

OUR RIVER by Joe Doherty

The Poison Stream

The proximity of St. Patrick's day inspires me to bring you this story today ("Blood On the Blackstone" will return next time – why not use this break to catch up on past chapters at www.blackstonedaily.com/ourriver.htm). So slip on your Hazmat suit and prepare to get your feet wet in "The Poison Stream."

In 1878, a suicidal Worcester resident plunged into Mill Brook, a slow, shallow stream in the city's south end.

Not with an expectation of drowning, but of being poisoned to death.

Mill Brook was a vile, stinking brew of raw human waste and deadly industrial pollutants. On an average *day*, three million gallons of untreated sewage were pumped into Mill Brook, more so after a heavy rain. The slop also contained highly toxic quantities of lead, arsenic, cadmium, chromium, electroplating waste acid, mercury, copper and zinc – all dumped by Worcester's mammoth wire mills and other metal-working shops.

The would-be suicide victim believed that the act of immersing himself in that fetid soup would cause instant death.

Although it sounds strangely plausible, his reasoning proved wrong. In the end, the poor wretch was rescued.

Alas, Mill Brook was not.

Before white settlers imposed their dreams of wealth on central Massachusetts, Mill Brook existed in a pristine state. Its clean, shimmering depths were disturbed only by native fish and fishermen. Deer and other wildlife made daily visits to the brook. Migratory birds used it as a way station on their long, seasonal journeys.

So many comings and goings, yet for centuries the only traces left behind were imprints in the soft brookside mud, and these lasted only until the next rain.

But by the early 1700s, white men had made an indelible mark upon Mill Brook.

Though a small, uninspired stream, Mill Brook was the best of a bad lot and so became the nucleus of early Worcester (known then as Quinsigamond Village). Grist mills and sawmills soon sprang up along the brook's low-lying banks. In 1760, the manufacture of caustic potash, or "lye," began in the vicinity.

Few people know that America's first cotton-spinning operation got underway at Worcester, let alone on the banks of Mill Brook. But it's a fact – the Worcester Cotton Manufactory predated Samuel Slater's mill at Pawtucket by at least two years. Slater's was America's first water-powered cotton manufactory; however, the Worcester outfit, despite its proximity to Mill Brook, relied on manual power. For the record, the Worcester Cotton Manufactory never posed a threat to Samuel Slater's business – it failed in August of 1790, just months prior to Slater's triumph.

Water-powered cotton spinning remained well beyond Mill Brook's capacity, even after Arkwright water-powered technology became widely available. The brook was simply too small. Too slack. Actually, none of Worcester's streams had enough juice.

As Margaret Erskine wrote in *Worcester: Heart of the Commonwealth*, “not one of them was worthy of the name river and not one of them was navigable by any vessel larger than a small rowboat or canoe.”

The dearth of water-power imposed serious constraints on Worcester’s development during the 19th century. But local artisans adapted. Barred from textile manufacture, they built smaller mills to produce the tools and machinery used in textile production. Certainly they found no shortage of customers in the Blackstone Valley. It has been suggested that Worcester’s early specialization in machine production influenced its later role as a stronghold of American technology.

Mill Brook might have escaped its sad fate if not for another obstacle to Worcester’s growth – the village was landlocked. Surrounded by steep, thickly wooded hills, Worcester had no cheap means of shipping its goods to market. Primitive, treacherous road conditions prompted wagon haulers to charge maximum fees for shipping to or from Worcester. Consequently many goods never made it past the town’s borders. They were sold or bartered within Worcester at below market value.

By the same coin, goods imported from Boston to Worcester were sold in town at prices far above market value. Incredible as it may seem, it was cheaper for a Boston merchant to ship goods 3,000 miles overseas to Liverpool, England, than to haul them 40 miles overland to Worcester. That extra expense was passed along to local buyers.

The Blackstone Canal was built to alleviate the village’s transportation woes. And, for a time, it did. Worcester products were carried inexpensively by canal barge to Providence, where they were sold to Rhode Islanders or loaded onto export ships. Likewise, imported goods were floated up to Worcester at prices that suited everyone.

The canal’s northern extremity annexed part of Mill Brook. In its natural state, the brook flowed south until meeting a muddy, marshy islet which split the stream in two. One branch forked west; the other followed a steady, southerly course. Both branches merged again a slight distance downstream.

The latter branch (steady, southerly) was acquired by the canal company. This segment began at the Worcester canal basin on Central Street and extended south to Millbury Street, near the Grafton town line.

