Greenways in the Industrial City: Parks and Promenades along the Lowell Canals

Patrick M. Malone and Charles A. Parrott

Lowell, Massachusetts, was widely admired not only for its industrial system and handsome architecture but also for its carefully designed parks and promenades. From the 1820s to the early-20th century, major corporations such as the Merrimack Manufacturing Company and the Proprietors of Locks and Canals carried out extensive programs of landscape enhancement. Their most impressive efforts to plant trees and create park-like settings were along the Merrimack and Northern Canals, two of the manmade waterways that supplied power for manufacturing in the city. Attractive greenways with shaded walks and grass-covered canal margins may have helped manufacturers recruit, retain, and control workers. However, mill operatives and mechanics were not the only ones who took pleasure in Lowell's green amenities. Most of the citizenry appreciated the corporate landscaping program. A number of Lowell's corporate executives and engineers were avid horticulturists, men who jumped at the opportunity to garden on a grand scale, with the company footing the expense.

Introduction

It was common for industrial firms in the 19th century to show concern for the appearance of land around their buildings and engineering structures. Professional designers of parks and gardens assisted some prosperous companies, but many firms relied on in-house talent for landscaping tasks. Managers and technical staff improved the look of company property, created green spaces and promenades, and provided public viewing points for natural or industrial vistas. They even developed entire systems of *greenways,* a modern term appropriate for describing linear parks or landscaped corridors from earlier periods. The motivations for and reactions to these various forms of "green engineering" were often complex and sometimes contradictory. Nowhere was this more evident than in Lowell, Massachusetts, the great textile manufacturing center on the Merrimack River.

Lowell, the Archetypal City at the Falls

In its course from the highlands of New Hampshire to the Massachusetts seacoast, the Merrimack River does not give up altitude in a smooth, uniform descent, but instead drops forcefully over a number of falls, rapids, and manmade dams. Henry David Thoreau said that the river had "a city on each succeeding plateau, a busy colony of human beaver around every fall."[1]

One of the great changes in the level of the river occurs at Pawtucket Falls in Lowell. Here a natural drop of more than 30 feet produced an outstanding site for industrial development based on water power. In 1821, a group of investors known as the Boston Associates acquired control of an existing transportation canal around Pawtucket Falls and substantial tracts of land for future development. They formed a series of textile corporations that would depend on the river for waterpower. The old Proprietors of Locks and Canals became a service company, retained as a separate corporation to hold property, build canals, manufacture machinery, sell mill sites, erect buildings, and lease waterpower to textile manufacturers.[2] Within a few years, Lowell was one of the fastest growing communities in the nation.

The highest priority of the investors in Lowell was to structure an environment conducive to manufacturing. They had to create a waterpower system, construct factories, and provide housing for the textile workers. Despite their businesslike approach to the planning of a new city, these men also gave serious attention to the landscaping of mill yards, canal banks, house lots, and streets. They apparently believed that an attractive and tasteful urban setting reflected well on them and served to deflect criticism of American industrialism. The setting also helped recruit a proper workforce for their mills and boosted employee morale. Corporate landscaping efforts in Lowell were not the domination of nature, but instead the planned integration of natural features and deliberate plantings in the rational, highly structured order of a new industrial city.[3]

Many American cities that contained power or transportation canals treated them simply as utilitarian infrastructure. Often they were hidden behind industrial and commercial buildings or fenced off, with little or no public access. The sensory appeal of these waterways was sometimes lost

