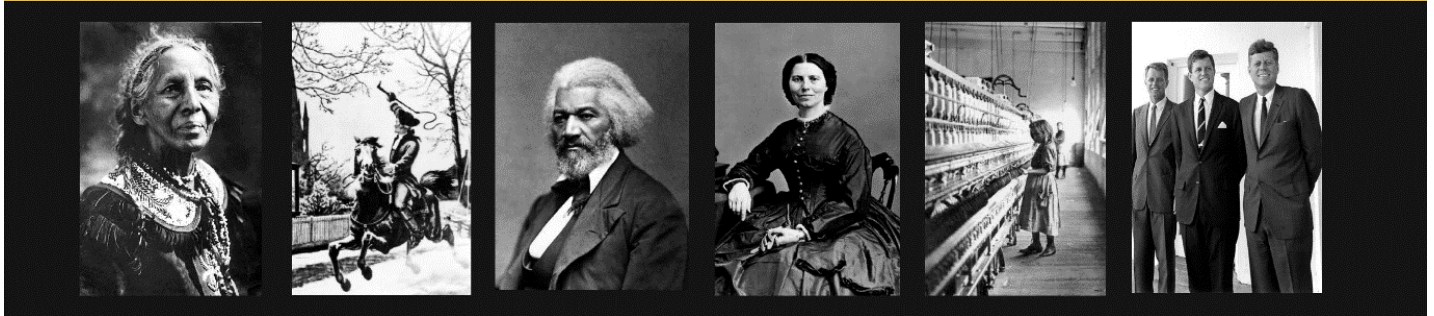


The Historical Journal of Massachusetts



“Hatfield’s Forgotten Industrial Past: The Porter-McLeod Machine Works and the Connecticut Valley Industrial Economy, 1870-1970.”

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Source: *Historical Journal of Massachusetts*, Volume 46, No. 2, Summer 2018, pp. 106-157.

Published by: Institute for Massachusetts Studies and Westfield State University



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MACHINE TOOL COMPANY

The PORTER-Mc LEOD
16 Inch 12 Speed Geared Head
Quick Change Screw Cutting Engine Lathe
Porter-McLeod Machine Tool Co. Inc.
HATFIELD MASS.

Porter-McLeod Machine Lathe

Courtesy of the Hatfield Historical Museum, Hatfield, MA

Hatfield's Forgotten Industrial Past:

The Porter-McLeod Machine Works and the Connecticut River Valley Industrial Economy, 1870-1970

ROBERT FORRANT



Editor's Introduction: *Rural and agricultural Hatfield, Massachusetts, one-time onion capital of the Commonwealth and today known primarily for its potato fields, was once home to a nationally-known gun manufacturer and a thriving machine works company that produced lathes and served customers across the United States and around the world. At its peak, the C. S. Shattuck Arms Company (c. 1875-1910) turned out 15,000 guns annually. The nearby Porter Machine Works (c. 1886-1900), renamed Porter-McLeod Machine Tool Company (c. 1900-73), turned out hundreds of precision lathes used in the manufacture of heavy machinery. Averaging ten to twenty workers in the late 1880s, by the 1920s Porter-McLeod employed over one hundred, reaching over two hundred workers in the halcyon days of World War II.*

In addition, several other companies briefly called Hatfield home, including Hampshire Manufacturing (c. early 1890s-1920s), which produced Wizard Spark Plugs, and the Bay State Screw Company, which also produced automobile

supplies in the 1910s.¹ The story of these companies, along with the lives of their founders and workers, provides an important and hitherto overlooked case study that helps illuminate the rise and fall of the Connecticut River Valley's once thriving industrial economy.

The industrial history of western Massachusetts is Dr. Farrant's area of expertise. He calls the region "the Silicon Valley of America" of the late nineteenth and early twentieth centuries. Farrant documents how the Porter-McLeod Machine Tool Company cultivated a "loyal network" of clients in the Pioneer Valley — often large companies in the arms, automobile and railroad industries. As its reputation for high-quality lathes spread, Porter-McLeod eventually sold the tool throughout Europe, in every province of Canada, and in at least thirty states. However, growth could also result in dilemmas and production bottlenecks, as the occasional angry letter from irate customers in the 1890s attests. Founder Jonathan E. Porter's letters from his sales trips provide a glimpse into American business history and practices, as do letters from skilled machinists seeking employment in his shop. These archival sources offer intriguing insights into business and employment practices in a small rural town.

Farrant calls the company a "forgotten empire." When he first began looking through its boxes of century-old paperwork, he was trying to answer two questions posed to him by staff at the Hatfield Historical Museum: Why was Porter-McLeod established in rural Hatfield when the hubs of the machine industry were in Worcester and Springfield, and how and why did the company last in Hatfield for so long?

Although he has partly answered these questions, others remain unanswered. One is when exactly the company closed its doors in the early 1970s. The Porter-McLeod archival collection does not include many records after the 1920s and none after World War II. As a result, more is known about the company in the 1880s than in the 1960s. Farrant and Kathie Gow, curator of the Hatfield Historical Museum that houses the Porter-McLeod archives, hope that local residents whose parents or grandparents worked at the company in the mid to late twentieth century might come forward with their stories.

*Dr. Robert Farrant has both a personal and an academic connection to this topic. Currently a Professor of History at the University of Massachusetts at Lowell, before completing his Ph.D., he had spent nearly fifteen years working as a machinist in Springfield, Massachusetts. He is the author of *Metal Fatigue: American Bosch and the Demise of Metalworking in the Connecticut River Valley* (2009). Kathie Gow, the curator of the Hatfield Historical Museum and board member of the Hatfield Historical Society, authored the following introduction to the article.²*

THE HAPPENSTANCE OF HISTORY: A CURATOR'S PERSPECTIVE

by **Kathie Gow**

What you're about to read is an unusual story. It tells of a machine shop that not only survived some ninety years, with a reach across the country and even abroad, but did so from the small farming community of Hatfield, Massachusetts, nestled on the Connecticut River. How did it end up there and why did it survive? The reason we have answers to those questions is equally remarkable. This story involves a treasure trove of records – some of them more than 125 years old – that had been moved from one sheltering place to another for the last sixteen years. Now, thanks to three state grants, the volunteer efforts of a handful of Hatfield Historical Society members, and the dedication of a few people who went out of their way to save local history, our Scholar in Residence Robert Forrant, the author of this essay, has been able to bring you this remarkable story.

In the case of the Porter-McLeod (PM) Machine Works Collection, Richard Rescia of Northampton donated twenty-one boxes of PM business records sixteen years ago (in 2001-2002) to the Town of Hatfield a few years after he and business partner Stanley Zewski purchased the machine shop building on Hatfield's Prospect Court. On taking possession of the building, they found boxes of records as well as binders and loose records strewn all over the second floor. "It was the dates that impressed us," he said, with most of the records dating from the company's beginnings in the 1880s and '90s to the early 1920s. The easiest thing to do would have been to discard the records, but Rescia boxed them up and contacted the Hatfield Historical Commission, which had the boxes put in town garages because the Hatfield Historical Museum had no storage space at that time.

Around 2006, when the roofs of those garages started to leak, Rick Martin, who served on the town's Historical Society and Historical Commission boards, volunteered to temporarily store the boxes in a shed on his property. There they sat for the next ten years, mostly housed in binders of grimy, crumbling cardboard, boxed and bagged. Finally, in 2016, having acquired a storage place to hold them, I applied for a pair of grants that would get them cleaned up, inventoried and rehoused in archival folders and boxes.

As we waited to hear back about the grants in April 2016, Rick Martin generously moved the twenty-one boxes from the space they occupied in his shed to the next holding place—the Hatfield Farm Museum—where the papers could be cleaned without risking damage to the Historical Museum's paper archives. We needed to make this move and accomplish



Porter-McLeod Records Before Cleaning

Photo courtesy of the Hatfield Historical Museum, Hatfield, MA

the cleaning after the winter snow was gone so the collection could be more easily transported, and when it was warm enough to work outside at the Farm Museum, but before the Museum opened to the public on Memorial Day weekend. Farm Museum Curator George Ashley, with the assistance of Historical Society board member John Pease, first had to clean the Farm Museum after its winter hiatus, moving large farm equipment out of the way so we could use space in the front of the museum.

Though the company records were in remarkably good shape for one hundred-year-old papers that had bumped around from shop floor to garages and sheds, numerous boxes had become homes for mice, and some records were shredded or moldy beyond salvage. Wearing gloves and face masks to keep from touching or breathing in the rodent nest dust, a half dozen Historical Society volunteers came to the Farm Museum on several cold days in April and did the major cleaning of all the boxes. Next, a few more volunteers loaded up the now twenty-five boxes and moved them to the second-floor balcony of the Hatfield Town Hall, which served as the Historical Museum's storage room.

Luckily, our efforts were not for naught: the Hatfield Historical Society was awarded a Research Inventory Grant (RIG) from Mass Humanities

(the state-based affiliate of the National Endowment for the Humanities) to pay researcher Deb Blodgett to do the next level of cleaning and then inventory the collection and create a searchable finding aid for it; that finding aid, listing 38,217 documents, is now available online.³ We also received a grant from the Massachusetts State Historical Records Advisory Board (MA SHRAB) to fund nearly \$1,000 in supplies to rehouse the collection using archival materials. While these grants allowed us to preserve the records and make them usable by researchers, we still didn't know what story they told. Next we applied for and received a Scholar in Residence (SIR) grant, also from Mass Humanities, to hire Professor Robert Farrant to mine the records and, through his research in the collection and elsewhere, uncover the story of the rise and fall of the Porter-McLeod Machine Tool Company. The rich collection of primary research material he has to work with includes bills, check stubs, correspondence, telegrams, and receipts from the start of the company in the 1880s to the early 1920s, plus two payroll books from the 1880s and the early 1900s.

The last phase of discovery took place in the summer of 2017, when Scott McArthur, the current owner of the Porter-McLeod building, generously allowed Robert Farrant, Historical Society President Bob Osley, and me to poke through the recesses of the second floor. He didn't think we'd find



Company Archives in Acid-Free Boxes

Photo courtesy of the Hatfield Historical Museum, Hatfield, MA

much, but what we did find, he let us take as donations to the Hatfield Historical Museum. Our discoveries included several wooden parts molds, two metal printing plates for schematics, pieces of belts and metal gears, a record book from the 1920s, and armfuls of loose receipts and orders from the late 1800s, most of them covered with dirt.

Sometimes it takes a while for the planets to align so that a historical artifact or a collection can be properly preserved and showcased. In this case, that timeline stretched nearly thirty years. Beyond the donor, who is often the first person to see the value of an item, there are usually a host of middlemen and women and/or municipal bodies that play important behind-the-scenes roles. This story has all of that and more.⁴

* * * * *

HATFIELD'S DEMOGRAPHICS AND AGRICULTURAL HISTORY

The production of guns, spark plugs, and the basic workhorse of all industry—the precision lathe—in Hatfield, Massachusetts, amidst its acres of corn stalks, tobacco barns and onion fields, still seems a bit strange to me, even after months spent poring over the Porter-McLeod business records. An imaginary twenty-first century time traveler who unexpectedly happened upon the factories at the rural falls could have been forgiven his or her surprise. Similar firms prospered in Springfield, Greenfield, and Holyoke. Large-scale production of everything from writing paper to automobile tires took off in places like Chicopee Falls and Holyoke. Luxury Rolls Royce automobiles were built in Springfield. And, up the river in Springfield, Vermont, machinery builders helped outfit Henry Ford's marvelous River Rouge automobile complex, one of the industrial wonders of the world.

"How odd," our imaginary time traveler might think to themselves, "to see a sign in the trees for the Porter Machine Works." Knocking on the factory door and entering the building for a brief conversation with owner Jonathan E. Porter, they would have learned that the shop produced precision machinery for export across the United States and around the world. "Manufacturers of everything from bicycles to automobiles to papermaking machinery owned a Hatfield-built lathe," they might tell their astonished friends. What follows is the story of how this came about.

Hatfield is located on the west bank of the Connecticut River at the mouth of the Mill River, twenty-five miles north of Springfield and about one hundred miles west of Boston. It provides excellent agricultural conditions thanks to its large expanse of flat, rich, and stone-free river land, plus a



Onion Planting in Hatfield, 1936

Source: U.S. Farm Security Administration photographs, Library of Congress

small waterfall that at one time powered a mill on what became known as the Mill River. Cattle was farmed and raised there during the colonial and Revolutionary War periods. In 1845, in fact, Hatfield was the sole town in Hampshire County in which cattle exceeded the human population.⁵

As the cow herds grew, so too did the number of Hatfield's Irish, French-Canadian, and German settlers; they were the first significant immigrant groups who were not of English ancestry. The town's Irish laborers joined their fellow countrymen from nearby Holyoke and Springfield in constructing a railway along the Connecticut River. With its completion, they settled in farming communities between Springfield and Greenfield. Cattle, corn, wheat, oats, and potatoes were the main agricultural products in Hatfield before the Civil War. In the second half of the nineteenth century, tobacco became the major cash crop; onions and asparagus were also grown in quantity. The introduction of commercial tobacco during the middle of the nineteenth century and its dramatic growth in the first two decades of the twentieth century contributed to the town's prosperity. To meet the need for labor, many Eastern European immigrants, particularly those from Poland, were hired.

