

## The Industrial Revolution That Never Was

by Marc Levinson | 9:00 AM July 18, 2014

Every schoolchild learns that the industrial revolution began in England. Forests have been felled to demonstrate why England, and only England, had the culture and institutions to be the birthplace of modern industrial capitalism in the late 1700s. Yet the creation of large-scale factories nearly began not in England, but in Great Britain's American colonies, 250 years ago. The American version failed miserably, because culture and institutions were not enough to kindle an economic revolution.

It was in June of 1764 that a merchant named Peter Hasenclever landed in New York with plans to build a network of factories unlike any the world had seen. Hasenclever, then 48, had been an international businessman almost since birth. He had grown up in northwestern Germany, where his father owned mills that heated small amounts of charcoal and iron together to make steel that could be hammered and sharpened into knife blades. He had lived and traded in Belgium, France, Portugal, and Spain. His acquaintances included Frederick the Great, king of Prussia, who wanted Hasenclever's advice about encouraging a textile industry.

Hasenclever moved to London in 1763. A few bribes persuaded Parliament to grant him British citizenship, and with it the right to invest in Great Britain's American colonies. Wealthy from his years in Spain, Hasenclever sank £8,000 into a partnership with two English traders. None of the three had been to America, but all sniffed opportunity in making iron.

Parliament normally opposed manufacturing in America in order to protect jobs at home. But the desire to protect British industry had foundered on a dangerous reality: exhausted mines and depleted forests could no longer meet the Royal Navy's endless demand for iron. Much of the Navy's cannon and plate was made from iron bars imported from Sweden. Worried about the security risk should Sweden cut off supplies, Parliament opened the door to iron imports from the colonies.

Hasenclever and his partners reckoned they could earn an annual return of 20 to 30 percent by making iron in America and trading it across the Atlantic. To smooth their way, they made the acquaintance of some gentlemen who could influence the government's purchases of iron, such as Major General David Graeme, private secretary to Queen Charlotte, and George Jackson, soon to be named deputy secretary of the Admiralty. These aristocrats and their friends put up £40,000 to form the American Company. Hasenclever would run the company's business in America, and the partnership of Hasenclever, Seton, and Crofts would transport its products and sell them in Britain.

In January 1764, Hasenclever's cousin traveled to Germany, where he secretly recruited miners, masons, ironmakers, and forgers in the face of a ban on emigration of skilled workers. Meanwhile, Hasenclever set sail for New York.

Soon after landing, he purchased 10,000 acres of rocky, inaccessible land in the Ramapo Mountains, a range of low but extremely rugged hills barely 30 miles northwest of the city. The property included several ancient mines and ironworks. The proprietors of New Jersey colony approved his plans to make iron after its investigators reported, "In our opinion the land is entirely unfit for any purpose but that Mr. H proposed to employ it in." As the first of 535 German workers and family members arrived in late summer, abandoned mines were reopened and old hearths relit. By November 1764, the American Company was making iron.

New Jersey was littered with tiny ironworks in the 1760s. Most were bloomeries, glorified blacksmith shops in which an ironmaker – often a slave unable to refuse a dangerous job – would heat a lump of ore over charcoal in a hearth. Standing inches from the hot coals, the ironmaker would reach in with a bar to push aside dirt and rock and lift the glowing mass of metal, called a bloom, on to an anvil where he could hammer out more impurities. A day of heavy labor might produce a few bars of iron, 14 feet long and two inches on a side.

Bloomeries were crude, but they were much cheaper to build than the main alternative, blast furnaces. A blast furnace was an egg-shaped stone oven 20 feet high designed to sustain very high temperatures for months on end. Coal or charcoal fueled a fire made white hot by blasts from a leather bellows. Ore would be fed in, and the ironmaker would cook it along with a flux,

such as limestone, at temperatures far hotter than a bloomery could achieve. Eventually, the iron would separate from the mass, and molten iron would trickle down into molds, known as pigs. Pig iron was brittle, but the cast pigs could be hauled to a forge, reheated, and beaten into wrought iron bars.

This was by any measure a primitive industry. Ore was extracted a few pounds at a time with picks and shovels. Bloomeries and blast furnaces produced tiny quantities of metal each day. Their biggest customers were blacksmiths who hammered a few inches of heated iron bar into a horseshoe or a hinge. Some pigs were processed by workers pounding small pieces of charcoal into molten iron until the carbon in the wood diffused into the metal, arduously producing enough carbon steel to hammer out a few knives or axe heads.

Hasenclever's strategy was far grander. The American Company was to be a transatlantic enterprise that would produce large amounts of high-quality iron and, eventually, steel. He, his partners, and the American Company's investors would control every stage of the operation, from mining on remote New Jersey mountainsides to selling metal bars in London.

To realize this vision, the company acquired yet more land, until it owned 34 square miles of forest around Ringwood, New Jersey, and 53 mines. German stonemasons erected three blast furnaces, two stamping mills, seven forges, and 10 coalhouses to turn trees into charcoal. To furnish ore, limestone, and timber, 214 company-owned oxen pulled carts over miles of company-owned road hacked out of the wilderness. New dams impounded four reservoirs, including the body now known as Tuxedo Lake in New York State. Four water-powered sawmills cut lumber to shore up mines and frame buildings.

Peter Hasenclever's ironworks may have been the most ambitious industrial enterprise of its day. But while Hasenclever took a long-term view of the colonies' promise as a home for industry, his investors tired of his endless expansion plans. They wanted dividends, and on that score the American Company was doing poorly. Storms destroyed millraces and waterwheels, requiring outlays for reconstruction. The mills could produce iron only until winter made the roads impassible and brought the waterwheels to a halt; for three or four months a year, there was nothing to sell. To the frustration of those titled gentlemen back in London, the American Company did not make much of a profit.

Technology was part of the problem. Machinery that would let a large mill turn out iron bar more cheaply than a small one was not to be had. The more charcoal the blast furnaces consumed, the further Hasenclever's timber cutters needed to range for trees, driving up costs. Ore, pigs, and bars all were transported one wagonload at a time, with no cost saving as volume increased. Scale was of no benefit, so expansion consumed ever more cash without bringing higher returns.

But even more troublesome than the lack of technology were the cultural underpinnings of eighteenth-century British capitalism. The American Company was not a corporation in a modern sense, but part of an assemblage of partnerships. In 1766, one of Hasenclever's London partners was declared bankrupt, dragging the other two partners with him. With Hasenclever's financial status now clouded, his partners in the American Company grew nervous. They looked more closely into his affairs, alleging he had spent £54,000 of their money expanding the business, far more than the £40,000 they had agreed to put up.

The investors sent a series of managers to take over the operation in New Jersey. Hasenclever ignored them, and turned to William Franklin, the colonial governor of New Jersey, for support. Franklin's investigators reported in July 1768 that "Mr. Hasenclever has accomplished a great deal" and concluded that none of his expenditures were unnecessary. Nonetheless, he was summoned to London to face charges of mismanaging company funds. Now, class differences came into play, as the aristocratic investors pursued court action against the self-made capitalist. The legal outcome was never in doubt. The ironworks were closed down. Peter Hasenclever never returned to America.

So it was that, a quarter of a millennium ago, the industrial revolution in New Jersey came up short. For the next half century, inventive entrepreneurs would apply their efforts to textile mills in the English Midlands, not to forges in the American wilds. Through many changes of hands, the American Company's furnaces and forges would make iron on and off until after the Civil War. When new technology reshaped steelmaking a few years later, though, Hasenclever's mills in the Ramapo Mountains were too antiquated to take part in the revolution.

