

Chronicles of Brunonia

Dam It! The Story of the Scituate Reservoir

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How much water is forty billion gallons? Enough to contain all the rain that falls on seventeen thousand acres of pine and deciduous forest, nearly a tenth of Rhode Island. Enough to fill a wishbone-shaped well seven miles long, two miles wide, and thirty-two feet deep. Enough to drown 375 houses, thirty dairy farms, seven churches, six schools, and a railroad. Enough to fuel all of Providence's factories, offices, and homes for a year – or to flood the city ten feet deep.

Just seven miles from Providence and a few hundred feet above it, nestled in a 14,000-acre forest of red pine trees, 40 billion gallons of water lap calmly at the banks of the Scituate Reservoir. Upon its completion in 1926, Providence Mayor Joseph H. Gainer hailed the reservoir for transforming Providence “from a staid and complacent city of the second class to the front rank of American municipalities.” A 100-foot-tall dam, a 90-inch-wide aqueduct, and a “thoroughly modern” rapid sand filtration system constituted the most extensive (and most expensive) engineering project in the state's history.

But not all Rhode Islanders were so pleased with the new reservoir. Scituate, now the largest body of freshwater in Rhode Island, is a man-made lake. Before the Providence Water Board condemned the surrounding land and dammed the Pawtuxet River, the town of Scituate had been home to 1,600 rural residents, mostly small farmers and millworkers. The thirst of Providence's booming industries – engine-building, wool-spinning, jewelry-making and more – demanded the sacrifice of the citizens of Scituate.

What happened to these displaced families, and who benefited at their expense? How did Providence develop such a profound thirst for freshwater, and who was responsible for quenching it? And what happens to a river when it swells

like a blister and overflows its banks?

The Beehive of Industry

At the dawn of the 20th century, Count Ferdinand von Zeppelin watched in delight as his prototype flying machine took off over Lake Constance; New York City mayor Van Wyck broke ground for a new Rapid Transit Railroad to run underground between Brooklyn and Manhattan; and the United States negotiated a proposal with the United Kingdom to construct a canal through Nicaragua that would link the Atlantic Ocean with the Pacific. Meanwhile, in Providence, a long, dry winter culminated in a spectacular fire, burning the Old Star Building to the ground.

The Old Star Building, which once stood at the corner of Dyer and Custom House Streets, had housed the Providence Blank Book Company, the Providence Tube Company, and several other manufacturers. These companies lost \$60,000, or about \$1.5 million in today's dollars, in the blaze. But with an industrial economy comprising over 3,000 separate establishments collectively generating more than \$150 million each year, Providence hardly flinched at the loss. Rhode Island, in spite of its diminutive size, supported the most highly industrialized economy of any state in the Union. Its factories churned out pharmaceuticals, rubber goods, ship pulleys, soap, sewing machines, and a slew of other modern goods in addition to the Blank Book Company's stationery and the Tube Company's iron and brass tubes. It truly deserved its nickname, "The Beehive of Industry". By far the biggest industry in the state was the manufacture of textiles, ever since 1790, when Samuel Slater mentally smuggled the blueprints for

England's famous Arkwright cloth-making machine into Pawtucket and reconstructed the mechanism entirely from memory. By 1900, Providence's worsted wool companies alone employed nearly 9,000 workers, spinning the city into the 20th century.

Even after these mills moved from waterwheel power to steam engines, they still required prodigious quantities of water to dye and bleach cotton and to clean debris out of the wool. This water, now laced with lime, bleach, and grease, soon found its way back into the water supply. In urban centers like Providence, no one seemed to mind the murky, acrid waters, which soon found their way out to Narragansett Bay, far from human eyes, noses, and mouths. But further upstream, many more mills operated along the banks of the Pawtuxet River. As early as 1893, the Providence Committee on Water, Sewerage, and Sanitary Conditions deemed the water of the Pawtuxet “unfit for either man or beast to drink.” The Committee found that although

the owners [of the Pontiac mill property] have taken great pains to prevent impure matter from entering the river... the lime and chemicals from the bleachery are here discharged directly into the river.... The water of the Pawtuxet... is sufficiently polluted to produce a lowered state of the system favorable to typhoid fever and other specific contagion.... The pollution of the Pawtuxet River is an illegal infringement on the rights of the people of the City of Providence.