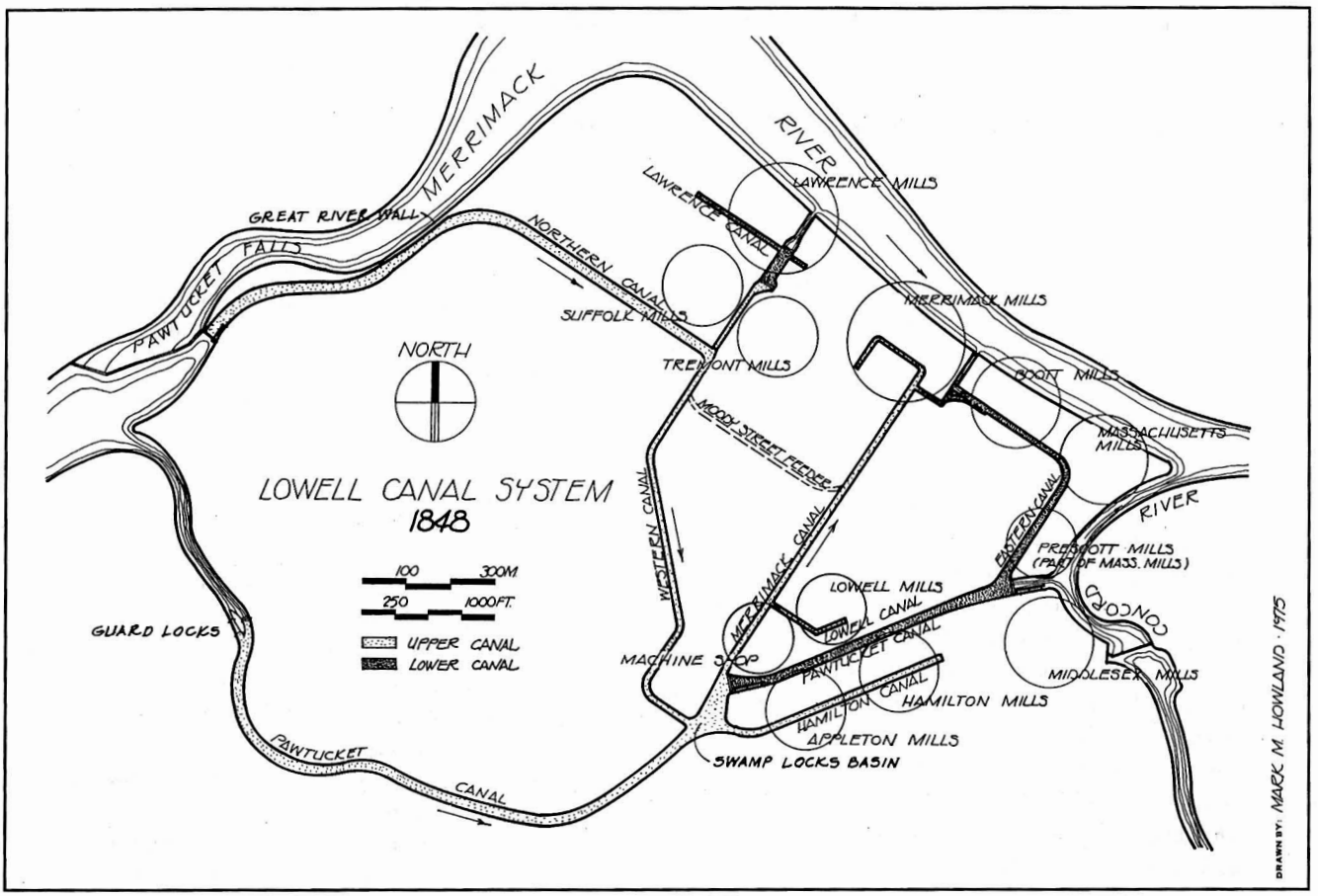

Figure 1. *The Lowell Canal System in 1848. The Northern Canal and the underground Moody Street Feeder had just been added to the original system.* Illustration adapted from a map drawn by Mark Howland in 1975: "Lowell Canal System, 1848," HAER MA-1, sheet 2 of 2. Courtesy of Historic American Engineering Record.

because urban wastes fouled their flow or because owners failed to maintain canalside property. In Lowell, the situation was different. Both corporate officials and the general public took pride in Lowell's image as the "Venice of America." Although wooden tenements eventually lined some of the 5½-mile canal system, several of the constructed waterways served as showpieces for this industrial city. The Merrimack Canal, built in 1822–23, and the Northern Canal, built in 1846–47, were much more than functional conduits of water (see figure 1). They represent early and influential experiments in the beautification of American cities through landscape improvement. They also reflect systems thinking, not only in their engineering but also in their landscape designs.

The Environmental Costs of Urban Development

The rural village of East Chelmsford became the busy town of Lowell in the 1820s because of the power of the Merrimack River at Pawtucket Falls. Reconstruction of the old Pawtucket Canal allowed it to serve as a feeder for a network of power canals, the first of which ran northeast to the mill yard of the Merrimack Manufacturing Company (see figure 2). Enroute to the first of the Merrimack mills, located on the bank of the Merrimack River, the new Merrimack Canal passed under the town's principal thoroughfare, appropriately named Merrimack Street. The Boston Associates laid out Dutton Street parallel to this power canal and built boarding houses on the west side of the street.