Hatfield's population hovered around 1,300 to 1,500 throughout the second half of the nineteenth century. Although the population declined between 1870 and 1890, new immigrants continued to arrive until, as historian Daniel White Wells writes, "the old town had become exceedingly cosmopolitan for a quiet farming community."⁶ In 1880, the foreign-born population totaled 386 (25.8%) and remained roughly a quarter of the total population for the next forty years. In 1920, of 2,651 residents, the foreign-born number totaled 708 (26.7%), a figure not eclipsed until 1970.

What other industry fueled Hatfield in the nineteenth century? In the early decades, broom corn became a major cash crop and the handicraft production of corn brooms took place in many homes. *The Springfield Union* reported that more than 300,000 brooms and brushes were produced during this period: "Broom-making shops were numerous, with farmers raising the corn, and this business attracted many French-Canadian immigrants to the town."⁷ Several other industries thrived as well. In 1845, a state report noted that three individuals in Hatfield made 450 pairs of boots and 350 pairs of shoes valued at \$1,332. Most likely at their kitchen tables, forty women made 11,175 palm-leaf hats valued at \$1,862. The manufacture of lumber and shingles rounded out the town's non-farm endeavors.

An 1866 Massachusetts report found that Hatfield had one flouring mill employing two people, a grain grinding facility, and three sawmills employing sixteen workers that turned out barrel staves, housing planks, shingles, and firewood. In addition, eight individuals produced 49,000 brooms valued at a little over \$15,000. The report noted that 185 farms with buildings worth \$916,400 spread across 9,164 acres employed approximately three hundred people. Large tobacco packinghouses also provided winter employment for the men who worked on farms in the summer.⁸

HATFIELD'S PRIME LOCATION IN THE CONNECTICUT RIVER VALLEY

Although Hatfield lacked significant early-nineteenth-century connections to industry, its presence in one of the country's richest regions for metals manufacturing—a twenty-five mile carriage ride from Springfield, Massachusetts—provides a clue to the origin of its development. For much of the nineteenth and twentieth centuries, the Connecticut River Valley, with its machine tool and metalworking firms, constituted a highly innovative region, akin to Silicon Valley today. In 1777, patriot leaders had established "The Arsenal at Springfield." The soon-to-be Federal Armory was the primary center for the manufacture of U.S. military firearms from 1777 until its closing in

1968. By the 1850s, the federal gunmaker had diffused its discoveries about mechanized production. Without the Armory, Springfield likely would have been a commercial and transportation center. Instead, according to historian Derwent Whittlesey, it developed an economy with “fewer drawbacks than that of most manufacturing cities. As a consequence, Springfield is neither a sleepy village resting on its past glories, nor is it a coarse factory town, conspicuous for its slums and tired workers.”⁹

Integral to the River Valley’s success were two historical continuities: the region’s capacity to design and build machine tools and related accessories and the numbers of skilled machinists and apprentices attracted to it. Firms cultivated and recruited workers through their sponsorship of apprentices and vocational-technical education. In the 1840s and 1850s, rail connections to Boston and Worcester, Massachusetts; Hartford, Connecticut; and Albany, New York, stimulated growth throughout the region. According to historian David Meyer, early nineteenth-century machinists set the stage for “the extraordinary machinery and machine tools of the late nineteenth century, when the United States moved to the forefront in making much of this equipment.”¹⁰

To Meyer’s point, in 1852 an analysis appeared in *Harper’s New Monthly Magazine* stating, “[At the Springfield Armory] we have the very singular and extraordinary operation going on, of manufacturing with the greatest care, and with the highest possible degree of scientific and mechanical skill, a vast system of machinery.”¹¹ Meyer suggests that:

The active engagement of mechanics in advancing the sophistication of machine tools and in incorporating them into firearms manufacturing caused firearms and machine tool networks that concentrated in or near the Connecticut and Blackstone valleys as early as the 1820s.¹²

By 1870, Connecticut River Valley firms built specialized equipment for New England’s pulp, paper, and shoe industries; textile companies; watch and jewelry makers; furniture manufacturers; munitions makers; and typewriter and bicycle builders. The Commonwealth’s machinery output grew a spectacular 158% between 1885 and 1890, and in 1900 its builders ranked second in the nation in sales at \$2.6 million. Metalworking firms and machinery builders behaved like a transmission agency, spreading their innovations to final goods producers. In 1920, 20% of the country’s machine tool firms with more than one hundred workers were located in the

Connecticut River Valley. Massachusetts, Connecticut, and Rhode Island builders collectively shipped 25% of the country's machine tools.¹³

In 1900, hundreds of machine building and metalworking plants populated this prosperous two-hundred-mile industrial corridor between Bridgeport, Connecticut and central Vermont.¹⁴ Fifteen miles north of Springfield, Northampton's thriving cutlery and hand tool industries found customers in the nation's burgeoning market for agricultural implements. Thirty miles upriver in Greenfield—little more than fifteen miles from Hatfield—firms manufactured cutting tools, machinists' hand tools and measuring devices. In Shelburne Falls, twenty-five miles from Hatfield, Lamson & Goodnow Manufacturing could call itself the largest single producer of cutlery in the United States. The firm produced five hundred different styles of cutlery and, by 1860, consumed two hundred tons of steel annually. In Windsor, Vermont, twenty-five factories produced rifles, sewing machines, and machine tools.

In his authoritative account of English and American machine tool builders, Yale University professor of mechanical engineering Joseph Wickham Roe wrote in 1916: "If New England no longer holds all the good mechanics in the United States, there was a time when she came so near it that the term 'New England mechanics' had a very definite meaning over the whole country."¹⁵ In the Connecticut River Valley, private firms enjoyed a comparative technological advantage over firms in other regions due to the diffusion of Armory manufacturing techniques (such as the utilization of gauges, fixtures, jigs, and dies) and the availability of skilled labor. By the early twentieth century, Massachusetts, Connecticut, and Vermont ranked second, fourth, and ninth, respectively, for machine-tool sales in the U.S.¹⁶ This dominance lasted well into the century.

In his 1930 history of Massachusetts industry, Orra Stone referred to Springfield, the largest city in the valley, as "a beehive of diversified production," with twenty-four large factories having annual production in excess of \$1 million and numerous smaller supporting specialty shops.¹⁷ At the onset of World War II, more than two hundred greater-Springfield machine builders and specialty metalworking firms produced precision components and machine tools. A 1941 Work Projects Administration study noted:

Springfield's products have been for the most part the essentials of other industries, the machines, the tools, and units that turn the wheels of industry the world over. Because of this inter-relationship and the diversification of her industries, Springfield

has suffered less from economic upheaval than single-industry cities of New England.¹⁸

Greater Springfield's mix of final goods producers capitalized on "the technical skills already in the region, embedded in small forges, foundries, and mechanical workshops that provided diverse metal goods for the prosperous economy."¹⁹ Over time, workers and engineers skilled in the development, use, and improvement of technologies anchored the larger industrial economy. Felicia Deyrup concludes that this rich contracting system promoted a "spirit of cooperation and mutual helpfulness" among gunmakers, for instance. Having a "clearinghouse" for new machines, materials, and manufacturing processes enhanced the region's reputation for precision and quality work and the aggregation of shops produced economic success for 150 years.²⁰

ORIGINS: JONATHAN PORTER'S MACHINE WORKS, 1887

Hatfield's Porter Machine Works, and later Porter-McLeod Machine Tool Company, inhabited this milieu of rich collaboration between firms and talented machinists. Though only rarely did such an environment result in the establishment of a factory that sold machinery around the world, Jonathan Porter figured out how to do it.

In 1930, Worcester-born attorney Orra Stone wrote a four-volume comprehensive history of Massachusetts industry in which he referred to Hatfield as "an impressive little town." Stone had served as general manager of the Associated Industries of Massachusetts (AIM) since 1918. Under his leadership, AIM grew in membership from 150 to nearly 1,500 manufacturing enterprises. In his study, he comments about Porter-McLeod: "The progressiveness of the company is evidenced by the fact that it maintains a research department for the purpose of making improvements on existing machines."²¹

Had Stone visited Hatfield decades earlier, when he was a reporter for the *Worcester Daily Spy*, he would have seen a quintessential farming town comprising 1,600 people and numerous tobacco barns, orderly rows of onions, and stately-looking homes along typical tree-lined New England streets. What, then, possessed Hatfield's Jonathan E. Porter and Nova Scotian (by way of Worcester) immigrant Hugh McLeod to think that a lathe- and/or gun-making business could thrive on the banks of the small and meandering Mill River? How did the Porter Machine Works attract skilled machinists and dozens of laborers? How did a thriving business with a coast-to-coast reach and markets stretching to Japan grow there? And, despite Hatfield's

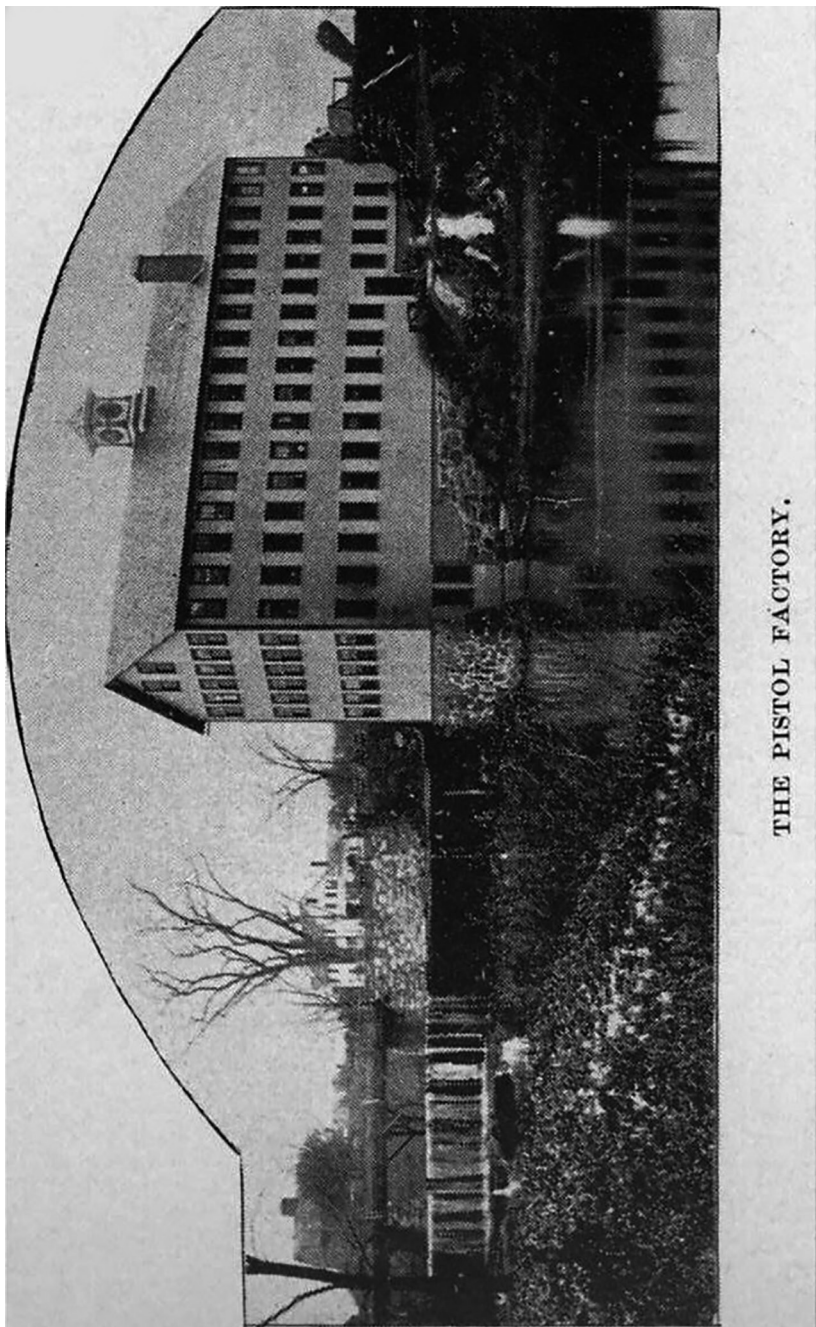
lack of obvious industrial roots, how did Porter and McLeod's firm manage to persist for ninety years?

Born on November 22, 1849, the son of Moses Chapin Porter (1820-1888) and Emily Porter Porter (1817-1856), Jonathan E. Porter received an education at public schools in Hatfield and at Bernardston Academy.²² In the 1870 census, his occupation was listed as a farm laborer, but by the mid-1870s, Jonathan, along with Henry S. Porter (no relation) and Edward Preston, had organized the Crescent Pistol Company. There is some evidence that Porter, along with the brothers John T. and George C. Fitch, might have started the business as early as 1870, though 1874 appears the more reliable date.²³ The company manufactured pistols at the old Moore sawmill, on the site of what Hatfield locals subsequently called the "pistol shop." Adding to the town's gun manufacturing base, Andrew Hyde and Major Charles S. Shattuck relocated their fledgling, two-year-old pistol factory from Springfield to Hatfield in February 1877, going into partnership with Mrs. Mary D. Porter (no relation to Jonathan).²⁴

Charles S. Shattuck (1840-1918), born in Sheldon, Vermont, left his business in 1862, enlisted in Company K, the Sixth Vermont Regiment, and fought in the Civil War, including at Gettysburg. After the war, he engaged in gunmaking in Springfield, Massachusetts, where he very likely learned a great deal about his craft from the Federal Armory. According to historian David Hounshell, "The Armory acted both as a clearing house for technical information and a training ground for mechanics who later worked for private arms makers or manufacturers of other goods."²⁵ In 1880, Shattuck boarded with Jonathan E. Porter while running his Hatfield gun shop, which by this time manufactured single and double-barrel breech-loading shotguns. In 1900, the 59-year-old still resided in Hatfield making guns.