In the late 1820s, engineers and workmen, under the supervision of an Irish contractor named Tobias Boland, reconfigured this part of the stream. They erected stone walls and dredged the muddy bottom to allow heavily-laden boats to pass. Thus Mill Brook became part of the Blackstone Canal trench.

To supply water for the canal, the muddy islet dividing the stream was sucked dry. As the former wetland firmed up, Boland deemed it ripe for development. He purchased some acreage and built several tenements on the land.

Boland filled the apartments with his fellow Irishmen, many of whom had traveled to Worcester to work as laborers on the Blackstone Canal. When the canal dig was finished, these men and their families found employment in Worcester factories, which proliferated along Mill Brook as the new canal ushered new business into town.

Unfortunately, the quality of the canal service degraded rapidly, for reasons that included seasonal droughts, floods and corporate mismanagement. In 1835, the Boston and Worcester Railroad opened, effectively putting the canal out of its misery despite that it had brought new industries to town and increased the population by 10,000. Like a dream dispelled, the canal boats and the canal men faded away. The only traces of their

passage were the granite walls lining Mill Brook, where the water lay stagnant in the absence of manmade currents.

Worcester's population continued to climb, notably in the "Island District" (as Boland's neighborhood became known). Hordes of new Irish immigrants arrived during the 1840s potato famine. Desperate and unskilled, they gratefully accepted jobs in the Mill Brook factories. They also took up residence among their fellow countrymen in the nearby Island District.

Overcrowding was inevitable. Churches, schools, more tenements and people, people, people were successively crammed into the Island.

This was Worcester's first working-class neighborhood, home to the "huddled masses" and bounded on both sides by a piddling stream called Mill Brook.

But it was paradise compared to what lay ahead.

Ichabod Washburn was putting the screws to Mill Brook as early as 1831.

Washburn's screw- and wire-making factory was located in the Northville section of Worcester, bordering upon Mill Brook. During his tenancy at this small shop, Washburn and his partner, Benjamin Goddard, invented a machine capable of drawing about 50 pounds of wire a day.

It was a pivotal event for American steel wire manufacture. Wire drawing – which is the process of stretching, or "drawing," steel rods into wire – had proved an elusive art in America. A few manufacturers had attempted before Washburn, but the results were so poor that it "tended to excite a prejudice against American wire."

Even among Americans.

Ichabod Washburn took it as a personal challenge. He set out to create a product that would bring the British to their knees, for at the time England was the world's foremost manufacturer of wire. A born innovator, Washburn soon patented a drawing block, the likes of which had never been seen in England or the United States. It enabled a single worker to draw an unprecedented 2,500 pounds of wire a day.

With this workhorse in its stable, the firm of Washburn & Goddard swiftly trampled the British competition. In fact, after the Hon. Stephen Salisbury built Washburn a new mill in 1834, the importation of British wire ceased altogether.

By then, Washburn and Goddard had parted ways. Under the roof of the new mill, the 36-year-old Washburn persevered in steel wire manufacture.

The "Grove Mill," as it was called, verged on Mill Brook. To supply a head of water for the factory, the brook was dammed, flooding what was once a meadow belonging to Salisbury.

According to Margaret Erskine, Salisbury first excavated the meadow to form a basin for the new mill pond, "destroying a shallow pool overhung by a grove of willows, a favorite swimming place. This bit of the rural past survived only in the name given to the street that the factory faced, which was called Grove Street."

The factory site was enormous, occupying more than 23 acres. The mill alone covered twelve acres. Geographically speaking, the Grove Mill couldn't have had a better location. In those days, steel wire was used primarily in the manufacture of carding machines. And no city in America produced more carding machines than Worcester.

Business boomed. In 1842, Washburn took a new partner, his twin brother, Charles. Together the Washburns constructed a brand new rolling mill at Quinsigamond Village, a

short distance south of the Grove wire mill and also within the Mill Brook watershed. The Grove Mill became known as “The Northworks” while the new rolling mill was nicknamed “The Southworks.”

Charles Washburn called it quits in 1849, but the demand for Washburn wire showed no signs of letting up. In 1850, Ichabod Washburn introduced his son-in-law, Philip Moen, as his new partner.

Washburn & Moen wire earned respect from coast to coast. In the 20 years since the drawing block was unveiled, the company’s product list had expanded to include galvanized telegraph wire, wire for sewing machine needles, crinoline wire for hoop skirts, iron wire for gun screws, piano wire, and all kinds of round, flat or oval steel and iron wire.

In the 1880s, the decade of expansion in the West, Washburn & Moen was recognized as the world’s leading manufacturer of barbed wire. The company supplied all the ranches in the American west. In 1882 alone, the Worcester mills produced 120 million pounds of barbed wire.

