

magistrates or other designated individuals to remove all obstructions from the river, including dams, that interfered with the upstream migration of fish. By the mid-eighteenth century, however, only a few Native Americans still lived along Delaware's stretch of the Brandywine or just over the line in Pennsylvania, with the last, Indian Hannah, dying in 1803. Now it was the turn of whites, who were also dependent on the spring run of spawning fish, to step forward and oppose the dam-building proclivities of the Brandywine's millers.²⁰

Dams were more acceptable to fishermen if they included "fishways" or fishruns that allowed at least some shad, herring and other anadromous species to fight their way upstream to spawning grounds beyond the dams. But often these fishways were not kept open by the millers. In 1756, petitions from white residents of the Brandywine Valley living in both Delaware and Pennsylvania caused a commission to be appointed to police the river and to break through dams that did not have fishways or to open those fishways that were now closed up. In 1760, four Brandywine dams—their exact locations are unclear—were breached by government-appointed officials. After that date, however, "there were no more dam wars, but also no more shad."

The shad and other anadromous fish stopped making their annual spring spawning runs because Delaware's colonial government decided that it was good public policy to support Brandywine millers in their ongoing dispute with the river's fishermen. Encouraging entrepreneurs to construct water-powered

mills and their related mill-dams along the Brandywine made good sense because the mill provided "a public benefit and ought therefore to be encouraged." Thus, in 1760, the same year that four dams on the Brandywine were breached, Delaware's colonial legislature annulled the law of 1727 that provided official support for the breaching of those dams.²¹

To a colonial assembly intent on encouraging the construction of water-powered mills, abolishing the 1727 law made good sense because that piece of legislation discouraged the building of mill-dams and was, therefore, a barrier to progress. As Henry Seidel Canby later observed, after 1760 "[water] power was now dominant on the lower Brandywine" and the "fish were somewhere turned back." Canby remembered that during his childhood in Wilmington, in the late nineteenth century, the migratory instinct of a certain type of herring—sometimes called alewives—continued to be so strong that every spring they fought their way, by the thousands, through Brandywine's Great Falls, "vainly trying to past the bulwarks of dams and races that blocked" their way upstream.²² The action taken by the colonial legislature to favor Brandywine's dam-builders indicated that in the future, the public's traditional fishing rights along streams and rivers would be protected by Delaware's government only where when those traditional rights did not conflict with the legislature's more modern commitment to industrial development.

Despite the construction of numerous milldams along its length, the suppression of the Brandywine was far from

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Despite the construction of numerous milldams along its length, the supposed domestication of the Brandywine was far from

into nearby streams and rivers. This moderating influence on the Brandywine's flow had been dramatically decreased by the cutting down of trees and the draining of wetlands during the seventeenth and eighteenth centuries.

All of this meant that, despite the construction of numerous dams, the flow of the Brandywine was often either too strong or too weak to meet the industrial needs of the river's millers. Days when its volume reached flood proportions and caused cascading water to thunder over its dams and surge across its rapids, were more than matched by long periods when there was so little water flowing downstream from the dams that much of the Brandywine's riverbed looked like "a rocky ridge in a thirsty land." During the mid-nineteenth century, long-time Wilmington resident Elizabeth Montgomery correctly characterized this sometimes unpredictable river as simply a "whimsical stream."²³

When major flooding did occur, the entire milling community was in jeopardy. On February 21, 1822, the Brandywine rose more than twenty feet after a hard rain. About 9:30 p.m., miller Edmund Canby was sitting in his parlor when he heard "a tremendous crash...a considerable part of Samuel Shipley's mill next to the bridge fell in." By the next day, the bridge

26, 1839. After a series of mill knocked out the that connected to Philadelphia was directly at behind milldam back part of the ice broke, huge the crest of a c scouring out structures built droughts caused drop so low that enough water into Perhaps the most in the summer of 1 a real rain for the millers were frustrated waterpower.²⁴

Steam Power

The mid-century bank of the Christ heartland of Delaware introduction of steam water continued to overwhelming major factories. Steam, by for only about six manufacturing sites.