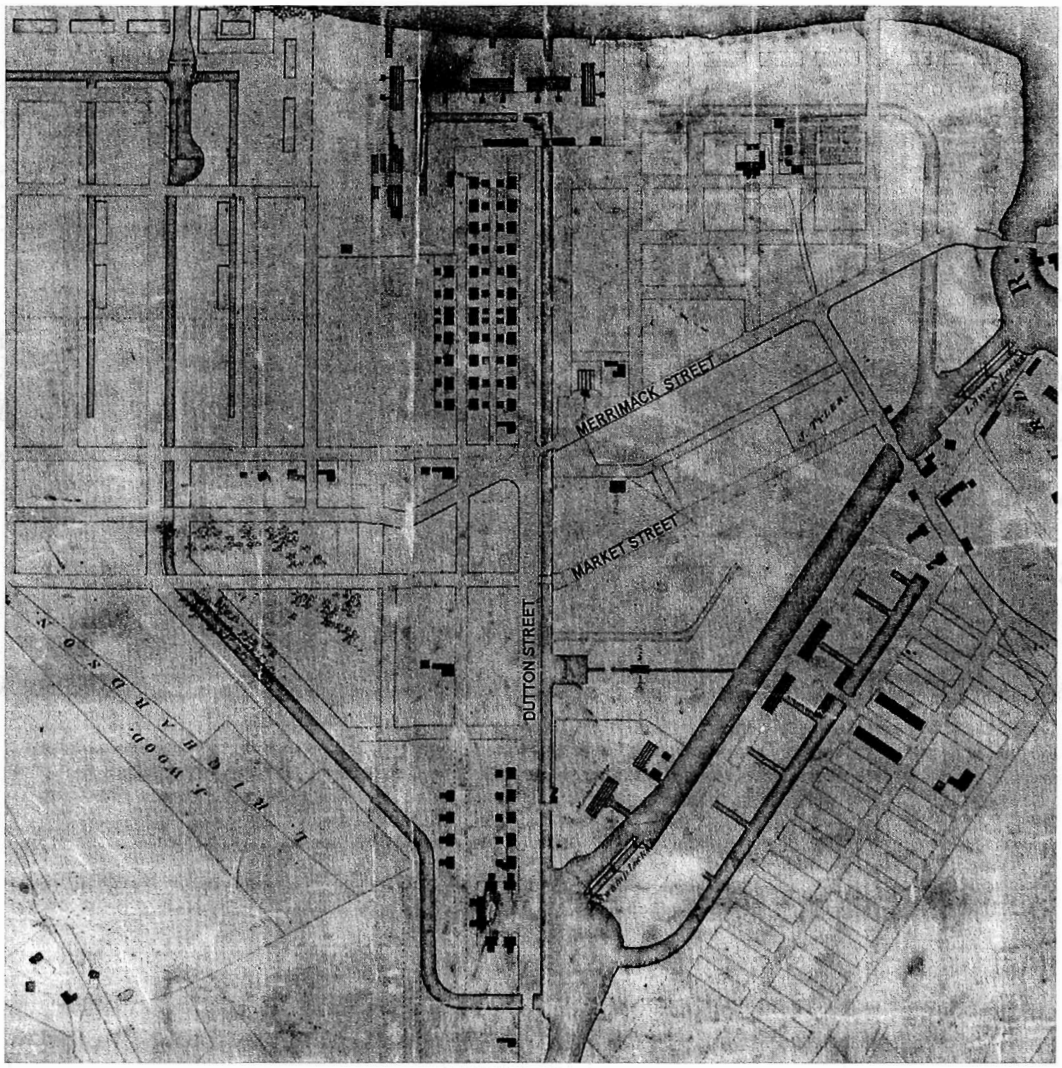

Figure 2. *Detail of an 1825 Lowell map showing the Merrimack Canal running in a vertical line from the machine shop of the Proprietors of Locks and Canals (at bottom) to the millyard of the Merrimack Manufacturing Company (at top). Projected buildings and canals are lightly outlined. Kirk Boott's house and gardens show at the upper right.* The authors have labeled key streets. Adapted from George R. Baldwin, *A Plan of Land and Buildings belonging to the Merrimack Manufacturing Company, with the Neighboring Farms, Roads, etc. at Pawtucket in the Town of Chelmsford, MDCCCXXV,* (1825). Courtesy of Locks and Canals Drawing Archive, Lowell National Historical Park.

Benjamin Mather gave three-dimensional form to the early layout of the Merrimack Canal and Dutton Street in an 1825 painting (see figure 3). At first glance, this painting appears to illustrate the seamless melding of early Lowell into the middle landscape.[4] Upon closer inspection, however, that aspect exists only in the still-rural foreground, and in the property around the neoclassical mansion of Kirk Boott, the Boston Associates' first agent in Lowell.[5] In contrast, the more developed area of the new community seems barren of trees. Because much of that area had been used for agricultural fields or pastures, it was not a forest when the Boston Associates arrived, but there were numerous trees along fence lines, in groves, and in isolated stands.

When one considers the unprecedented scale of construction necessary for canals, roads, and buildings, it is clear that Lowell bypassed any interlude as a bucolic New England mill village.[6] The first phase of construction, although still of relatively low density, wrought a major change upon the land. It was in every way an urban transforma-