The Beehive of Industry was growing more populous and productive with each passing day, but the marvels and comforts of industrialization wrought new hazards and challenges. Even in this age of excitement and progress, Providence was quickly running out of the most fundamental of all life's necessities: water. The city needed a larger, cleaner, more reliable supply of water to keep its factories running smoothly, to hydrate its burgeoning population, and of course,

to put out its fires.

“The Water Sharks of Providence”

Providence did not draw its water directly out of the polluted Pawtuxet. The city has always had some sort of water system, from the private wells that supplied Providence's first European settlers in 1636 to the underground network of hollow logs that distributed water in the early days of the Revolution. Prior to the construction of the Scituate Reservoir, Providence drank from a network of smaller reservoirs, including Sockanosset, Hope, and Fruit Hill. This system, fully operational by 1871, lacked a purification system until 1906, when the supply was modified with the addition of a sand filter. And yet only seven years later, a string of droughts coupled with unprecedented urban growth rendered the relatively young water system obsolete.

Thus, on April 25, 1915, the City Council organized the Providence Water Supply Board, a small body of officials who would oversee the design of a water system as impressive and modern as the city itself. The Board included Mayor Joseph H. Gainer, whose progressive agenda eventually encompassed highway improvements and school reform; City Clerk W. C. Pelkey, whom the National Conference of Social Work would later commend for his diligence, efficiency, and “unfailing courtesy”; and Chief Engineer Frank Winsor, who would go on to design a water supply for Boston.

But in 1915, even to these men of eminent talent and vision, the task must have seemed daunting. Just the previous year, the Panama Canal had finally opened, after ten years of intensive construction that cost the United States well

over \$370 million – its single most expensive construction project to date – and claimed some 5,609 lives from accidents and disease. Clearly, earth and water were powerful forces with which to contend, and in the first decades of the 20th century most labor still involved muscle power and sweat instead of internal combustion and fossil fuels.

So the engineers and surveyors of the Water Supply Board set out from Providence in search of the perfect site for their enormous oasis. They traveled and dredged, drilled and triangulated, and finally found it four hundred feet above Providence between two hills of rock on the Pawtuxet River. Unfortunately, the valley was occupied.

Scituate was a quiet town of mills, pastures and schoolhouses “fifteen miles but a world away from the State House in Providence,” according to Barbara Sarkesian, the town’s historian. “People didn’t really understand what was happening. This was pretty much a done deal when folks heard about it.” Indeed, City Council assumed eminent domain over the grounds in 1915, then promptly dispatched Arthur Drew of the Water Supply Board to notify residents of their eviction. Despite a rural upbringing, Drew worked for the city. He would engage farmers in personable conversation, but only in the interests of procuring their land as cheaply as possible.

Some farming families had lived in Scituate for two centuries, and they resisted the urban encroachment however they could. Frank Knight, furious with the city’s settlement of \$12,150 for his 406 acres, set fire to his house in protest. His neighbor hanged himself from the rafters of his barn. Some wrote satirical

letters in their newspapers, decrying the “water sharks of Providence”.¹ Others sued the city, but to no avail. One wealthy mill owner, determined to enjoy his last days in Scituate, built a casino, a movie house, and a dance hall on the condemned land. But the Beehive of Industry would not relent. By 1916, the Water Supply Board had bought over 950 acres and started digging test pits.

“Serious Complications”

Driven by the infectious momentum of progress, Providence’s workers took to the task like drones. Fifteen men cleared brush and stumps, bored holes into the earth, and sounded the muddy depths of Quonapaug Swamp to determine the ideal locations for aqueducts, siphons, and filter sites. The residents of Scituate never stopped fighting city hall, but the Water Board labored on, impervious, it seemed, to lawsuit and lachrymation. As the end of the first year of work approached, the contractors prepared for the real construction to commence: a new highway to link the reservoir to Providence, a gaping aqueduct through three miles of solid rock, and the mammoth main dam. Then the war came.