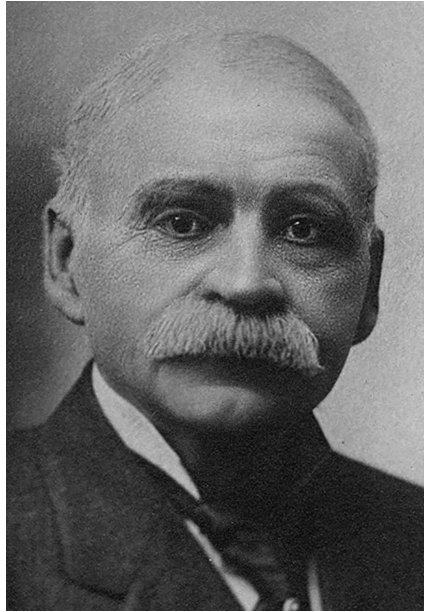
Mary D. Porter withdrew from the partnership with Hyde and Shattuck in 1878; two years later, Shattuck bought out Hyde. Hyde might have stayed on at the gun shop for a while or, possibly, worked with Jonathan E. Porter as he got his lathe-making business off the ground. In any case, after 1880, Shattuck "conducted the factory alone, turning out many revolvers. Soon after, he made single-barreled, breech-loading shotguns and a few years later added double-barreled guns. Large quantities of both were assembled, averaging for a time 15,000 guns per year"²⁶

Jonathan Porter, Shattuck, and Hyde remained friends. Of the three, Hyde had the "New England mechanic's gene" that, it appears, Shattuck lacked. For example, Hyde received a patent (no. 247,764) issued in October 1881 that had to do with pistol triggering mechanisms. In 1879, he applied for a patent (no. 221,171) for what he called an "improvement in Revolving



THE PISTOL FACTORY.

Postcard c. 1900. Building rebuilt in 1881 after fire.



Jonathan E. Porter (1849-1921)

Charles S. Shattuck (1840-1918)

Images courtesy of the Hatfield Historical Museum, Hatfield, MA



Shattuck Pocket Revolver

Pistols.” Shattuck and Porter witnessed the patent filing.²⁷ Hyde also applied for a patent for a screw-cutting lathe on June 17, 1881. There is no way to know for certain, but it could well be that Porter utilized Hyde’s designs when he commenced lathe production.

Prior to the gun shop’s arrival, little manufacturing had occurred in Hatfield. In the seventeenth century, the town had granted Thomas Meekins the rights to the Mill River waterfall and surrounding swampland in exchange for his services as a miller. In 1661, he built a gristmill next to the waterfall, adding a sawmill on the other side of the river eight years later. Harvey Moore obtained the site in the mid-1800s. After the Civil War, as noted above, new owners, including Jonathan E. Porter, took over the mill site and in 1874 organized the Crescent Pistol Company in one of the buildings, merging several years later with the gunmaking business brought to town by Major C. S. Shattuck. This facility eventually became the Shattuck Gun Shop.

By the 1880s, Shattuck produced his guns and Porter his lathes and Hatfield farmers grew lots of onions. From 4% of the county’s production in 1885, Hatfield by 1905 produced 54% of Hampshire County’s onions, valued at \$116,230, leading the Commonwealth in their output. In 1909, Oscar Belden & Sons built the first storehouse in New England designed specifically for onion storage. According to a report, “Both tobacco and onion raising were labor intensive, and their development at this time is at least partially credited for the influx of Polish immigrants from Austria and Russia in the late 1880s and after to Hatfield and surrounding towns.”²⁸ Some of these immigrants, and/or their offspring, found work at Porter Machine Works.

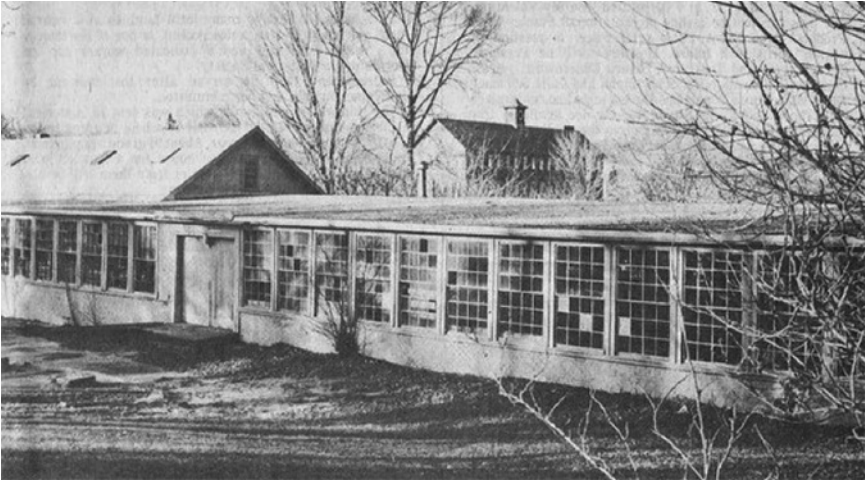
When his gun factory burned down on January 29, 1881, Shattuck rebuilt at the same site—on the north side of the Mill River—for the production of single-barreled, breech-loading shotguns and, eventually, double-barreled guns. Around 1910, gun production ceased. Shattuck remained in Hatfield until his death in 1918 at age 77, serving on the Board of Trustees of the Northampton State Hospital for 15 years. After his death, the Board issued a statement which described him as a “brave soldier in the civil war, a successful business man, and a public-spirited citizen.” He is buried in Hatfield’s Main Street Cemetery.²⁹ Although the C.S. Shattuck Arms Co. had ceased operations, it represented an important link in Hatfield’s industrial past and laid the foundation for the emergence of the Porter Machine Works.

Initially, Jonathan Porter had leased an upstairs portion of Shattuck’s rebuilt shop for the manufacture of his lathes, but he soon opened his own lathe shop in 1886 directly across the narrow river from the gun shop. Water turbines installed in both buildings in the twentieth century powered



Shattuck "Pistol Factory"

In 1669, Thomas Meekins built a sawmill on this spot. In 1870, a grist mill operated here. In 1874, the Crescent Pistol Company was formed at the site. In 1881, the building burned and Charles Shattuck built the current structure. Initially, Jonathan Porter leased the upstairs portion of the rebuilt shop to manufacture lathes. In 1886, Porter opened his own shop on the south side of the river (see photos on the next page). Today the building houses a luxury bed and breakfast, the Old Mill Inn. (Photo by Mara Dodge)



The Porter-McLeod Building

Above is the only photo showing the original exterior of the building that *HJM* editors could find. It comes from a January 23, 1980 *Daily Hampshire Gazette* story. At that time, the *Gazette's* owners were considering purchasing both the Porter-McLeod building and the "Old Mill" (Shattuck pistol factory) seen in the background across the Mill River. The property includes water rights to the dam. The *Gazette* calculated that the dam could generate all the needed electricity and the Porter-McLeod building could house the printing presses along with office space for 50 staff. However, the deal fell through. Since then gray siding has been added so that none of the original exterior of the Porter-McLeod building is visible and it is used as a storage facility. None of the building's rich history is even hinted at. (See photo below.) (Lower photo by Mara Dodge.)



the shops. As sales increased, new products were introduced, and Porter's structure grew. A description of the firm appears in Charles Forbes Warner's *Picturesque Hampshire* (1890):

Jonathan E. Porter, the founder of these works at Hatfield, started in a small way eight years ago, up-stairs in the building now occupied by C.S. Shattuck. The present building was constructed three years ago, when the business had grown considerably, and this year further growth compelled the erection of a forty-foot addition, making the factory 152 x 35 feet. To give some idea of the growth of the business it is only necessary to say that in May, 1887, the works employed 11 men; in May, 1889, 18 men, and in May, 1890, 28 men, while last month there were 33 men on the rolls. The works make a lathe for turning iron, a superior machine. It is a standard article in all machine shops, and the company have a great many orders booked ahead.³⁰

From 1886 to 1892, Porter ran the business with Lewis Warner of Northampton. It may be that he partnered with Warner to secure funding for the new, larger shop. At any rate, in 1892 Warner withdrew from the business and Porter, with Hugh McLeod as superintendent, manufactured lathes under the name of the Porter Machine Company. In 1898, McLeod became owner of the firm after having worked as superintendent for seven years. A year later, he married Porter's daughter Helen.³¹ Porter stayed on and spent a good deal of time traveling the country selling lathes. In 1921, he passed away from "heart trouble" while at his summer home in Crescent Beach, in Niantic, Connecticut, at age 72. Obituaries for Porter can be found in several trade publications, further testimony to his prominence³²

HUGH MCLEOD: FROM WORCESTER TO HATFIELD IN 1890

Hugh McLeod, arriving in Hatfield in 1890, brought to the mix the technology of another city, Worcester. McLeod had spent seven years working in the central Massachusetts city at a number of machine shops. He left when the lathe maker he had worked for closed. The archival record picks up McLeod's trail when he became superintendent of Porter Machine.

Born in White Harbor, Nova Scotia on May 2, 1867 to immigrant parents from Lewes, Scotland, Hugh McLeod arrived in Worcester at the age of fifteen. He lived and worked there until 1890, when he moved to Hatfield. From White Harbor to Worcester to Hatfield, his life followed a pattern

similar to those of numerous nineteenth-century machinists who eventually owned their own companies. In the 1910 U.S. Census, McLeod is listed as a manufacturer of engine lathes. By then, he was married with three daughters.

In his history of Worcester, Charles Nutt offers a generic description of the career trajectory of individuals like McLeod. The vast majority of Worcester manufacturers “have themselves been laborers and apprentices, workers in the shops before they became employers,” he writes. While opportunities to own a firm do not come to everyone receiving a weekly pay envelope, Nutt acknowledges that such individuals “are just as capable as those at the head of a business; there are those, too, whose opportunities are yet to come, some through invention, some by promotion, others because they naturally rise.”³³ According to Meyer, individuals like McLeod:

underwent extensive training to acquire metalworking skills, first under a formal or informal apprenticeship and, subsequently, moving among machine shops to gain experience or they learned from co-workers, if they remained in one shop. They commanded wages that ranked among the highest in the eastern United States, they received premium salaries if they were part of management, and they acquired profits from the firm if they had ownership stakes.³⁴

Worcester city directories for 1883 and 1884 list McLeod as a laborer. Two years later, he was working as a machinist at the Lathe & Morris Tool Company. McLeod lived in two different places in Worcester. At 1 Lynn Street, he boarded with four people. From 1885 on, when he was advancing in his trade and was attending classes at the twenty-year-old Worcester County Free Institute of Industrial Science, now Worcester Polytechnic Institute (WPI), he resided at 25 Myrtle Street, an interesting place to live because it sat above a firehouse. Boarding with him during his last year in Worcester were Charles Holland, a machinist who worked at Gilbert Loom Company; Wilbur Quinn, a machinist at Rice & Fales Company; and C. O. Lamb, a tinsmith who likely traveled around the city working his trade out of a wagon.³⁵

Founded in 1865 by self-made tinware manufacturer John Boynton and Ichabod Washburn, WPI prepared a new professional class of engineers, scientists and entrepreneurs to fuel the rapid industrialization of the United States. Washburn had apprenticed at age sixteen in a Leicester, Massachusetts blacksmith shop. By 1865 he co-owned with son-in-law Philip Moen the Washburn & Moen Manufacturing Company, then the world's largest

wire mill. Some 225 Worcester citizens—among them shop floor workers at twenty of the city’s factories and machine shops—contributed to the construction of the original building of the Worcester County Free Institute of Industrial Science.³⁶

In the “Department of Practical Mechanics,” students learned shop floor theory and then applied their new knowledge on factory floors across Worcester. This became the institute’s centerpiece. McLeod likely enrolled in this department and perhaps found his job at Lathe & Morse through the school. Washburn had high hopes for the school and once said:

I have long been satisfied that a course of instruction might be adopted in the education of apprentices to mechanical employments, whereby moral and intellectual training might be united with the processes by which the arts of mechanism as well as skill in the use and adaptation of tools and machinery are taught, so as to elevate our mechanics as a class in the scale of intelligence and influence, and add to their personal independence and happiness, while it renders them better and more useful citizens. . . .³⁷

In Worcester, McLeod unknowingly prepared for his move to Hatfield and an ownership stake in Porter Machine. With several lathe makers operating in the city, he might have heard of the Hatfield upstart, though this is hard to determine. What we do know is that the young man labored for five years in Lathe & Morse, one of Worcester’s premier firms. It opened in 1864 and by the time McLeod rolled up his shirtsleeves and started cutting metal, Lathe & Morse employed fifty workers building lathes similar to the ones being produced about seventy miles to the west in Hatfield among the onions and tobacco. Lathe & Morse failed at the end of 1890. A few months later, William Draper, owner of the Worcester-based Draper Machine Works, purchased its assets and, in 1905, the Whitcomb-Blaisdell Machine Tool Company acquired Draper. By then, with his skills and years of experience at Porter Machine, McLeod called Hatfield home. While in Worcester, he had witnessed firsthand the volatile up-and-down business side of machinery building. McLeod had also learned a great deal about what it meant to be a precision machinist while rooming with several individuals plying the same trade.