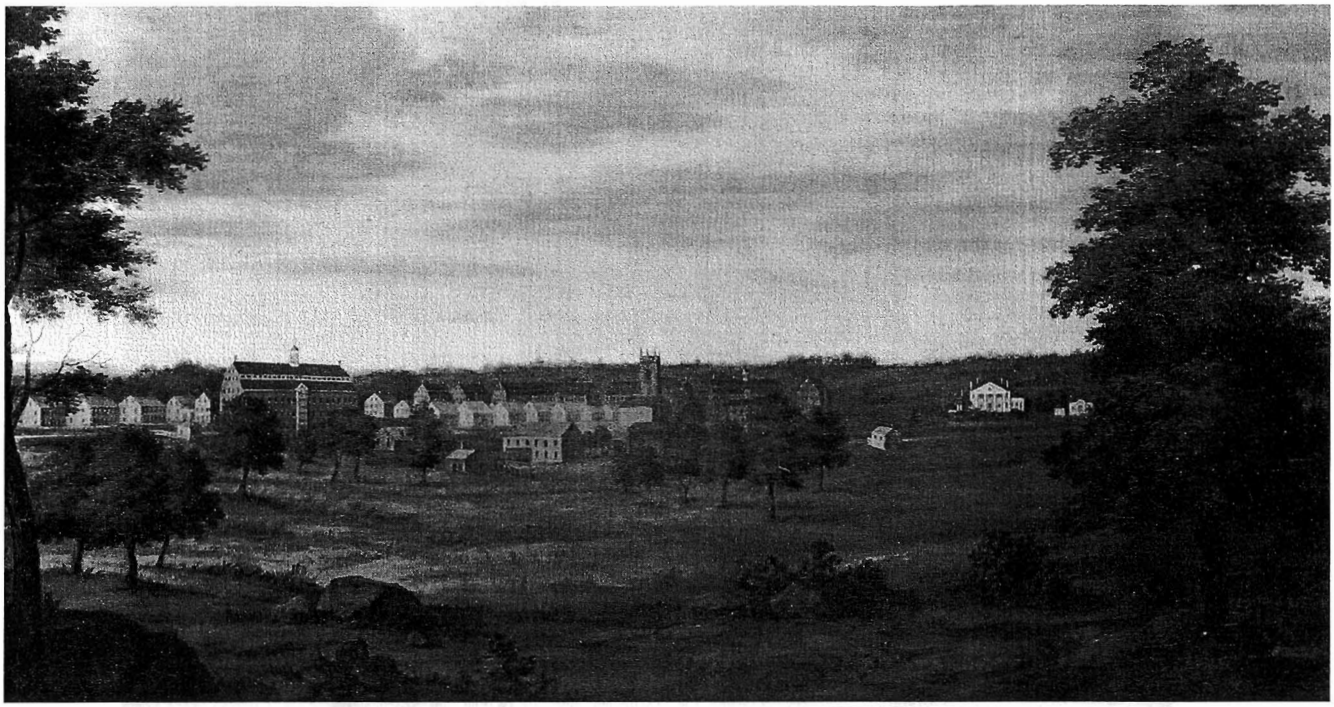

Figure 3. *Painting of early Lowell, viewed from the south. The large factory to the left is the machine shop of the Proprietors of Locks and Canals. The line of boarding houses along Dutton Street is visible in the center. Mills of the Merrimack Manufacturing Company at the end of Dutton Street extend in the background on both sides of the church tower. The mansion at the far right is Kirk Boott's house.*
Benjamin Mather, *Lowell in 1825.* Courtesy of Lowell Art Association.

tion, requiring cutting of trees, filling of low areas, and regrading. Two views from the mid-1830s provide additional evidence that construction took a heavy toll of pre-existing vegetation. In the first image, Dutton Street south of Merrimack Street still appears treeless. Indeed, looking northeast from the machine shop, it has a raw, unfinished character (see figure 4a). The same condition is evident in the second image, which looks south from the Merrimack Street intersection. (see figure 4b).

The scarcity of mature trees in the Lowell landscape was still remarkable as late as 1844. John Greenleaf Whittier spent the latter half of that year in Lowell editing an abolitionist newspaper.[7] In his collection of essays entitled *The Stranger in Lowell,* he observed that

> Many of the streets of Lowell present a lively and neat aspect, and are adorned with handsome public buildings; but they lack one pleasant feature of older towns—broad, spreading shade trees. Shame on that miserable Yankee utilitarianism of the first settlers, which swept away so entirely the green beauty of nature.[8]

Whittier went on to complain of "the sun glaring down from a hot copper sky, upon these naked, treeless streets," and "how unlike the elm-lined avenues of New Haven" Lowell was.[9] He was talking about the city in general, but his criticism was unfair to the northern corridor along Dutton Street and the Merrimack Canal, an area that industrialists had planted with elm saplings, beginning in the 1820s. The problem there was not a lack of trees; it was the slow growth of popular species like the American elm.[10]

The stark appearance of early Lowell could not be altered overnight. Construction of mills, housing, and canals by the Lowell corporations was virtually a continuous activity from 1822 to 1841. However, soon after the Boston Associates had their first mill in operation, they began to soften the look of new development with a program of tree planting. They deliberately re-established a connection with nature by creating an artificial, but green, landscape in the corridor leading to their mill yard.

