

Mystic Seaport showcases the changes in technology of the traditional maritime trades and their impact on the Industrial Revolution through our recreated 19th-century seaport village, which focuses on the jobs and lives of people who relied on the water in one way or another.

STEM in History:

Technological Changes in Two Maritime Trades during the Industrial Revolution

What is the Industrial Revolution?

The Industrial Revolution in the United States was a period of time where goods went from being made by hand in family owned businesses to being made by machines in large factories. This change took place over the entirety of the 19th century, interrupted by the Civil War. It began in the coastal New England states in the late 1700s, but spread throughout the country by the end of the century. The Industrial Revolution brought not only technological changes, but numerous social ones as well. People were now working farther away from home, making things on a larger scale, and living in closer conditions than ever before.

Here are two examples of trades represented at Mystic Seaport that saw great technological changes during this time.

Blacksmith – People shaped iron and steel with hammers for thousands of years, until the Industrial Revolution. The blacksmithing trade was so large at the end of the 1700s that specializations could be made within it. A general blacksmith made and repaired items for household needs, such as cooking implements, farm tools, and various types of nails. A farrier only dealt with shoeing horses, and a shipsmith only fashioned items needed for vessels and the whaling industry. By the end of the 1800s, due to the Industrial Revolution, the traditional blacksmithing trade had almost been replaced by machines. The Museum's shipsmith shop tells part of that story.



James Driggs Shipsmith Shop, Mystic Seaport.
Photo credit: Mystic Seaport

New Bedford, Massachusetts, a major whaling port, was the shop's original home. Built in 1885 by the owner, James Driggs, and his grandson, it was built into a dyeing industry. Driggs had been a successful shipsmith in New Bedford with his partner Joseph Dean, since 1846. Both Driggs and Dean had served apprenticeships with the James Duffree company, learning how to make harpoons, ship fittings, and chains with a hammer and anvil. The Driggs and Dean shop had five forges, (fires used to heat metal) and each forge was worked by a shipsmith – Driggs, Dean, or one of the three journeymen, (independent tradespeople) they hired. Driggs and Dean had such success that the road leading to their shop was renamed Driggs Lane in honor of one of the owners and the shop. However, in 1875, things began changing. Dean retired from the business that year and Driggs continued to operate the shop for ten years, but business wasn't as good as it used to be. The whaling business that had made New Bedford successful was in a decline. 1859 saw the discovery of petroleum in Pennsylvania, and it was a major competitor with whale oil. In 1885, Driggs moves his business to Merrill's Warf, and built a smaller shop, the one that is now at Mystic Seaport. Driggs stayed in the business until 1902, when he sold the shop.

Ambrose Peters, the shop's next owner, served an apprenticeship, but not in shipsmithing. Peter's apprenticeship was in machine shop, or a business that made and repaired machines for other businesses. Peters' machine shop serviced New Bedford's textile mills, one of the numerous different factories that had sprung up during the Industrial Revolution. This shop would have been larger than Driggs and Dean's 1846 shop when Peters served his apprenticeship, and Peters might have been taught the same skills as Driggs or Dean.

The Lowell, Massachusetts machine shop in the drawing might be similar to the one Ambrose Peters served his apprenticeship.



Machine shop, 1850, Lowell, MA.
Photo credit: public domain, via Wikimedia commons

During his time owning the shop, Peters continued the shipsmith business, but had to take on general blacksmith projects to keep the business going. Very few whaling ships were left in New Bedford, as the whaling and shipsmithing industries were almost dead. Peters had to branch out in to other smithing specialties in order to compete and survive in the industrialized New Bedford economy.

Printing – The introduction of moveable type and the printing press to Europe by Johann Gutenberg in 1440 was one of the most influential technological developments in human history. The printed word meant that information could spread much more quickly than before. Until the 1800s, Gutenberg's press remained relatively unchanged – it was still made out of wood, using single sheets of paper, and the press itself required a lot of strength to use. The first technological development in the printing press came by 1800, when Lord Stanhope in Great Britain built a press completely out of cast iron, reducing the amount of force needed to print a page by 90%, and increased the paper size that could be printed. In 1821, Samuel Rust of New York created the Washington Press. While still a hand press like Gutenberg's, it improved Lord Stanhope's cast iron design by using a type of toggle that gave greater power than before, and made the frame lighter and easier to take apart and move.

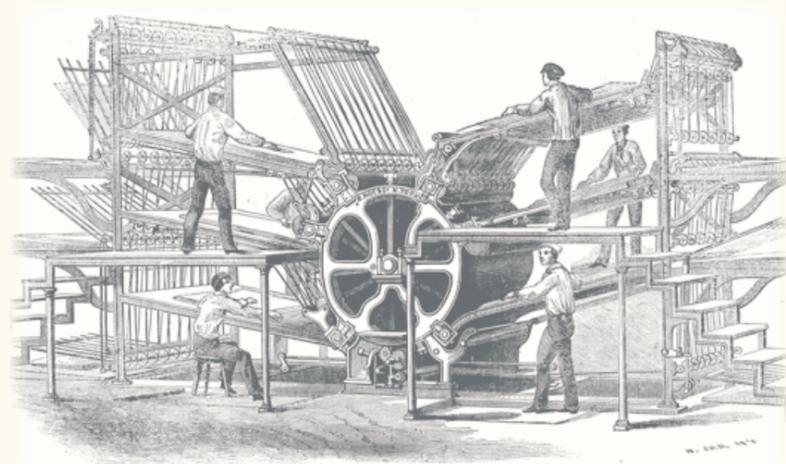


Mystic Press Printing Office (Print Shop)
Photo credit: Mystic Seaport

As the Industrial Revolution continued in the United States, the limitations of hand presses became more and more evident. In the 1810s, steam powered presses were developed in Great Britain that increased the hourly output from around 500 pages an hour to over 1,000. In 1843, Richard Hoe of New York improved the steam powered press by inventing the rotary press. Instead of arranging the type on a flat surface to create a proof, the type was curved around a cylinder, increasing the output of a printing shop from thousands of pages a day to millions.

With the rapid development of new printing presses to print books and newspapers, smaller printing shops in small towns and cities changed their business. Instead of printing newspapers and books, they took on minor jobs, such as broadsides advertising local activities and events, and envelope printing. These jobs did not require the large steam powered presses, so small presses, called jobbing presses, were created to take on these jobs. The small print shop, maybe employing six or seven journeymen printers printing the local newspaper or book pages, was almost non-existent by the turn of the 20th century.

As these two examples illustrate, the Industrial Revolution saw the rapid development of new technologies, and also a faster change in people's lives. Occupations that existed at the beginning of the century, such as the shipsmith, were practically non-existent by the end, and those jobs that still existed, such as the printer, looked much different at the end of the century than they did at the beginning. It could be argued that we are currently in the middle of another technological revolution. New technologies are being developed all the time, and daily life looks different today than it did even 10 or 20 years ago.



The Hoe six cylinder rotary press, 1864.
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Mystic Seaport fits into a STEM-focused environment by educating about past technological advances and their impacts on life in the 1800s. Students who visit the Museum can see the technological development of printing presses in the print shop, and learn about a trade almost lost to time in the shipsmith. They can even learn about the technology of the past by trying it out for themselves with a hands-on program.