A cursory look at the 1890 Worcester city directory for Myrtle Street showed fifteen other machinists living in immediate proximity to 25 Myrtle. As his employer, Lathe & Morse, struggled in 1890, McLeod likely was searching

for a viable place to continue his education as a machinery builder. When he ventured to Hatfield in 1890, he started as factory superintendent at the Porter Machine Works. A young go-getter from the industrial city at the heart of the Commonwealth, in less than ten years he had married the boss' daughter, Helen Louise Porter, and purchased the business.

The time he spent in Worcester gave McLeod the confidence which must have made him an attractive applicant to Jonathan Porter.³⁸ This self-confidence was shown when, in June 1898, McLeod purchased the business for \$10,000 at a default sale from Porter's partner Lewis Warner's estate.

Chronology of the Early History of Porter-McLeod Tool Company

- 1870** Jonathan E. Porter listed as farm laborer; evidence points to possibility that he started the Crescent Pistol Company with John T. and George C. Fitch
- 1874** Jonathan E. Porter, Henry S. Porter, and Edward Preston buy the Moore sawmill and organize the Crescent Pistol Company there
- 1875** Charles Shattuck forms a pistol company in Springfield, MA
- 1877** Shattuck moves his company to Hatfield and partners with Andrew Hyde and Mary D. Porter
- 1878** Jonathan Porter merges Crescent Pistol Company with Shattuck's to form Shattuck Gun Shop
- 1878** Mary Porter withdraws from partnership with Shattuck and Hyde
- 1880** Shattuck buys Hyde's share in the pistol company and runs the business by himself; Hyde may continue working for him or may help Porter establish his lathe-making enterprise
- 1881** Shattuck's gun shop burns down; he rebuilds on the same site (north of the Mill River); Porter leases upstairs portion of rebuilt shop to manufacture lathes
- 1882** Porter opens Porter Machine Works
- 1886** Porter opens his own lathe shop on the south side of the Mill River; runs the business with Lewis Warner of Northampton
- 1890** Hugh McLeod moves to Hatfield, becomes factory superintendent at Porter Machine Works
- 1892** Porter builds 40' addition to lathe shop; Lewis Warner withdraws from business
- 1898** Hugh McLeod becomes owner of the business
- 1900** Company is renamed Porter-McLeod Machine Tool Company, Inc.

Prior to the closure and purchase by McLeod, about forty-five people worked at the plant, with output averaging 250 to 300 lathes annually. With the purchase McLeod secured ownership of the machinery, fixtures, raw stock, completed machinery, patterns, orders on hand, and a deed to the building. He also negotiated a lease for the land at what the newspaper called “a very reasonable rate.”

McLeod carried on the business under the Porter Machine name for a few years before adding his own name to the company’s masthead. The newspaper reported that the value of the patterns for the machinery, the finished lathes on hand, and those in process when the factory temporarily closed “are worth nearly the amount paid for the plant.”³⁹ Three years later, the first of several additions expanded floor space. According to *Iron Age* magazine, McLeod planned “an extension 25 feet in length on the east end and an addition 14 feet wide along the entire length of the south side giving about 21,000 square feet more floor space.”⁴⁰ With the sale completed, founder Jonathan E. Porter assumed the position of traveling agent for the firm.

A NEW FIRM IS BORN: PORTER-MCLEOD

On June 4, 1898, an article in the *Northampton Daily Herald* insinuated that not everyone in Hatfield celebrated the firm’s reopening. The town’s motto, “Industry-Prosperity,” seemed in question. The author wrote, “While several conservative Hatfield citizens have not been enthusiastic about the starting up of the works it is certain that a majority of townspeople will rejoice that Mr. McLeod has bought the plant and is to continue the business.” The growth of Porter Machine along with The Hampshire Manufacturing Company, which produced Wizard Spark Plugs, and the nearby Bay State Screw Company, gave employment to

a large number of Hatfield men of a mechanical turn, so that the town has not diminished in size to the extent that many agricultural communities have. Some skilled machinists from outside places have been attracted to the town. The Porter Machine Company owns several houses to rent to operatives.⁴¹

The Hampshire Manufacturing Company was one of just thirty-five firms in the United States producing a vital part for the emerging automobile market. Manufacturing “Wizard Spark Plugs,” the company competed with firms like the Springfield-based American Bosch Magneto Co. in the emerging market.⁴²

The growth of these local industries did not alter the fact that Hatfield remained a farming community. A close review of the 1900, 1910, and 1920 Federal Population Censuses shows how residents made a living. For our purposes, the manufacturing category includes machinists, factory hands, and skilled tradespeople in Hatfield, including carpenters, blacksmiths, painters, cabinetmakers, and railroad workers. Farmers are identified as owners of their farms. The jump in farm laborers between 1910 and 1920 can be attributed to the growth of tobacco farming. The drop in manufacturing workers is more difficult to explain, but one possibility is that many of the workers at Porter-McLeod lived outside Hatfield and would therefore not be picked up in the census records or town directories. The town also had its share of barbershops, ice sellers, dressmakers, and butchers.

	1900	1910	1920
Farmers	170	156	101
Farm Laborers	311	416	594
Manufacturing	85	103	42
Servants/Housekeepers	29	28	24

Between 1870 and 1915, at a time when more than half the towns in Hampshire County reported declining populations, Hatfield recorded 64.9% growth. Between 1915 and 1925, the town grew by a smaller amount, and after 1925 the number of residents steadily declined. By 1940, Hatfield's population stood at 2,216, some four hundred persons less than the 1915 figure. In one respect, "Porter and the Hatfield story" defies conventional histories of machinery builders. This is so because the community the firm prospered in is an agricultural one. Daniel White Wells, in his 1910 Hatfield history, noted that some 1,500 acres of land were devoted to tobacco in the early twentieth century and that tobacco packinghouses provided employment in the wintertime. In addition, five to six hundred carloads of onions were shipped annually.⁴³

Porter-McLeod's owners received patents for innovations they perfected in building one of the workhorse machines of their day, the lathe. In the late nineteenth century, emerging business and transportation networks proved vital to the firm's success. It maintained a far-flung network of distributors for their machines, located in cities including Los Angeles, San Francisco, Milwaukee, Buffalo, Baltimore, Syracuse, Montreal, and New York City. Rail transport, which developed early in the Connecticut River Valley, proved vital. The Connecticut River Railroad (CRRR) formed in 1845, with its first line connecting Springfield and Northampton. The line





Porter-McLeod Employees, c. 1900

Photo courtesy of the Hatfield Historical Museum, Hatfield, MA

Porter-McLeod Shop Floor (on left), c. 1900

When he was just beginning to pore over the 38,217 pages of payrolls, machine orders and correspondence in the museum's collection, Dr. Robert Farrant was shown this sepia-toned photograph. As he recalls, "This picture is what made me say, 'OK, I really want to do this project.'" Farrant, a former machinist, thought to himself: "This is just so cool." In the photo, rows of engine lathes span a long room with gears, pulleys and ropes hanging from the ceiling. Dozens of men wearing bowler hats and sporting curled mustaches roam the aisles between the machinery; those in the foreground of the picture look at the camera, scowling. Farrant recalls: "This was a big surprise to me because I've written books about the history of machinery in the Connecticut River Valley, but I never knew about any of this in Hatfield. I saw this and I got hooked, damn it." In the summer of 2017 Farrant spent four months as a scholar in residence, poring over the Porter-McLeod Machine Shop's records. (Photo by L.H. Kingsley, courtesy of the Hatfield Historical Museum, Hatfield, MA)

extended to Deerfield and Greenfield in 1846. In 1849, the line reached the Massachusetts-Vermont state line, where it met the Brattleboro line of the Vermont & Massachusetts Railroad. On January 1, 1893, the Boston & Maine (B&M) Railroad leased the Connecticut River Railroad. The B&M also operated a line connecting Boston and Montreal.

From the various lines operated or leased by B&M, Porter could deliver machines across the country and north into Canada from either the Hatfield Depot or from Northampton. It had to be a sight to see in town whenever wagons full of shiny new lathes made their way to the station. Street railway extensions eased travel for workers living south or north of the town. By the end of the nineteenth century, the Springfield Street Railway's electrified lines made connections to move passengers to Holyoke, Westfield, Northampton, and Hartford. In 1901, the Northampton & Amherst Street Railway extended its lines to Hatfield and beyond.⁴⁴

By rail, finished machines were shipped to all corners of the United States. Machines left the country, too, with several Canadian provinces, a host of cities in England, and even a Japanese distributor importing Hatfield-built lathes. Company records from the early 1900s reveal two shipments of lathes to a distributor in Yokohama, Japan. Eighteen machines weighing nearly fifteen tons were shipped there on December 8, 1904, with an additional seventeen lathes sent a week later; their final destination was the Tokyo Army Arsenal. A letter from the Arsenal dated March 6, 1905, stated: "We are very glad to inform you that the machines which were of your make, are now in our shops operating in a good condition. With best wishes for your prosperity."⁴⁵

In late 1904, a rail car loaded with lathes shipped from Hatfield bound for Zimmerman, Wells, Brown and Company, a machinery distributor in Portland, Oregon. Boxcars left on a regular basis from Hatfield to the West Coast. On January 27, 1906, two lathes made a far shorter trip to Shaw Machine in Lowell, Massachusetts. On the same day, twelve tons of machinery were loaded onto a boxcar and sent to Cleveland, Ohio. Further evidence of the Hatfield firm's global reach is seen in a November, 1908 letter written to Porter-McLeod in French from Barcelona, Spain, asking that a price catalog be sent.⁴⁶ A shipping record was issued for a ton and a half of machinery and parts bound for Copenhagen, Denmark, leaving Boston on the Scandinavian-American Line of the United Steamship Company on August 4, 1910.⁴⁷

The majority of shipments were certainly nowhere near the scale of the Japan orders. Typically, they consisted of one or two machines and spare parts, such as the single machine shipped to the Webster City Steel Radiator

Company in Webster City, Iowa, on September 27, 1902. However, Porter-McLeod's distributors occasionally ordered six to ten machines to have a variety of sizes on hand when a possible buyer ventured to, say, Milwaukee or Buffalo and wanted to see the machines in action. The distributor could sell a machine or two off their showroom floor and then order replacements. In late 1902, Syracuse Supply Company's owners wrote that they hoped "to be in a position to do considerable business with your lathe line than we have done in the past."⁴⁸ Once in a while a manufacturer purchased more machines, as Pittsburgh-based screw maker Baird Machining Company did when they received ten lathes shipped by rail on July 31, 1909.

GLIMPSES INTO BUSINESS OPERATIONS: LETTERS OF COMPLAINT, 1892-1907

Though the breadth of its customer base and the record of repeat customers indicate the quality of the firm's workmanship, from time to time there were complaints. On February 26, 1892, for example, Porter Machine received this irate letter from the W. A. James & Company Iron and Wood-Working Machinery:

We are very much disappointed in your 20 x 8 lathe, it is very poorly finished and its fittings have not received any finishing at all. Now, while we want to do the fair thing by this lathe, we think it very doubtful if we can get our money back. Now we can sell the A. S. Wright lathe here for \$810 and make money on them. We want you to shave the price, or let some remain here on consignment. If you don't want to do that, order us where to ship.⁴⁹

Porter himself occasionally encountered similarly dissatisfied customers. He documented his sales trips in letters back to Hatfield, providing a glimpse of life on the road. One dated February 13, 1893, on stationary from the St. Denis Hotel in New York City, noted:

I did not reach here till tonight – have been in Hartford through the day. Last night I met a machinery man in the depot at Springfield that told me of a concern that was starting up in Hartford that would be in the market soon for lathes. They will send their man to Hatfield to see our lathes as soon as they are ready for them.⁵⁰

Porter soon received an order for used lathes but wanted them gone over carefully before they were shipped.⁵¹ He had just visited the Standard Tool Company, which had previously purchased eight used lathes, writing, “and there was not one of them that was right—and I tell you what—they made me ashamed.” When told “that our lathe was not worth a damn,” Porter noted that he “could not blame them.”⁵²

Another letter from the same trip dated February 18, 1893 found Porter in Pittsburgh’s Hotel Anderson, complaining that he’d arrived five hours late because his train had been snowed in on the way there. Porter continued, “I found the Baird people in the worst sort of a frame of mind, mad as hens about the lathe they wrote you about. I could just do nothing with them.”⁵³