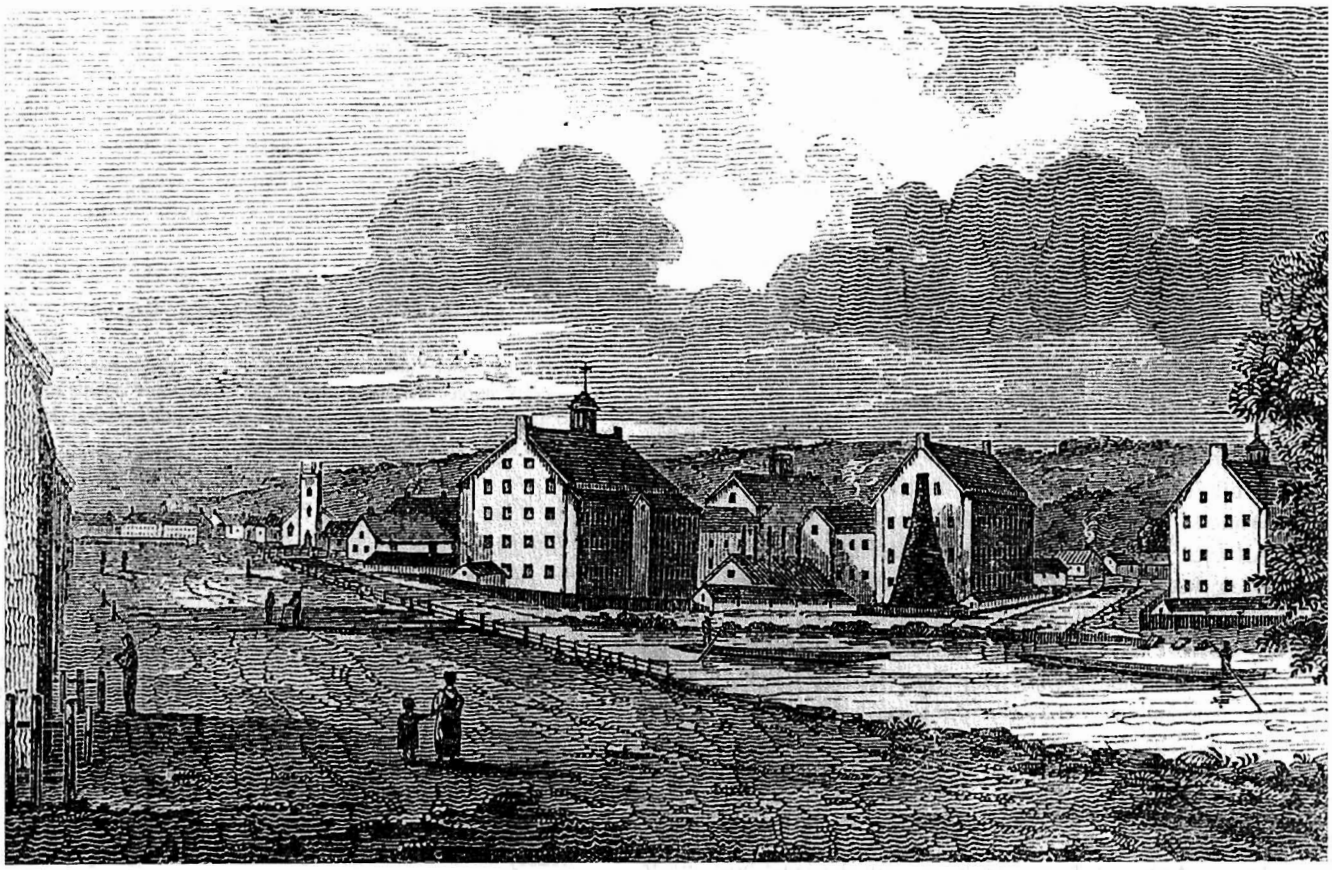

Figure 4a. *Looking northeast on Dutton Street from the Swamp Locks Basin. The buildings at the machine shop of the Proprietors of Locks and Canals are right of center.* _ Martins, "Lowell," *Peoples Magazine* 1, no. 26 (8 March 1834). Courtesy of Lowell Historical Museum.

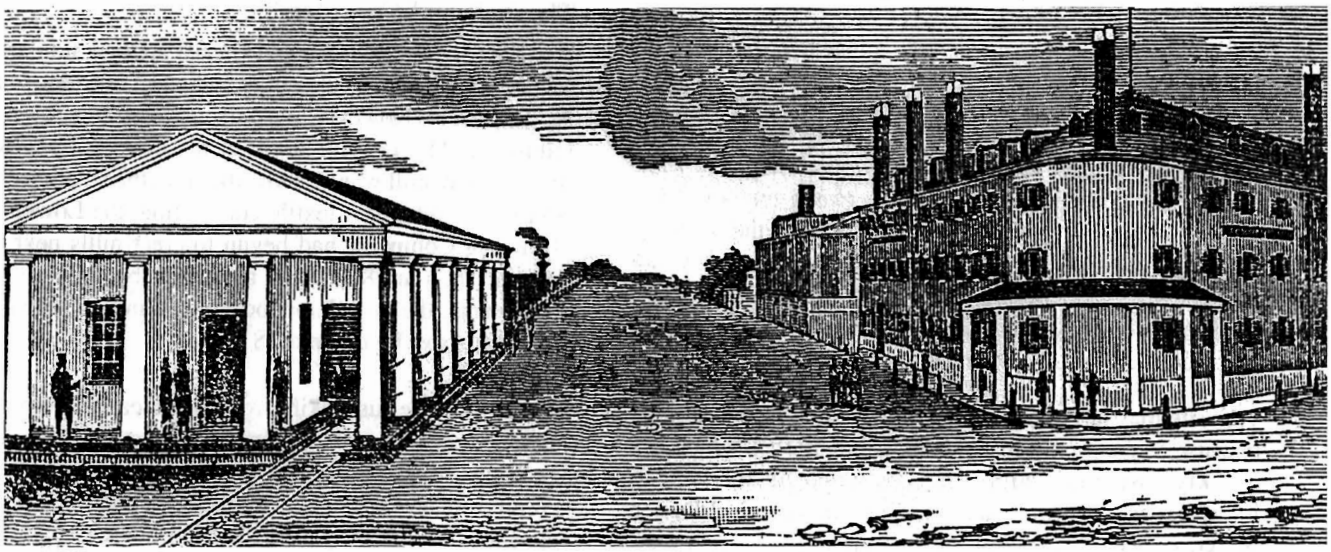

Figure 4b. *Looking south on Dutton Street from Merrimack Street. The neoclassical railroad station is at the left.*
Anon., "Boston and Lowell Railroad," *American Magazine* III, (December 1836). Courtesy of Lowell Historical Society.

A Green Industrialist

Kirk Boott, as agent (chief executive) of both the Merrimack Manufacturing Company and the Proprietors of Locks and Canals, was in charge of the first landscaping along Dutton Street and the Merrimack Canal, an effort that extended into the Merrimack mill yard as well. With those projects, he established a pattern of green engineering by Lowell corporations that would last long after his death in 1837. It is not surprising that Boott liked to see trees, grass, and flowers on company land; horticultural and botanical interests ran deep in his family.

Kirk's father (Kirk Sr.), the son of an English market gardener, maintained a famous greenhouse and garden at the family's seat on Bowdoin Square in Boston. One brother, Francis, became a respected botanical expert on sedges. All four of Kirk's brothers were members of the Boston Society of Natural History, and two, Wright and William, were charter members of the Massachusetts Horticultural Society at its founding in 1829. Both of these organizations drew their membership from Boston's leading families and included many of the Boston Associates on their rosters. The eccentric brother Wright, who was one of the first of the associates, was a well-known orchid grower. William, who would eventually follow Kirk to Lowell, was also a serious gardener who assisted Wright in the greenhouse. Although Kirk may have been the least horticulturally inclined member of his family, he did keep a large garden on his Lowell estate, and his wife, Anne, exhibited at a show of the Massachusetts Horticultural Society.[11] Their Lowell garden "was a wonder to everybody, fruit and flowers brought to such perfection."[12]

The Dutton Mall

The first intensive planting of trees along the Merrimack Canal/Dutton Street corridor was apparently north of Merrimack Street on the strip of land between the street and water. The new elms stood directly in front of the boarding houses of the Merrimack Manufacturing Company. An account from 1825 described the setting: "On the banks of the factory canal, which is fenced in and ornamented with a row of elms, are situated the houses for the people."[13]

This site may have been favored for the initial tree planting because of the proximity of the boardinghouses, which had quickly assumed a high symbolic value in the Lowell industrial experiment.[14] Here on the northern end of Dutton Street, as seen in an 1834 view of the city (see figure 5), the character was already quite different than the more industrial part of the street to the south. A line of trees fronting the boardinghouses on what we will call the Dutton Mall is clearly evident. The easterly panorama across the canal from the Dutton Mall included the middle landscape of Boott's estate with the still-natural confluence of the Concord and Merrimack rivers just beyond.