“Owing to serious complications arising between the United States and Germany,” wrote the Water Board in 1917, “the Board deemed it both wise and patriotic to temporarily abandon the plan”. The strongest young men of Providence abandoned their derricks and hard-hats for gas-masks and rifles. In April, the Water Board asked the families of Scituate to keep farming; ever stoic,

¹ “The water sharks of Providence/ Good judgment seem to lack/ If they will take a trip up here/ They’ll find us on the map”

the farmers returned to their condemned fields, raising enough crops to keep the hungry soldiers satisfied.

Meanwhile, chief engineer Frank Winsor set out once more in search of land, this time for a burial ground to house the thousands of corpses the Water Board would have to disinter to prevent contamination of the new reservoir.

The war rumbled on, sapping money from state coffers and returning to Rhode Island its hardest workers, delicately wrapped in flags. Drought struck New England, and its factories, frantically fuelling the war machine, nearly drank its rivers dry. Construction crawled slowly forward – too slowly for the water sharks of Providence. In August 1918, the Water Board issued Contract 9, an order for a smaller reservoir, and its reduced crew went to work. They finished the 430-million-gallon emergency reservoir that December, a month after the War to End All Wars finally drew to a close.

Gradually, the workers returned to Scituate. They brought with them sixteen dump trucks, a magazine of dynamite, and a sixty-ton steam shovel. They employed ninety horses and removed 1,334 acres of chestnut trees. They experimented briefly with a gasoline-driven concrete mixer, but found hand methods more reliable. They fought off wildfire and tunneled through three miles of solid rock. In 1922, with the main dam just over 10% complete, chemist Harry Clark built a small experimental filter plant, complete with a ten-foot wooden tub and three galvanized iron tanks filled with sand. The rains returned to New England, and “an unusually wet summer” flooded the reservoir prematurely; the workers, by then numbering three hundred, pumped two million gallons out of the core trench every day and continued digging.

Quenched

At 9:45 on the morning of September 30, 1926, pipes shuddered and valves shrieked as 85 million gallons of fresh, clean water gushed through the giant subterranean aqueduct into Providence. Mayor Gainer presided over the ceremony, proudly declaiming the water's cleanliness, not only from the bleach and grease that had plagued the Pawtuxet, but also from corruption and political graft.² The next morning's Providence Journal called the new water system "the greatest engineering feat ever accomplished in the state" and estimated that the supply would last at least 45 years.

Nearly a century later, Scituate continues to water Providence and most of the rest of Rhode Island. Over the decades, the system has been maintained so proactively that all 18 original filters are still working, and in 2009 the Washington, DC-based Environmental Working Group recognized Providence Water as one of the cleanest municipal water sources in the country, second only to Lake Arlington Reservoir in Texas.

In fact, the quality of the water owes as much to trees as it does to technology. Since the floodgates opened in 1926, Providence Water has planted over 7 million seedlings throughout the 17,000-acre watershed. The resultant root structure holds soils intact and filters chemicals and nutrients out of the rainwater that feeds Scituate. And in addition to serving the citizens of

² He was mostly right, except for the \$600 that Clerk of the Board W. C. Pelkey, he of the "unfailing courtesy", surreptitiously collected in return for apples harvested from the condemned area. Pelkey was promptly fired. His replacement, W. B. Chafee, bought himself a fresh set of automobile tires on Water Board money and received "a serious reprimand".

Providence, this man-made forest also provides homes for the original residents of Scituate. Long before the Knights burned down their home and moved out of Kent, even before the Knights' ancestors forced the Narragansett out of their homes and onto a reservation half the size of the reservoir, the place we call Scituate teemed with wildlife. Recently, ecologists have observed many of these native species return to their original habitat. Of course, today's watershed is not really their original habitat; the river has ballooned into a lake larger than any natural lake in Rhode Island, and even the red pines planted by Providence Water are not native to the area. But the resurgence of apex predators like fisher cats, lynx, and bald eagles indicates that the ecosystem is healthy, even if it is, in a sense, unnatural. The story of the Scituate Reservoir proves that, once in a great while, perhaps only once in the history of a state, a triumph of human engineering can be a boon instead of a burden to humans and non-humans alike. Perhaps, knowing this, the ghosts of the lost towns of Scituate can rest in peace, their indignation and suffering soothed by the calm, copious clarity of the water.

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