Other letters from distributors provide evidence that the firm occasionally had trouble keeping up with its order book. On October 30, 1902, for example, a Michigan customer pleaded, “I write to ask if you have forgotten to make the screw and gear ordered September 12. We need these very bad and wish you would hurry and get them out.”⁵⁴ Cleveland machinery dealer Strong, Carlisle & Hammond, an important repeat customer, wrote on October 22, 1902, “Please advise when you will ship the lathes ordered. We thought surely you would send them no later than October 1st.” The dealer also wrote on November 11, 1902 urging the Hatfield firm to ship a machine directly to the Sandusky Automobile Company, a nascent automobile manufacturer in Sandusky, Ohio, saying, “You will please be very careful in testing this lathe for we are anxious to get them in line on your tools and we therefore want you to send only such a tool as you can guarantee satisfaction on as their opinion on this will decide future purchases.”⁵⁵

The larger the lathe order and the longer the distance traveled, the greater was the potential headache for the company. Complaints often centered on late deliveries of large orders. An exchange with L. Booth & Sons Machinery Merchants, one of Porter’s major West Coast distributors, illustrates the issue. A letter dated January 10, 1907 from their San Francisco office states, “I don’t know of any firm that we are dealing with that has so mercilessly disappointed us. You promised that car of Lathes in November. We are now on the 10th day of January and have not received a single word from you as to the shipment.” It closed by pointing out that a customer waiting for one of Porter’s largest lathes would most likely cancel the order. On April 22, 1907 this message came from Booth & Sons’ Los Angeles office:

We have just received the carload of lathes, which you shipped to us sometime in December. It is in pretty bad shape. The extent

of the damage we cannot ascertain until we go further into the car, but three of the lathes will have to be rebuilt... While this may be in part due to bad yard work on the part of the railroad crews, a great deal of it is undoubtedly due to the inferior manner in which you packed these lathes for shipment... This present breakage is going to be a very severe loss to us by withdrawing the machines from sale just at the very time we need them.⁵⁶

WORKERS AND JOB SEEKERS, 1880s-1900s

Sadly, only a few years of payroll records have survived. The company employed no more than thirteen people in the first nine months of 1887. In June of that year, total payroll was \$177.59, with several days when nobody worked. In July, the factory closed down. In August, payroll for ten employees totaled \$332.60. During that month, five of the ten workers put in at least 250 hours each. In September, total payroll came to \$432.11. Something happened in October that caused the workforce to nearly triple to thirty-eight people; payroll totaled \$919.66. Thereafter, the employment rolls fell to sixteen in November and fifteen in December. During the next year, employment stayed right around twenty workers. The highest monthly payroll reached \$715.77 in September; the lowest of \$445.70 came in December. During 1889, the workforce stayed under twenty until the last three months of the year, when it reached a high of twenty-three in November and December. The year's highest monthly payroll of \$815.84 came in December, its lowest of \$443 in June.⁵⁷

German immigrant George Eberlein worked at the company from 1890 to 1901 after having learned the blacksmith and machinist trades in Bavaria, Germany. Born on November 10, 1866, at age twenty he entered the German army and, two years later, worked in his father's blacksmith shop. By 1889, he oversaw a machine shop in Germany. Then, in March 1890, he emigrated to the United States, settled in Hatfield, and found work at Porter. Soon afterwards, he bought property on Main Street and opened a blacksmith shop where he also assembled tobacco trucks, dump carts, and farm wagons. Eberlein became a U.S. citizen in 1900. That Porter routinely put his blacksmithing skills to good use is evidenced by receipts for shoeing totaling \$6.10 in April, May, and August of 1909.⁵⁸

A string of good hires boosted the firm. Among them was Malcolm Crawford, son of Henry and Lydia Maria (Lowell) Crawford. Born in Putney, Vermont, Crawford studied at Black River Academy, where President Coolidge was a fellow student, and at the Glenwood Classical Seminary in

West Brattleboro. He worked in the grocery business and afterwards was engaged in raising and packing tobacco. Crawford then came to Hatfield, where he is listed in the 1900 census as a laborer at Porter Machine. He next moved into the Porter Machine office as bookkeeper. After twelve years, he left Porter to become a farmer, but later returned to the company.

In 1901, with McLeod three years into ownership of the firm, both employment and payroll had grown. In that year, an average of forty-six persons a month were employed in the Hatfield facility. Payroll reached over \$1,700 by year-end. Two workers earned the top wage of \$2.50 a day, but the majority made under \$2.00. In 1902, the last year for which there are payroll records, employment reached fifty-one in April; it never fell below forty-six for the year. In the first month of 1902, total payroll hit a new high of \$1,920; during three additional months, total monthly wages exceeded \$1,800. For daily wages, four workers received the highest level, \$2.50; three workers received \$2.25; eight earned \$2.00.⁵⁹

Numerous letters from job seekers indicate that the company was an attractive place to work. Since letters like this are generally rare, that so many survived suggests that there were probably quite a few more individuals who wrote to the company in a similar vein. The surviving letters, from skilled and unskilled applicants, provide a fascinating glimpse into how workers found their way to Hatfield. On August 12, 1892, E. A. Pollard of Northampton, Massachusetts wrote, "I hear you want a man in your mill to do millers work. I am used to the work and can furnish recommend [sic] if so desired. Will come and see you tomorrow."⁶⁰

Eleven days later, E. A. Frischmann from Middlefield, Connecticut reminded McLeod, "I sent you a letter last spring about learning the machinist trade and hoped you would give me the first show as I am out of work just now. I thought I would drop you a few lines to see if you had any show yet."⁶¹ On January 16, 1893, Henry B. Whitney of Florence, Massachusetts, inquired, "Will you take me in to learn the tool makers trade or the machinist trade as I would like to learn one of the trades? I was over there about five weeks ago."⁶²

In early 1899, Porter-McLeod advertised for a shop foreman in the *American Machinist*. It generated several responses. A. T. Gifford of Springfield wrote, "There can be no possible doubt that I can fill the position. I have been a foreman for some years and am a first-class machinist and tool maker."⁶³ From Bridgeport, Connecticut came this reply:

I am a thoroughly experienced and up to date foreman, thoroughly understanding the manufacture of engine lathes and machine

tools of all kinds. Am 32 and have had 14 years experience and understand handling men to the best advantage and am a hustler and not afraid of work. Can furnish references and want \$4 per day.⁶⁴

Even McLeod's old Worcester acquaintances looked to him for a job. On February 28, 1899, James E. Welch, who resided at 71 Penn Avenue in Worcester, asked about the foreman's job. He wrote:

Friend Hugh your brother George was asking me about a man that was boss in the shop that I am working in but I don't seem to know him. George said you were looking for a man to take charge of your shop. Now Hugh I would like to get a chance for that job if you thought I was able. I would try mighty hard to suit you for two reasons. One for myself, which is natural and the other to show that I still appreciate what you did for me. I have had a good deal of experience since last you saw me and I am willing to hustle... I think I am a better man now than I was five years ago.⁶⁵

Several letters arrived from workers at Robb Engineering, a metals manufacturer in Amherst, Nova Scotia, where Hugh McLeod's brother John resided. Originally a tinsmith shop, the factory manufactured boilers, electric engines, locomotive engines, and small generators. One job seeker wrote that McLeod's brother John had told him McLeod sought workers. "I have worked at Robb Engineering Co. for a year. I run a drill for about eight months. I have had little experience at lathe work. I would like to get in your shop to get some experience." On May 4, 1899, Robert J. McLoskey wrote:

Having learned from John McLeod that you desired the services of a machine hand I respectfully offer myself as an applicant for the situation. I have been in the employ of the Robb Engineering Co. for two years and have a fair knowledge of machine work having run machines for over one year and the remainder of the time in fitting. Please mention wages in reply.⁶⁶

Albert Rivett wrote from Toronto on April 10, 1905. He'd worked over six years in the Putnam Machine Works, a longtime Fitchburg, Massachusetts, lathe maker. His years there included time as an apprentice. He returned to Toronto and worked in Landry Machining on one of Porter's lathes. "Hoping

you can find me a position in your works,” he wrote. “I am anxious to leave this place.” There is no indication that he got a job. One wonders whether Hugh McLeod ever saw the handwritten note, as Rivett’s story would have resonated.⁶⁷

A 1907 letter from Polish immigrant Frank Kugler began, “Pardon me for my daring to bother you about my private affairs.” He continued:

My wife and four little boys are living in Poland and my wishes are to have them come here to live with me and they are willing, but I shall not send for them before you advise me to. I am willing to work for you as long as my services is needed. And in case you approve my intentions, I would want a tenement and I hope will let me have one you have vacant now.⁶⁸

In 1910, Kugler, age 43, resided in Hatfield with his wife Rosie, age 42, and seven children. His three-year-old daughter Stella and six-month-old son Edward were born in Massachusetts. He appears in payroll records between 1908 and 1910, but is listed as a farmer and not a Porter employee in the 1910 Census.⁶⁹

One individual who’d moved from Hatfield hoped a job offer might hasten his return. Robert Bardwell wrote on August 5 and again on August 22, 1907. In his first letter he let McLeod know, “Owing to my Father’s death this summer, which leaves my Mother alone, I shall be obliged to return to Hatfield to live this Fall and would like very much to get a job in your machine shop. . . .” He worked at the American Pin and Brass Goods Company in Waterbury, Connecticut, and claimed to be “thoroughly capable to set up and do the work on such lathes as I have used.” Bardwell wanted to stay in machining and did not “like to take up farm work, if I can get anything else.” In the second letter he wondered whether McLeod had responded, noting that he worried that children might have stolen his mail.⁷⁰ A check of the Federal Census indicated that Bardwell did not reside in Hatfield as of the 1910 census.

WORKER HOUSING & WAGES, 1891-1910

Wells and Wells’ *A History of Hatfield in Three Parts* (1910) contains evidence that the firm rented housing to some of its workers. One of the three sections of the book is devoted to descriptions of Hatfield houses. When discussing Porter Avenue, which ran off Prospect Street, near the Porter-

Mr. Porter -

Pardon me for my daring to bother you about my private affairs but I hope you will give ^{me} advise just as a father would to his son.

My wife and four little boys are living in Poland and my wishes are to have them come here to live with me and they are willing but I shall not send for them before you advise me to. I am willing to work for you as long as my services is needed and in case you approve my intentions I would want a settlement and I hope will let me have ^{the} one you have vacant now.

Hoping your decision will be favorable to me I am yours respectfully

Frank Kugler

P.S. Please state your decision in writing so friends of mine who have wrote this will translate for me.

ANSWERED

1907 Letter from Frank Kugler to Jonathan Porter

Image courtesy of the Hatfield Historical Museum, Hatfield, MA

McLeod factory, the authors state that five houses were owned by Porter Machine Works.⁷¹

How were these houses obtained? Who lived in them? Letters to Porter from Anna H. Hubbard in late 1891 and early 1892 offer a clue. In one dated

March 25, 1892, the discussion is focused on property Hubbard owned. She had furniture in the house, and they were trying to figure out what to do with it and ultimately with the dwelling itself. "I would prefer to rent only the L tenement and one room upstairs" with four acres of land for \$50 a year, she wrote. Alternatively, she suggested renting "the tenement for \$2.50 a month." She continued:

Another year the entire house, barn, and land can all be rented together, should anyone want the whole place. I supposed you proposed renting the house for one of your workmen. Possibly you know of a very small family who would like a small tenement and cheap rent.⁷²

In 1910, Arthur Dube, who migrated from Canada in 1890 and worked as a toolmaker in the lathe shop, rented the company house he lived in with his wife Exailea and four young children. Albert Matthews, age forty-four, worked as a machinist and lived in one of the Porter Street houses with his wife, four sons, and a daughter. Next door lived twenty-five-year-old German immigrant machinist Lawrence Schmitter with his wife and three children. Charles Winter, another German immigrant, along with his wife and three children, were Schmitter's neighbors.

Forty-five year-old machinist Benjamin Graves, his wife, and two children also lived in the neighborhood. Russian-born Julius Kuchela arrived in the U.S. in 1902 at age eighteen. He and his wife Stefania, born in Poland in 1891, were boarders in one of the Prospect Street dwellings. In 1910 he was a laborer in the lathe shop. In 1940, Kuchela, still employed at Porter-McLeod, was a machinist. Stefania was a tobacco worker and their daughter Stasia a tobacco inspector. Charles Winter, seventy-four in 1940, no longer worked. His son, Charles Jr., and daughter Delia lived with him in Prospect Street housing. Charles Jr. worked as a machinist at Porter-McLeod, and Delia was a telephone operator.⁷³

No records exist that indicate the amount of rent that the company charged for housing. Might low rent have helped to offset low wages? By Massachusetts standards, wages paid at Porter-McLeod appear low. However, they surpassed what Hatfield-area farm laborers were paid. Across the Commonwealth, the average farm laborer earned \$1.25 per day in 1878 and \$1.37 per day in 1881. In 1872, skilled pattern makers in the state earned an average weekly wage of \$17.60; this reached \$18.10 in 1881. Machinists averaged \$14.40 a week in 1872 and \$17.09 in 1881. Factory laborers averaged \$9.15 a week in 1881. Statewide, lathe hands in machine shops in 1895 worked on average fifty-

nine hours a week at an average daily rate of \$1.47 a day, with a high of \$1.90 and a low of \$1.00.

In 1900, Massachusetts machinists worked on average fifty-four hours a week with rates of pay as follows: average, \$2.33; high, \$3.15; low, \$1.35.⁷⁴ Only a handful of Porter McLeod employees made \$2.50 a day in 1901; the majority made \$2.00 or less.⁷⁵ In May 1902, workers circulated a petition requesting that the company reduce the workday to nine hours and continue to pay them for a ten-hour day. Forty-six workers were on the firm's books that month, but only twenty-six signed the petition. There appeared to be no reprisals for signers, as everyone was still listed in the company's June and July pay records. Pay records after this date have not survived.