A contributor to the *Lowell Offering* in 1841 was impressed by the effects of the corporate planting programs:

> Within a short time, shade trees have been placed around the different corporations; and along some of the canals, even double rows of trees have been placed, forming a cool and delightful retreat. Many pleasant hours have I passed beneath their shade. . . .[15]

By then, the Proprietors of Locks and Canals had apparently added another line of trees between Dutton Street and the Merrimack Canal north of Merrimack Street, thus forming one of those double rows. People in Lowell had used the 38-foot-wide strip of land between the street and canal bank as one of the community's unofficial promenades since the late 1820s. An 1848 view shows several well-dressed men and women enjoying that "cool and delightful retreat" in a clearly defined double row of stately trees (see figure 6). We call this the Dutton Mall because the term *mall,* meaning "a shaded walk or public promenade," was widely used in Lowell for similar settings by the 1840s.[16] The trees of the mall were by then mature enough to provide softening elements of natural beauty and grace in a landscape devoted to industrial production.

The Railroad Corridor

The Proprietors of Locks and Canals applied similar landscaping treatments to the street and canal corridor south of Market Street. However, the surroundings here were more industrial. The heavier work at the company's machine shop and sawmill was already affecting the character of the landscape, and a new textile corporation, the Lowell Manufacturing Company, had begun to erect mills next to the machine shop in 1828. In an attempt to beautify this reach of the canal, the proprietors began planting numerous trees along the water by the mid-1830s.

New trees were just taking root when canalside property suddenly became very important real estate. Some of the same men responsible for the industrial development of Lowell were now planning a railroad, and they were quick to appreciate the advantages of the Merrimack Canal corridor

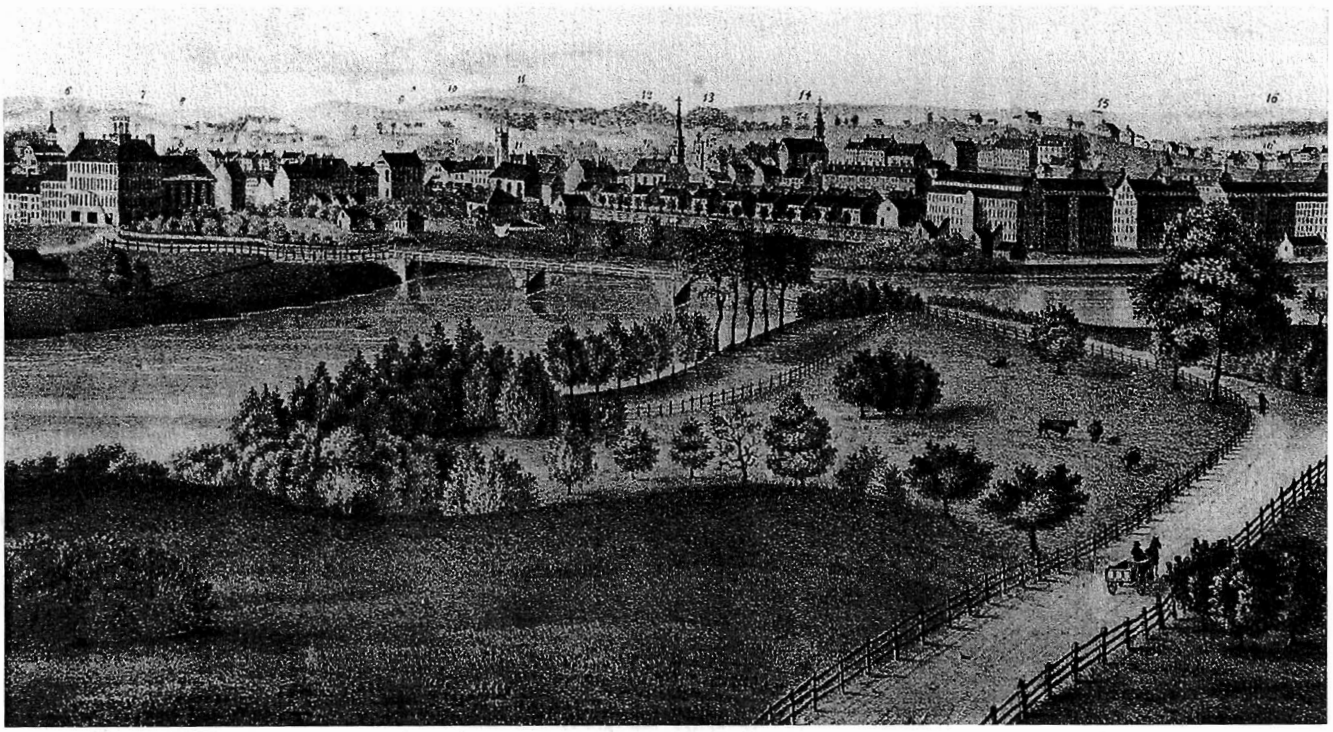

Figure 5. *Lowell in 1834. Looking southwest across the Merrimack River toward the Merrimack Canal and the corporate housing along Dutton Street. The artist shows a line of trees along the canal in front of the boarding houses, with the Merrimack Manufacturing Company mills to the right.* Detail from E. A. Farrar, *View of Lowell, Mass. Taken From The House of Elisha Fuller Esq: In Dracutt* [1834]. Courtesy of Univ. of Massachusetts–Lowell.

