857**
Thomas Wiswall buys Wigginn mill and water rights.
- 1868**
Dam is completely rebuilt, paper mill is greatly expanded.
- Late 1800s**
Massive factories force many small mill owners out of business.
- 1883**
Fire destroys paper mill. Wiswall decides not to rebuild.
- 1896**
Floods destroy dam, sawmill closes.
- 1899**
James Burnham buys site and water rights. Rebuilds wooden dam and builds a power station where the paper mill had been.
- 1900**
Electricity provides light to local homes for the first time.
- 1912**
Newmarket Electric Company acquires the hydro-electric site and builds a concrete dam.
- 1914**
Wiswall bridge is rebuilt.
- 1930**
Power plant ceases operations.
- 1951**
Bridge collapses, is rebuilt.
- 1965**
Town acquires dam and mill site.
- 1985-1989**
Southern New Hampshire Hydroelectric Development Corporation proposes hydroelectric power plant for site. Site is recognized on the National Register of Historic Places.
- 1996**
Lower Lamprey is designated as a Wild and Scenic River by the National Park Service.
- 1996**
Major floods damage bridge.
- 2000**
National Fish Passage Program is initiated by US Army Corps of Engineers, beginning the on-going discussion about a fish ladder or bypass channel on site.
- 2006**
Mother's Day Flood causes further damage to bridge. Town officials close the bridge and request that the state install a temporary "Bailey bridge".
- 2009-2010**
Old bridge is removed, new bridge is constructed. Historic stone from the old bridge is used to face the new abutments.

Photo by Ed Maland