INDUSTRY VOLATILITY AND LATE DELIVERIES, 1890-1920

The industry's ups and downs challenged even the best of firms. An 1893 letter from the Lodge & Davis Machine Tool Company of Cincinnati, Ohio, cancelling an order makes this clear. Brief and to the point, it read: "I am sorry, as orders are scarce."⁷⁶ Another letter to one of Porter-McLeod's distributors in Syracuse, New York from the American Gasoline Motor Company underscores the vicissitudes of the industry. Upset that a needed lathe would not be shipped on time, the author wrote:

This is a distinct disappointment and very unsatisfactory after the specific promise that the lathe would be shipped no later than the 12th. We call your attention to the fact that we were influenced to place our order for this tool against other makes because of the absolute promise of delivery on the date mentioned, and we must request that you ask the manufacturer if he has any tool of this description that will come along ahead of the one that he is planning to ship us, that he apply it on our order giving it preference.⁷⁷

Similar communications dot the correspondence files. From the Duthie and Daggett Tool Company, Sellers of Fine Tools, Special and Experimental Machinery, Indianapolis, Indiana, there's this: "What has become of our 24 in. lathe? We have several parties waiting to see same and am afraid we will lose the customers if we don't get it soon. As I told them the Lathe would be here the first of the month, they are getting a little impatient. Hurry as quickly as possible, and oblige."⁷⁸

From Dayton, Ohio, one of the company's distributors, Callendar & Patterson, characterized as "Dealers in Iron and Woodworking Machinery, Mechanics Tools, and Manufacturers' Supplies," wrote:

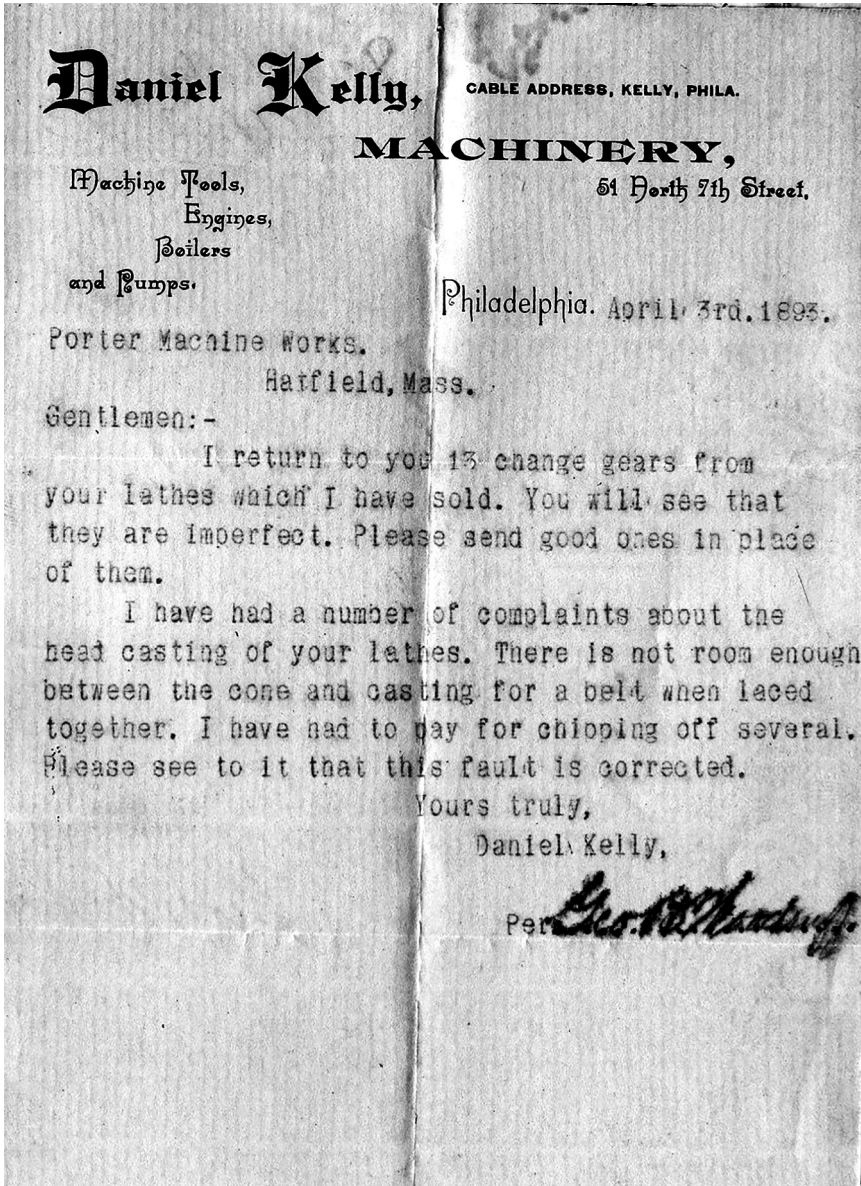
We have evidently "struck a lead" on your Lathes, and now if they will only show up well when we get them to running, we can sell more of them. All that we have ordered so far are sold, and we now have a call for a 16 x 6 compound, with Taper Attachment. What will you furnish it for...? If we get this order and those we have sold behave well, we will put one or two into our stock at once.⁷⁹

Company records indicate that Porter-McLeod typically built one size of machine at a time, a common procedure for companies of Porter's size. Completed but unsold machines were placed in storage in the machine shop, in the Shattuck building, or in a space referred to as "Carl's Station." Members of the Carl family were in the earliest group of German immigrants to arrive in Hatfield in the mid-1800s. By 1910, Jacob Carl, one of the three sons of Christian Carl, who emigrated from Germany, owned one of Hatfield's tobacco warehouses and sorting shops. He lived on School Street near both Porter and McLeod. It is likely a deal was struck among the three for excess machines to be stored in a corner of the warehouse.

In late February, 1893, there were sixteen lathes on hand of varying sizes. In April 1893, sixteen lathes were stored while nine machines shipped. In May, fourteen lathes were stored with just four shipped, while in June, twenty-one lathes were stored, with six shipped.⁸⁰ At the start of December 1893, twenty finished machines of varying sizes were on hand; in the middle of the month, nine of these were shipped to a Chicago distributor. The storing of machines and inability to quickly meet customer demands led to trouble with customers and distributors.

A series of letters from one distributor, the Philadelphia-based Daniel Kelly Machinery Company, demonstrates this. On April 3, 1893, Daniel Kelly wrote: "I return to you thirteen change gears from your lathes which I have sold. You will see that they are imperfect." For good measure he concluded:

I have had a number of complaints about the head casting of your lathes. There is not enough room between the cone and the casting for a belt when laced together. I have had to pay for chipping off several. Please see to it that this fault is corrected.⁸¹



Letter of Complaint from Daniel Kelly, April 3, 1893

Image courtesy of the Hatfield Historical Museum, Hatfield, MA

Nine days later, Kelly wrote asking about a lathe he had ordered, asking why it had not yet been shipped. He concluded, "Please hustle." This letter is followed three days later by another inquiry about the missing lathe. It would appear that the bane of a machinery builder's existence, the inability to complete orders on time, afflicted Porter Machine. Kelly wrote:

Please refer to your letter dated March 27th where you say you can furnish a 18" x 8" rise and fall rest lathe upon receipt of the order. I ordered that lathe at once and now you say you cannot ship it till a new lot is completed. I fail to comprehend.

Kelly was not done yet. On April 28, he complained that Porter's delay had cost him, and by extension Porter, a sale. Rubbing salt into the wound he wrote, "I am constantly hearing complaints and kicks about your lathes. There is always something wrong. Every man who buys a Porter lathe swears that he won't have another as a gift." He concluded by letting Porter know he would no longer sell their machines.⁸²

An April 30, 1909 letter from Baltimore-based Carey Machinery and Supply Co., one of Porter's largest distributors, illuminates the problems many machine builders had in maintaining high quality standards. This issue still plagues firms today. John Carey, Jr., director of the company, informed Porter-McLeod that he'd sent his best troubleshooter out into the field to visit a firm complaining about a lathe. Carey let the company know that with one exception "we think this is the first complaint he has ever come across" regarding the Hatfield-built lathes. Since the aggrieved party had the machine on his shop floor for nearly two years, Carey found it difficult to blame Porter. However, Carey offered a cautionary note, urging Porter-McLeod to make this customer happy:

As you know this lathe was purchased at a time when the factories were all overrun with work, and probably your own factory and others had never been as busy before, and it is of course possible under these circumstances that defects like these could have escaped attention in a shop. We would do nothing on account of the long delay in making definite claims, but this would simply mean losing a good customer on general principles and giving a black eye to your lathes in a section of the country where they have been very much used.⁸³

To summarize the business challenges, the factory often produced lathes without in-hand orders and then stored the machines at some expense. These machines represented wages paid out to employees and costs associated with buying things like the machine base from a local foundry and tooling and other things needed to build the lathes. A customer who requested the particular size of machine being built that week or one completed and in storage received it straightaway. If, as was the case with Daniel Kelly Machinery, one wanted a machine that was currently unavailable, one stewed and then perhaps severed the relationship, as Daniel Kelly did. A wait might stretch to two or three months. This represented a risky business model for a firm like Porter, which usually had little cash on hand.⁸⁴

Despite quality concerns and problems filling orders, shipping records for the late nineteenth century and early twentieth century indicate that Porter's customers comprised a broad-based manufacturers' *Who's Who*. of paper mills, steel mills, sugar refineries, lumber mills, rail car makers, start-up automobile companies, firms making car engine parts, horseshoe makers, other machinery builders, foundries, bicycle makers, iron smelters, wire makers, valve and plumbing supply companies, nail makers, and producers of steam pumps bought the Hatfield-built lathes. Automobile companies on the list included American Gasoline Motor Company in Baldwinsville, New York; The Autocar Company, Ardmore, Pennsylvania; Locomobile Company of America, Bridgeport, Connecticut; Vonnegut Motor Company, Indianapolis, Indiana; Matheson Motor Car Company, Forty Fort, Pennsylvania; and, the Geneva Automobile and Manufacturing Company, Geneva, Ohio.⁸⁵

One repeat local customer, the Stevens-Duryea Car Company, built automobiles in Chicopee Falls, Massachusetts between 1901 and 1915 and from 1919 to 1927. McLeod was very familiar with the company, having purchased at least one Stevens-Duryea car himself. In March 1905, four secondhand lathes were shipped to Charles Koegel & Sons in nearby Holyoke, Massachusetts. Another local purchaser, the Fisk Tire Company, also headquartered in Chicopee Falls, employed more than six hundred people in 1910 and more than three thousand during World War I. By 1917, Fisk employed 4,500 people and continued to purchase Hatfield-made machines.

Porter-McLeod also sold lathes to the Chase Turbine Company in Orange, Massachusetts and Crompton & Knowles Loom Works, with factories in Worcester, Philadelphia, and Providence. The product of a consolidation between two competing Worcester companies, by 1920 Crompton & Knowles comprised the largest corporation building looms for textile manufacturers in the world. Selling machines to the company certainly put

Porter-McLeod in the big leagues.⁸⁶ Porter-McLeod machines were also sold in Ayer, Boston, Chicopee, Chicopee Falls, East Cambridge, Easthampton, Greenfield, Holyoke, Lowell, and Millers Falls, Massachusetts; Bridgeport and Windsor Locks, Connecticut; and Providence, Rhode Island.⁸⁷

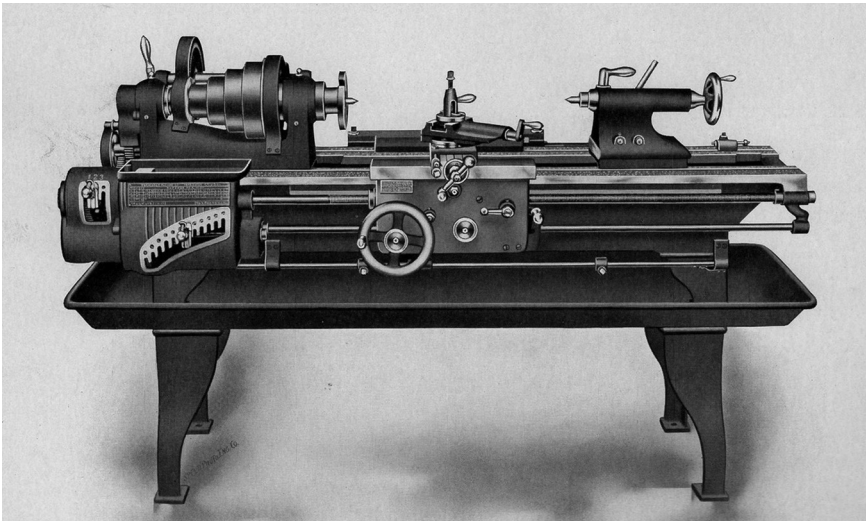
PATENTS, INNOVATION & DIVERSIFICATION, 1896-1950

As for lathe innovations and the development of potential new product lines, Hugh McLeod successfully filed for at least three patents. In December, 1896 he received a patent for a friction clutch that he had filed for in June of that year. A patent request filed in 1904 for a pulley crowning attachment for lathes came through in 1906. McLeod received yet another patent, filed in June 1911 and granted in January 1915, for a combined trunk and seat that would be placed in the back of automobiles. The description read as follows:

My invention relates to improvements in seats of the convertible type, and takes the form of a combination chest, box or trunk and seat, or of a chest, box or trunk that can be changed to a seat, and back again into a chest, box or trunk, the same being particularly designed and intended for use in connection with automobiles.⁸⁸

Impressed by Porter-McLeod—which by the late 1920s employed one hundred people following a few lean years at the end of World War I—historian Orra Stone noted something quite unusual for a firm of its size: it maintained a research department “for the purpose of making improvements on existing machines.”⁸⁹ When he visited the company, a redesign of its entire line of lathes had just commenced. Simultaneously, a line of specialized machines for the textile industry and machines for the cutlery industry were in production. Typically, fabric designs were etched onto copper rolls used for printing cloth, with the expensive roll tossed away when the design had run its course. A new, high-speed machine removed the etching from the roll so that it could be reused.