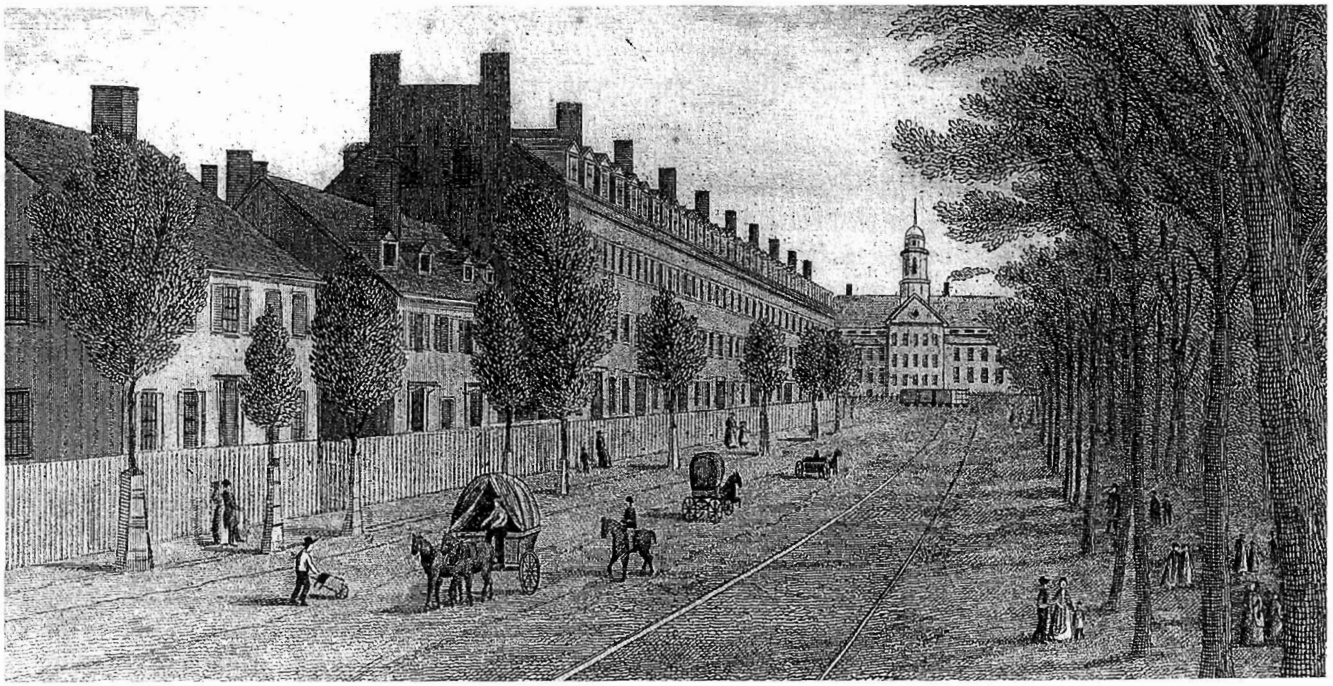

Figure 6. *Dutton Street with its mall and rail spur. Looking north toward Mill No. 6 of the Merrimack Manufacturing Company. Boarding houses are at the left, and the Merrimack Canal is to the right beyond the Dutton Mall. People are promenading in the shade of the trees.* Print by O. Pelton, delineator, in 1848. Courtesy of Lowell Historical Society.