Washburn & Moen was a genuine American success story. As the company expanded, so did the City of Worcester. The wire mills were among the city’s leading employers. At the peak of production, the Northworks mill is said to have employed more than 3,000 people, many no doubt Irish immigrants from the nearby “Island District” neighborhood.

Washburn’s decades of success also helped to ensure the growth of Worcester’s metals industry. Metals shops such as the Crompton Loom Works started competing for space along Mill Brook. Like Washburn & Moen, these manufacturing operations required water to fuel steam-conversion engines and to make chemical solutions.

Chemicals and heavy metals were part and parcel of the wire-making process. For example, telegraph wire had to be galvanized for strength. A 19th-century industrial historian explains what the process involved:

“Mr. Washburn secured the control of an English patent for a process by which the wire is passed through a tube heated so as to bring it up to a slight red heat, and through a cold acid bath ... from which it emerges in perfectly clean condition ... Wire made in this way has borne the weight of trees falling upon it without breaking.”

Judging by the process required to make crinoline wire, hoop skirts had to be even tougher:

“The steel used in making crinoline wire is imported from England in the form of coiled rods of about one quarter of an inch in thickness. The first operation to which it is subjected is heating it to about a bright-red heat ... by which it is softened. It is next cleansed with an acid to remove all oxide from its surface, after which it is coated with rye flour and dried ... It is now ready for drawing ...”

Following a series of strenuous drawing operations, the now-flattened wire is “hardened by passing it through a bath of red-hot lead, then through a trough of oil where it is quenched, then through a bath of slightly melted lead ... This process for tempering is patented by this firm.”

Repeated wire immersions no doubt left impurities suspended in the bath fluids. To maintain process quality, the manufacturer must have periodically purged and replaced the spent acids, oils and molten lead. Even today, metalworking fluids have to be replaced once they start degrading.

Of course, today we have all manner of disposal methods and treatment procedures for waste fluids and metals. But in 19th-century Worcester?

Look no further than Mill Brook.

Kenneth Lewis, a former employee of Washburn & Moen during the early 20th-century and author *Steel Wire In America*, describes how waste acid was disposed of at the Northworks mill:

“It was just thrown away in the handiest and most direct fashion ... it soaked into the ground, trickled to some low-lying boggy area, or found its way by adventitious or prepared channels to a neighboring stream.”

Lewis left no doubt as to the caustic nature of these chemicals. His description of life inside the mill cleaning house is absolutely frightening:

“The cleaning gang wore rubber boots, chiefly because the slop and fumes ate the nails out of their shoes. Their teeth were gone with the wind. They told me as an interesting fact and a recommendation that a worker in the cleaning house never had any respiratory infections; it was much later that I found out the reason, namely after a month or two in that atmosphere, the respiratory tract simply disappeared ...

“After my first week in the cleaning house I found my handkerchiefs coming back from the wash had pairs of brown spots just as far apart as my nostrils and the following week the spots had been replaced by holes. I could snort a hole through a handkerchief in two tries.

“The mess, mud, slime and acid went through the floor, which was of chestnut plank laid on edge and laid open to let the slop drain through. I got down between two tubs once and peered into the area beneath the floor, which I can best describe as a buffalo wallow. Nobody ever went there except one old derelict who was said to know where all the pipes and connections were.”

“Mystery” drainage pipes, sewage lines, groundwater, storm runoff – in varying degrees, all of these flushed toxic industrial chemicals, heavy metals and PCBs into Mill Brook.

It was more than the little stream could handle. In 1992, a research team observed that during the wire mill age, beginning in the 1850s, Mill Brook “must have gone stone cold dead.”

During the latter half of the 19th century, a pestilence swept through Worcester, spreading disease, death and social unrest through the city’s east side.

It had a name, this pestilence. And a familiar one at that:

Mill Brook.

By 1873, the stream was an abomination. Its foul waters ran thick with industrial poisons and raw domestic sewage.

Regarding the latter substance, pollutant levels actually climbed after Worcester installed its state-of-the-art water carriage sewer system in the early 1870s. The previous system had first channeled all organic waste into cesspools, where bacterial action broke it down naturally. Only then was it shunted into Mill Brook.

However, the new system, approved by the Massachusetts General Court in 1867, made provision for 44 separate sewer lines to empty directly into Mill Brook, with no pre-treatment whatsoever.

“This amounted to an average dry-weather discharge of 3 million gallons a day,” observed a 1992 research paper, “with about 21,900 tons of fecal matter passing down the stream in one year (add to this the amount of animal, street wash and other waste contributed).”