Robert Johnson of Longmeadow, Massachusetts and Earle M. Chase of Springfield, Massachusetts applied for a patent on the roll turning machine on May 29, 1928. After their patent (no. 1,811,504) was granted on June 23, 1931, the two men assigned production of the machine to Porter-McLeod. It’s likely that Johnson and Chase worked for a few years with Porter engineers to perfect the design of this machine for “turning and dressing



Engraving of a Porter-McLeod Lathe, 1904

Image courtesy of the Hatfield Historical Museum, Hatfield, MA

hollow cylindrical objects and more particularly to the means or mechanisms for centering and holding objects while being turned or dressed.”⁹⁰

In 1929, the firm built mirror-finishing machines of its own design for use by cutlery manufacturers. According to Stone, the new product “awakened keen interest among the cutlery men.”⁹¹ An article in *The Springfield Sunday Union and Republican* said this about the machine: “The device produces finish on stainless steel knives and other stainless steel ware and introduces economies and rapidity of production by supplanting the method of hand-finishing, which has generally been in vogue hitherto.”⁹² To make this new production possible, the main factory produced lathes while, according to Stone, the building “formerly occupied by the C. S. Shattuck Arms Co., bought by the Porter company in 1924,” was “devoted to the production of specialty machinery.”⁹³

Diversifying further, Porter-McLeod bought the Highley Machine Company of Norwalk, Connecticut, a maker of steel cutting saws, and manufactured the saws in Hatfield through the 1950s. During World War II, however, the federal government directed the company to focus on lathe production. The workforce grew to over two hundred, with machines shipped to defense plants across the United States and to Great Britain, the Soviet Union, Australia, and New Zealand. Like other Connecticut River Valley machinery builders, the

Hatfield plant worked around the clock six days a week. From late 1941 to 1946, a satellite factory even operated on King Street in Northampton.⁹⁴

One testament to the firm's reputation was its ability to attract highly skilled employees like Aurin Wood, Porter's design engineer from 1928 through at least 1933. Serving originally as superintendent at the company from 1907 to 1915, Wood left Hatfield to become superintendent of the Whitcomb-Blaisdell Machine Tool Company in Worcester, where he'd previously worked.⁹⁵ He then worked for the federal government during the First World War, overseeing military production at the Osgood-Bradley Car Company of Worcester and, from 1919 to 1928, served as production superintendent at Chevrolet Motors in Flint, Michigan. He returned to Hatfield to become Porter-McLeod's factory manager and design engineer at the end of 1928.⁹⁶

THE DEMISE OF CONNECTICUT RIVER VALLEY INDUSTRIAL ECONOMY

After the boom years of World War II, nearly all Connecticut River Valley machinery builders and metalworking firms suffered layoffs and sharp ups and downs. On August 7, 1954, *The Springfield Union* carried an article headlined "Report Firm in Hatfield to Quit Business." The day before, rumors had abounded. According to the news story, "The Hatfield machine shop, which handled much war business during World War II was reported closed for the annual vacation of employees and officials were not available for comment."⁹⁷ Veteran workers were concerned because they had received no notice about when to report back to work, as they'd been promised. They expressed concern that the factory "may be considering ending operations in Hatfield," according to the article.⁹⁸ The factory reopened, but worry permeated the air.

Hugh McLeod's son, John P. McLeod, had become vice president of the business in 1941 at age twenty-seven and, shortly thereafter, rose to president, a position he held until the firm closed in the early 1970s. While running the company, the younger McLeod played an active role in the industry as a member of the National Machine Tool Builders Association and the Associated Industries of Massachusetts. He died in Montecito, California, on July 23, 1988, at age 74.⁹⁹

In 1966, a smiling John McLeod, still president of the company, appeared in a photograph with R. F. Caleda, newly appointed agent for the company in Milan, Italy. Porter and Caleda were in Milan at a trade show. A 1967 *Daily Hampshire Gazette* article noted that "[f]or more than 30 years, the Porter

McLeod Machine Tool Company has been one of the largest producers of polishing, glazing, and mirror finishing machines for use in the cutlery and allied industries.” The specialty machine pictured—not a part of Porter-McLeod’s core business in 1940—could be found in large cutlery factories in the United States, Western Europe, Canada, Australia, and Mexico.

A new line of polishing machines came on the market in 1965. According to McLeod:

The new polishing machines are somewhat similar to the previous models but have twice the production capacity of their predecessors. Since their cost is not much greater and they occupy only a little more factory space than the older model, we feel very confident that they will continue to be extremely popular with manufacturers particularly in foreign countries where the relative high price of American machinery has always been a deterrent to sales.¹⁰⁰

It appears that managers were scrambling to keep the facility open. To keep work in Hatfield, the company rebuilt and resold their old machines and those of other manufacturers as well. They also took on subcontracting work for other manufacturers. McLeod reported that:

These three phases of our present operations—our own proprietary lines, our machinery-rebuilding program, and our subcontract operations— give us far greater diversification than we have had in the past. We anticipate that 1966 will be a year of continued expansion and progress.¹⁰¹

Across the state and region, metalworkers suffered through layoffs and devastating plant closings as the domestic machine tool industry and manufacturing more generally collapsed. Manufacturing as a percentage of employment in the Commonwealth fell steadily. In 1950 it stood at 40.7%. By 1965 it had dropped to 33%; it then fell to 27.2% in 1972 and to 24.3% in 1982.¹⁰²

Machinery building and precision metalworking had prospered in the Connecticut River Valley from the late nineteenth century through the early 1960s, long after textile and apparel cities like Holyoke, Fall River, Lawrence, and Lowell ceased their economic growth. Now, metalworking firms could not escape a similar fate. Between 1969 and 1975, 12% of manufacturing jobs in the state disappeared each year. Fully half of greater Springfield’s

manufacturing facilities closed between 1950 and 1987. Many of these closed firms had once been Porter-McLeod customers. Porter-McLeod was another small business shuttered by the whirlwind collapse of the nation's machinery builders.

By the early 1970s, Porter-McLeod Machine Works had ceased operations. Though details of an official closing date are difficult to come by, a public auction of machines and tools took place in the spring of 1973. An auction notice ran in *The Hartford Courant* on March 18 of that year. To dispassionate observers, warning signs had appeared, such as the shutdown of several Springfield manufacturers and of the Armory in 1968. Ownership changes among leading companies, including the American Bosch and its next-door neighbor Van Norman Industries, dramatically shifted most business decision-making and research and development efforts outside the region.

As the United States machine tool industry restructured, thousands of workers lost their jobs. Although the biggest losses came between 1975 and 1995, when total industry employment declined from 88,000 to 57,000 and production workers' jobs fell from 57,400 to 35,700, Porter-McLeod likely gasped for air throughout the 1960s. By then Japanese and German machinery builders were competing for global market share as well as the U.S. domestic market. How far did the industry fall? The United States went from a net exporter to the world's largest importer of machine tools.

* * * * *

Built in 1886, the one-and-a-half story Porter McLeod Machine Shop at 10 Prospect Court is on the National Register of Historic Places. It is a part of Hatfield's Mill-Prospect Street Historic District.¹⁰³ When Porter-McLeod closed its doors in the early 1970s, ownership of the property stayed in the McLeod family for approximately ten years, before Mill River Development Company purchased the land and buildings in 1980. Ownership changed once more in 1989, when Richard Rescia and Stanley Zewski of Northampton bought the property, hoping to turn the building into "affordable apartments and workspaces for artists and craftspeople."¹⁰⁴ When the new owners entered the building they discovered the company records that provided the basis for this research. According to Rescia:

When the company went out of business, I think they didn't want to spend any money cleaning out stuff, so they just left everything there. The age of some of the stuff—back to 1888—we knew it

had to be of interest to somebody. There were quite a few boxes of stuff, and none of it was organized.¹⁰⁵

The strong shop-floor skill base, combined with innovative and forward-looking employers, once provided the Connecticut River Valley region with a competitive advantage. However, in the face of industrial decline, even a very clever firm in Hatfield could not withstand the negative course of events that affected manufacturers nationally. Though the company certainly benefitted from the strength of its manufacturing environment when things went well, in the end, no matter how ingenious, Porter-McLeod could not outrun history.

**Table 1. Layoffs/Closings of Springfield-Area
Metalworking Companies 1970 -1990**

Company	Status	Jobs Lost	Closure Date	Years Open	Peak Emp. since 1960
American Bosch	Closed	1,500	2/86	80	1800
Chapman Valve	Closed	25	6/86	100	2700
Columbia Bicycle	Closed	250	6/88	80	1000
Kidder Stacy	Closed	90	9/89	100	325
Northeast Wire	Closed	35	1990	22	125
Oxford Precision	Closed	60	9/86	40	120
Package Machinery	Closed	400	9/88	100+	950
Plainville Casting	Closed	65	4/87	65	75
Portage Casting	Closed	60	8/86	36	100
Rafferty Steel	Closed	50	11/85	40	--
Rexnord Roller Chain	Closed	200	6/89	100+	675
Springfield Foundry	Closed	75	4/86	100+	285
Van Norman	Closed	27	10/83	90	1200
Van Valkenberg Plating	Closed	40	7/86	100+	135
Wico Prestolite	Closed	250	3/82	80	675
Atlas Copco	Layoffs	565	1980s	70+	1000
Easco Hand Tool	Layoffs	2,000	1980s	75+	2200
Storms Drop Forge	Layoffs	125	1980s	60+	250

Table 2. Global Machine Tool Market Share by Percent among the Top Three Producers

	1964	1970	1975	1980	1985	1990	1996	1999
United States	25.1	18.5	17.3	18.1	12.6	6.7	12.6	12.8
Japan	6.4	14.2	7.8	14.4	24.8	23.2	23.6	23.0
Germany	15.9	18.9	17.6	17.8	14.8	18.9	20.1	21.0

Hatfield Population

Year	Pop.	Year	Pop.
1850	1,073	1940	2,216
1860	1,337	1950	2,179
1870	1,594	1960	2,350
1880	1,495	1970	2,825
1890	1,246	1980	3,045
1900	1,500	1990	3,184
1910	1,986	2000	3,249
1920	2,651	2010	3,279
1930	2,476		

HJM

Notes

1. Hampshire Manufacturing Company was open from the early 1890s to at least the early 1920s. I found advertisements for their products in trade publications through 1922. Employees of the firm are identified in the 1910 and 1920 Hatfield federal census, but none are listed in the 1930 census. Bay State Screw Company started in Springfield in the 1880s and moved to Hatfield in the early 1900s. Employees of the firm are identified in the 1910 Hatfield federal census, but there are no such listings in the 1920 census.