20. Canby, *The Brandywine*, 62–64, 82; *Laws of The State of Delaware*, vol. I, 97, 384. Because *The Laws of The State of Delaware*, vol. I, does not give the exact year for some of the acts of the early eighteenth century, the date of 1727 for the act that responded to the Lenape complaint was arrived at after examining a number of sources.
21. Canby, *The Brandywine*, 65–66; *Laws of The State of Delaware*, vol. I, 384.
22. Canby, *The Brandywine*, 65–66.
23. Montgomery, *Wilmington*, 29.
24. Hoffeecker, ed., "The Diaries of Edmund Canby," 85, 203–206; Scharf, *History of Delaware*, vol. II, 671; Montgomery, *Wilmington*, 34.
25. Glenn Porter, "Mid-Atlantic Manufacturing in the Jacksonian Era: The McClane Report and Delaware," *Del. Hist.*, vol. XXIV, no. 1 (1990), 66.
26. Welsh, "Merchants, Millers and Ocean Ships," 326; Thompson, "Navigation on the Delaware Bay, 1790–1830," 71; Carol E. Hoffeecker "Nineteenth Century Wilmington: Satellite or Independent City," *Del. Hist.*, vol. XV, no. 1 (April, 1972), 6n.
27. Berger, *History and the Human Ecology of the Delaware River*, 51; Hoffeecker, "Nineteenth Century Wilmington: Satellite or Independent City," 17–18. In 1837, Wilmington banned the dumping of ballast in either the Christina or the Brandywine. See *Ordinances of the City of Wilmington* (Wilmington, DE, 1841), 96.
28. *Laws of The State of Delaware*, vol. VIII, 366–367.
29. *Ibid.*, 367; Monte A. Calvert, "The Wilmington Board of Trade, 1867–1875," *Del. Hist.*, vol. XVII, no. 3 (April, 1967), 176–177; Hoffeecker, "Nineteenth Century Wilmington," 8.
30. Hoffeecker, "Nineteenth Century Wilmington," 5–6.
31. *Ibid.*, 7–8; Hoffeecker, *Wilmington, Delaware*, 17.
32. William Cronon, "Modes of Production: Placing Nature in His American History," vol. LXXV 1131; *Second Annual Report of Managers to the Wilmington Board of* (Wilmington, 1869), 3; Richard White, "Environmental History: Watching Nature Mature," *Pacific Historical Review* 1 (2001), 103. For the presence application of environmental history, see Worster, "Transformations of the Agroecological Perspective in His American History," vol. LXXV 1087–1147; Richard White, "Environmental History: The Development of the Historical Field," *Pacific Historical Review* (Aug., 1985), 300, 330; Elizabeth S. Roberts, "Templating the Force of Nature," *Environmental History Newsletter*, no. LXX (May, 1992), 1.
33. Canby, *The Brandywine*, 99; *Human Ecology of the Delaware River*; Henry Seidel Canby, *The Age of the Nineties* (New York, 1931), 193.
34. Dalleo, "South of the Canyons," *Americans and Their Forests*, D.P.A., Dover, DE., 1971, 197.
35. Hoffeecker, ed., "The Diaries of Edmund Canby," 81; Bushman, ed., *Brandywine Between 1880–1890*, 126, 138, 186.
36. Martin V. Melosi, *The Sanitary City: Infrastructure in America from the Present* (Baltimore, 2000), 197.
37. Steinberg, *Down to Earth: The American History*, 160; *Ordinances of the City of Wilmington* (Wilmington, DE, 1841), 96. Steinberg, "Down to Earth, Nature and Power in American History," 8. *Ordinances of the City of Wilmington*, January 1, 1863, (Wilmington, DE, 1872), 224, 336. Resistance to attempts to close down urban areas was widespread in American cities until 1860, for example, that most cities were pig free. Steinberg, "Down to Earth," 160.