Confined behind the stone walls of the defunct Blackstone Canal, the squalid stream oozed along the perimeter of the “Island District,” the city’s poorest and most densely populated neighborhood. It sloughed past numerous and shabby tenement doorways. Past pale, pinched children with wrinkled noses and watering eyes. Past their parents, too, whose ever-heavy hearts recalled “the green fields, clean streams and fresh air of Ireland.”

The new sewer system was ostensibly prescribed for the good of the public health. But before many years had rolled by, it became sorely apparent to many Worcester residents that the sewer project benefited not the public good, but instead only the upper class residents of Worcester’s well-to-do hilltop neighborhoods.

On December 28, 1884, the editor of the *Worcester Sunday Telegram* observed:

Our wealthy residents live in elegant homes on all the hills of Worcester, they have unrestricted fresh air and perfect sewage, their streets are well-cleaned and lighted, the sidewalks are everywhere and Elm Park, that little dream of beauty, is conveniently near.

The toilers live in the lowlands, their houses are close together, the hills restrict the fresh air, huge chimneys pour out volumes of smoke, the marshy places give out offensiveness and poison the air, the canal remains uncovered, the streets are different, the little ones are so many. While the families of the rich can go to the mountains or to the sea during the hot months of summer, the families of workers must remain at home ...

The powers of imagination can’t begin to summon the cloying, noxious stench that rose from Mill Brook in the blistering afternoons of July and August.

Summer after summer, the Irish immigrants of “Green Island” – as the Island District came to be called – suffered through the miasma, though not in silence. For years they demanded that steps be taken to remedy the sewage problems of Mill Brook.

But deaf ears were as epidemic among politicians then as they are today. And people paid the price.

According to the 1992 research, “The death rates on the east side exceeded those on the west side until 1920, and smallpox remained on the east side long after it had been eradicated in the rest of the city.”

It took nothing less than outcry and lawsuits from communities downstream before Worcester and state officials finally gave serious consideration to the Mill Brook dilemma.

In the 1870s, Millbury complained about foul odors, kicking off a 10-year legal battle between that town and the City of Worcester. Upper Blackstone Valley manufacturers also griped about the pollution, charging that it made the water unsuitable for industrial use.

In the summer of 1881, schools of dead fish bobbed to the surface of the river at Millbury, causing the town fathers to demand pollution abatement from Worcester. The city refused, citing the expense as prohibitive.

The following year, a special committee of the Massachusetts General Court heard arguments for and against mandatory pre-treatment of Worcester sewage. Under oath,

Millbury residents recounted episodes of abhorrent stench, related illness and other problems associated with Worcester's waste stream.

But Worcester proponents brushed off the accusations, insisting that progress and urban growth take a necessary and unavoidable toll. They suggested that Millbury look to its own sewage system to find the source of the problem.

C.D. Morse, a prominent Millbury manufacturer and civic leader, subsequently sued the City of Worcester for pollution abatement. The case was heard by the Supreme Judicial Court in 1885 but stuck down on the basis that Worcester had state permission to pump untreated waste directly into Mill Brook.

Nevertheless, the lawsuit seems to have gotten the message across – in 1886, a close vote in the state legislature required Worcester to build a sewage treatment facility within four years. The order was carried out. Worcester's first sewage treatment plant came on line in 1891. Unfortunately, the chemical precipitation methods employed at the treatment plant did little to neutralize the filth pouring out of the city.

An 1895 report by the Massachusetts State Board of Health states, "The public nuisance caused by the sewage of the City of Worcester ... continues unabated ... the stench ... has been worse during the past season than ever before."

Maybe Worcester couldn't help Millbury, but in its magnanimity the city decided to improve life for the poor Irish residents of Green Island. In 1894, city engineers and construction crews began the arduous task of burying Mill Brook. They built a stone arch roof over the old Blackstone Canal from Salisbury Pond to the southern end of the city, then buried it, effectively removing Mill Brook from sight and smell, with only a shadowy outlet to attest to its existence. The eastern branch was similarly interred.

Within 10 years, virtually no sign of Mill Brook remained. Where once the waters flowed stood new buildings, streets and electric railways.

Yet below picturesque Lincoln Square, below Harding Street, Blackstone Street and other Worcester thoroughfares, Mill Brook still crept along, carrying the virulent wastes of a fast-growing city. Down there in the darkness, it still flows today.

Throughout this tale you may have wondered how the sad history of Mill Brook comes to bear on the Blackstone River. Now I will tell you.

Many people don't know it, but the Blackstone officially begins in Worcester's south end, at a point where two smaller streams converge.

One is the Middle River.

The other is Mill Brook.

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