2. For other *Historical Journal of Massachusetts* articles by Robert Farrant on industry in the Connecticut River Valley, see "Skilled Workers' Union Organizations in Springfield: The American Bosch Story," *Historical Journal of Massachusetts* 24, no. 1 (Winter 1996): 47-67; "The Roots of Connecticut River Deindustrialization: The Springfield American Bosch Plant, 1940-1975," *Historical Journal of Massachusetts* 31, no. 1 (Winter 2003): 90-116; and "The Rise and Demise of the Connecticut River Valley's Industrial Economy," *Historical Journal of Massachusetts* 46, no. 1 (Winter 2018): 2-21.
3. Deb Blodgett, "Porter-McLeod Machine Tool Co. (Porter Machine Works) Business Records Inventory, Hatfield, MA," December 2016, Hatfield Historical Museum, Hatfield, MA. <https://docs.google.com/spreadsheets/d/1O-Tw4mIFQEVTim8SwLuXuhNfbw0RYQcNd880t5R-rXk0/edit#gid=1527913379> (accessed March 7, 2018).
4. Kathie Gow, "For every mouse you see, theree are usually more . . ." *Hatfield History Museum* (blog), February 1, 2017. hatfieldhistory.weebly.com/blog/for-every-mouse-you-see-there-are-usually-more (accessed March 7, 2018).
5. John G. Palfrey, *Statistics of the Condition and Products of Certain Branches of Industry* (Boston: Dutton & Wentworth, 1846), 158-159; Massachusetts Historical Commission, *Reconnaissance Survey Report* (1982), 9.
6. Daniel White Wells and Rueben Field Wells, *A History of Hatfield in Three Parts* (Springfield, MA: F.C.H. Gibbons, 1910), 234.
7. *The Springfield Union*, August 15, 1957, 29.
8. Compared with Hatfield in the 1850s, in the same period nearby Greenfield nourished a lively manufacturing sector. Woolen mills employed forty people. A pig iron furnace, a company producing ploughs and other agricultural implements, a bookbindery, two tinware manufactories, six master builders, four blacksmith shops, a brickyard, a coffin builder, and a planing mill turning out door and window frames helped to diversify the town's economy. See Oliver Warner, *Statistical Information Related to Certain Branches of Industry in Massachusetts for the Year Ending May 1, 1865* (Boston: Wright & Potter, 1866), 213-215, 298.
9. Derwent Whittlesey, "The Springfield Armory: A Study in Institution Development" (Ph.D. diss., University of Chicago, 1920), 265.
10. David R. Meyer, *Networked Machinists: High Technology Industries in Antebellum America* (Baltimore: The Johns Hopkins University Press, 2006), 3.
11. Jacob Abbott, "The Armory at Springfield," *Harper's New Monthly Magazine* (July 1852), 146.
12. Meyer, 260.
13. Robert Farrant, "Neither a Sleepy Village Nor a Coarse Factory Town: Skill in the Greater Springfield Massachusetts Industrial Economy, 1800-1990," *Journal of Industrial History* 4 (2001): 24-47; Nathan Rosenberg, ed., *The American System of Manufactures: The Report of the Committee on the Machinery of the United States 1855 and the Special Reports of George Wallis and Joseph Whitworth* (Edinburgh, 1969), 1963; Moses King, *King's Handbook of Springfield, Massachusetts: A Series of Monographs Historical and Descriptive* (Springfield: James D. Gill, 1884), 188.

14. J. Alexander Bishop, *A History of American Manufacturers, 1608-1860, Volume III* (Philadelphia: Edward Young & Co., 1868), 338-343.
15. Joseph Wickham Roe, *English and American Tool Builders* (New York: McGraw-Hill Book Company, Inc., 1916), 109.
16. Robert Forrant, "Too Many Bends in the River: The Post-World War II Decline of the Connecticut River Valley Machine Tool Industry," *Journal of Industrial History* 5, no. 2 (2002):71-91; Robert Forrant, *"Metal Fatigue": American Bosch and the Demise of Metalworking in the Connecticut River Valley* (Amityville, New York: Baywood Publishing, 2009), 24.; Rosenberg; Francois Weil, "Capitalism and Industrialization in New England, 1815-1845," *Journal of American History* 84 (1998): 1334-54.
17. Orra Stone, *History of Massachusetts Industries, Volume I* (The S.J. Clarke Publishing Co., 1930), 573.
18. Writers' Program of the Works Progress Administration, Springfield, Massachusetts, City of Springfield, 1941, 57.
19. Meyer, 42; Whittlesey, 265.
20. Felicia Deyrup, *Arms Makers of the Connecticut Valley* (Northampton, MA: Smith College Studies in History Series, 1948), 55. On pp. 3-5 of this study, Deyrup discusses the concept of a "clearinghouse."
21. Stone, 718.
22. Porter had an older sister, Augusta, who was born in 1848. His father owned real estate worth \$3,500 in 1850 and \$12,000 in 1870, with a personal estate valued at \$2,400.
23. "Hatfield Reconnaissance Report, 2009," Massachusetts Department of Conservation and Recreation, June 2009. http://hatfieldhistory.weebly.com/uploads/4/1/6/4/41642_hatfield_heritage_landscape_report_june2009.pdf.
24. Seventh Census of the United States (1850); Ninth Census of the United States (1870).
25. David Hounshell, *From the American System to Mass Production: The Development of Manufacturing Technology in the United States, 1830-1932* (Baltimore: The Johns Hopkins University Press, 1984), 34-35.
26. Wells and Wells, 364.
27. U. S. Patent Office, Specifications of Patents, November 4, 1879, 38-39.
28. Massachusetts Historical Commission, *Town Report, Hatfield*.
29. Wells and Wells, 364; *Public Documents of Massachusetts*, Public Document 21 (1918), 18.
30. Charles Forbes Warner, *Picturesque Hampshire: A Supplement to the Quarter-Centennial Journal* (Northampton, 1890): 104.
31. William R. Cutter and William F. Adams, eds., *Genealogical and Personal Memoirs Relating to the Families of the State of Massachusetts*, Vol. 4 (Lewis Historical Publications, 1910), 2227.
32. Obituaries appeared in *Iron Age*, July 28, 1921, 237 and the *Iron Trade Review*, July 28, 1921, 246. A death notice appearing in the *Boston Post* on July 22, 1921 stated that Porter was "widely-known as an inventor and founder of the Porter Machine Works." *The Springfield Daily Republican* (July 22, 1921, 2) noted that at age twenty-

seven he “went west When his ambitions failed to materialize he returned home and entered into a partnership in the Prescott Pistol Co., being associated with the firm for seven years.” Porter was survived by his wife Mary (d. 1942), a daughter Mary, three granddaughters, a grandson, and a brother Charles, of Northampton, Massachusetts. Obituaries offered a portrait of a well-rounded life. Porter had served as a Hatfield selectman for several years and gave “the necessary financial help when the town needed a new high school building.” However, this obituary was in error, as Porter had been “a prime mover” in getting an elementary school built in 1914 that was dedicated on January 1, 1915. See “Hatfield’s New \$50,000 School Building,” *Springfield Union*, Jan. 2, 1915. A three-term elected president of the Three County Agricultural Society, Porter served on the board of trustees of Cooley Dickinson Hospital, Smith Academy, and the Easthampton Savings Bank.

33. Charles Nutt, *History of Worcester and Its People* (New York City: Lewis Historical Publishing Company, 1919), 1068.

34. Meyer, 4.

35. Worcester City Directories.

36. “The Two Towers Tradition,” George C. Gordon Library, Worcester Polytechnic Institute (n.d.). <http://www.wpi.edu/academics/library/collections/two-towers.html> (accessed February 22, 2018).

37. Letter of gift from I. Washburn to Trustees, March 1866, folder 3, Ichabod Washburn Papers, Worcester Polytechnic Institute Manuscript Collection, Worcester, MA.

38. “McLeod, Hugh,” *The National Cyclopædia of American Biography* (New York: James T. White & Company, 1933).

39. “\$10,000 for the Plant: Porter Machine Works at Hatfield Sold to Hugh McLeod,” *Northampton Daily Herald*, June 4, 1898.

40. *The Iron Age*, February 28, 1901, 29.

41. “\$10,000 for the Plant: Porter Machine Works at Hatfield Sold to Hugh McLeod,” *Northampton Daily Herald*, June 4, 1898.

42. Wells and Wells, 365; “Spark Plugs,” *Motor Age*, January 24, 1918, 6; *Farm Light and Power Year Book: Dealers’ Catalog and Service* (New York: Farm Light and Power Publishing Co., 1922).

43. Massachusetts Historical Commission, *Reconnaissance Survey, Town Report, Hatfield* (1982), 15.

44. www.archives.lib.state.ma.us/handle/2452/71870 (accessed February 26, 2018); Derek Strahan, “Springfield Street Railway,” last modified April 21, 2015. Lost New England. lostnewengland.com/tag/springfield-street-railway/ (accessed February 26, 2018).

45. Letter from the Tokyo Army Arsenal, 6 March 1905, Box 8, Folder 6, Porter & McLeod Machine Shop Collection (hereafter cited as Porter McLeod), Hatfield Historical Museum, Hatfield, Massachusetts..

46. Porter McLeod, Letters, November 1908, Box 25, Folder 1.

47. Porter McLeod, Letters, August 4, 1910, Box 25, Folder 1.

48. Porter McLeod, Letters.
49. Porter McLeod, Box 27, Letters, Folder 6.
50. Ibid.
51. Occasionally Porter-McLeod bought back lathes from customers who no longer needed them, refurbished and resold them.
52. Interestingly, rather than address the letters to his son-in-law Hugh McLeod, Porter began each one with the greeting "Gentlemen." Porter McLeod, Box 27, Letters, Folder 6.
53. Porter McLeod, Box 27, Letters, Folder 6.
54. Porter McLeod, Box 8, Letters, Folder 3.
55. Ibid.
56. Porter McLeod, Box 26, Letters, Folder 2.
57. Porter McLeod, Box 10, payroll records.
58. John Lockwood, *Western Massachusetts: A History, 1636-1925*, Volume IV (New York: Lewis Historical Publishing Co., 1926), 586; Porter McLeod, Box 9, Bills Paid 1909, Folder 2.
59. Porter McLeod, Box 10, payroll records, 1902.
60. Porter McLeod, Box 27, Letters, Folder 4.
61. Porter McLeod, Box 19, Letters, Folder 4.
62. Porter McLeod, Box 27, Letters, Folder 3.
63. Porter McLeod, Box 28, Letters, Folder 1.
64. Ibid.
65. Porter McLeod, Box 22, Letters, Folder 1.
66. Ibid.
67. Porter McLeod, Box 16 Correspondence, 1905, Folder 1.
68. Porter McLeod, Box 17, Letters, Folder 2, 1907.
69. *Thirteenth Census of the United States* (1910); Porter McLeod, Box 17, Letters, Folder 2.
70. Porter McLeod, Box 26, Folder 1.
71. The following houses were owned by the Porter Machine Works: first house occupied by L. A. Dube; second house by Albert Matthews; third house by Joseph Fox and Frank Takubiel; fourth house by Julius Kociela (Kuchela) and William Fox; fifth house by L. A. Schmitter and B. L. Graves (Wells and Wells, 322).
72. Porter McLeod, Box 27, Letters, Folder 6.
73. *Thirteenth Census of the United States* (1910); *Sixteenth Census of the United States* (1940).
74. *Bulletin of the U.S. Bureau of Labor Statistics*, No. 604, "History of Wages in the United States From Colonial Times to 1928," October 1929, 295, 304; *Annual Report on the Statistics of Labor*, 420, 424.
75. Porter McLeod, Box 10, Payroll Records.
76. Porter McLeod, Box 19, Letters 1892-93, Folder 4, July 15, 1893.
77. Porter McLeod, Box 7, Letters, Folder 3, April 19, 1906.
78. Porter McLeod, Box 19, Letters 1892-93, Folder 4, June, 1893.
79. Porter McLeod, Box 19, Letters, Folder 4.

80. Porter McLeod, Box 11, Accounts Receivable, 1882–1894.
81. Porter McLeod, Box 27, Letters, Folder 8.
82. Ibid.
83. Porter McLeod, Box 3, Letters A – D, 1909, Folder 6.
84. At the end of 1898, the figure was \$1,244.82; 1899, \$1,959; and 1900, \$3,194. Porter McLeod, Box 5, Folder 2, Correspondence 1901-02; Box 11, Cash Book 1898 - 1902; Box 11, Shop Log Book 1893 - 1897; Box 17, Folder 3, Correspondence 1908-09.
85. Porter McLeod, Box 8, Folders 1-3; Box 26, Letters, Folder 1.
86. Crompton & Knowles Loom Works Collection, Worcester Polytechnic Institute.
87. Porter McLeod, Box 8, Folders 1-5.
88. H. McLeod, "Combined Trunk and Seat," U.S. Patent 1,124,769, filed June 30, 1911.
89. Stone, 718.
90. R.A. Johnson et al., "Roll Turning Machine," Patent 1,811,504, filed May 29, 1928. Similarly, on May 21, 1940, inventor Ernest C. Whitney received Patent No. 2,201,658 for a "Cutoff Machine." Whitney assigned its manufacture to Porter-McLeod Machine Tool.
91. Stone.
92. *The Springfield Sunday Union and Republican*, July 7, 1929, 5F.
93. Stone, 718-719.
94. "War Department Placed \$96,536,258 National Defense Contracts in a Week," *Steel*, October 6, 1941, 45; Lis Slyszy, "The Old Mill and the Porter-McLeod building," *Foxfire Report*, Hatfield Historical Museum, 1982; Mary Serreze, "DEP Reports King Street Business Site Contaminated," *The Sunday Republican*, July 20, 2014, C1. *The Foxfire Reports* were a series of class assignments given to Hatfield junior and senior high school students from 1982 until 2000. Comprising 226 folders, most include primary sources and oral interviews. They are located at the Hatfield Historical Museum.
95. *The Iron Trade Review* 61 (August 30, 1917): 457.
96. Stone, 720.
97. "Report Firm in Hatfield to Quit Business," *The Springfield Union News*, August 7, 1954.
98. Ibid.
99. *The Springfield Union News*, 1988, 41.
100. "Hatfield Firm Has Foreign Market," January 1966. Hatfield Historical Museum Collection, 2016-194-001. See also "A Birdseye View of the Porter-McLeod Machine Tool Co.," *Daily Hampshire Gazette*, January 23, 1967.
101. "Hatfield Firm Has Foreign Market"; "A Birdseye View."
102. Massachusetts Division of Employment Security, 790 Series.
103. United States Department of Interior National Register of Historic Places.
104. Hatfield Town Records.
105. Suntrup, Jack. "Hatfield Historians Mine for Pieces of Bygone Era," *The Greenfield Recorder*, Dec. 11, 2016.