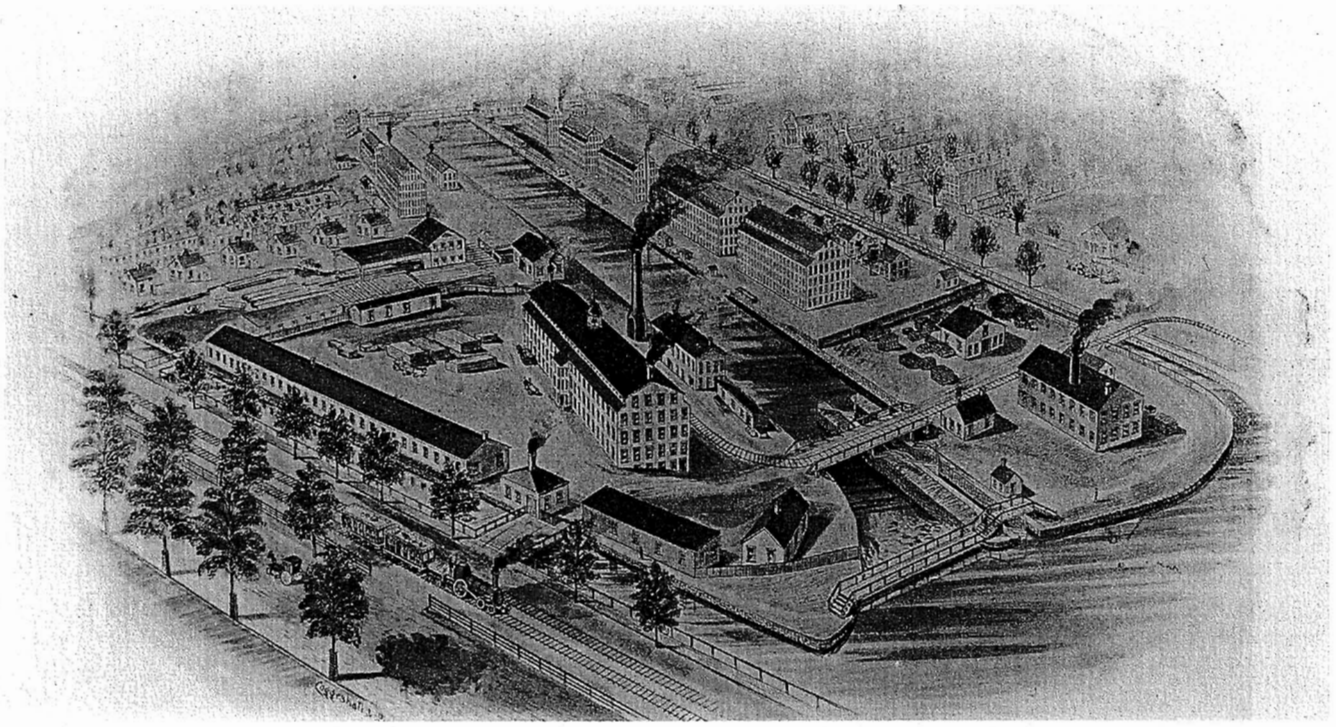

Figure 7. *Retrospective drawing showing the landscaped rail corridor along the Merrimack Canal at the machine shop in 1845. This is a bird's-eye view looking east, with Dutton Street in the lower left corner. The train is traveling on the tracks located between Dutton Street and the Merrimack Canal.* Illustration by Coggeshall & Piper in *Lowell Machine Shop: Builders of Cotton Machinery* [catalog] (Lowell, Mass.: 1898), 112. Courtesy of Univ. of Massachusetts–Lowell.

as a route to the manufacturing plants, their most important potential customers. The strip of land between the Merrimack Canal and Dutton Street was ready-made for railroad tracks. It also could handle spur connections to individual mill complexes. The Boston and Lowell Railroad built the first of what was soon to be a double line of tracks in the western 25 feet of the green strip between Dutton Street and the Merrimack Canal. The line ended at Merrimack Street, where a passenger station opened with the first rail traffic in 1835.

The railroad had come to stay, but it did not have total freedom to alter the designed landscape. The Proprietors of Locks and Canals still owned the land on which the railroad sat and were determined to preserve the already planted trees. When they transferred the railroad right-of-way to the Boston and Lowell in 1847, a clause in the deed stated

> It is understood and agreed that said Rail Road Corporation are not to cause any trees to be cut down or removed (that are now standing) between the track of their road and said Merrimack Canal without the consent of said Proprietors.[17]

A triple file of trees along Dutton Street and the Merrimack Canal south of Market Street appear in a perspective drawing of the Lowell Machine Shop. Local engravers produced this detailed image in 1898 to illustrate the plant as it looked in 1845, the year it was formally organized as a separate company (see figure 7).[18] They drew trees flanking each side of Dutton Street and another row of somewhat smaller trees standing along the canal's left (western) bank. The railroad also encroached on the Dutton Mall north of the railroad station. Shortly after the line reached its terminus at Merrimack Street, workers extended tracks to each of the mill complexes, usually following routes estab-

lished by existing canals.[19] Completion of these freight spurs was critical to the financial success of the railroad. The spur from the station to the Merrimack Company continued straight along the east edge of Dutton Street, taking about a quarter of the promenade strip beside the canal.

In spite of this intrusion, the Dutton Mall's trees survived, thus preserving the promenade function in the remaining width of approximately 28 feet. In 1845, Josephine Baker described the younger of the two lines of elms:

> To the right was the canal, neatly walled-up and enclosed with a white fence near which a row of trees had been set, that flourished and gave promise in time to shade the railway that ran beneath to the factory yard.[20]

Rail traffic over the freight spur was far less frequent than on the combined freight/passenger track south of the station, and horses were used in place of locomotives to pull cars on this final link to the Merrimack mills.[21] So at least for the next decade, while other promenade areas were being developed elsewhere in the city, the Dutton Mall continued to be frequented by crowds of recreational walkers, especially on Sundays when there was no work in the mills and no need to move freight on the spurs.

A Canal System Linking the City with the Countryside

Walkers venturing beyond the developed malls of the Merrimack Canal could follow it upstream to the Pawtucket Canal and reach the relatively undeveloped areas outside the urban core, such as the falls on the Merrimack. Lucy Larcom recalled strolls in the 1830s along the "old canal path, to explore the mysteries of the guard-locks" on the Pawtucket Canal. She said that "there were miles of winding canal, that on holidays tempted young feet into long, sunny wanderings through green pastures." William Worthen commented that walks to the guard-locks "in pleasant company" were "the thing" in his day.[22]

After the 1847 addition of the Northern Canal to the system, ambitious hikers could take a circuitous route out the Merrimack and Pawtucket canals to the falls and back into the city on the Northern Canal (see figure 1). Where the Proprietors of Locks and Canals had done no deliberate landscaping, there were many appealing areas of natural growth. Wildflowers flourished (and still do) along the canals' stone walls and sloping banks. Harriet Robinson noted that wild roses, blue bells, and the "rock-loving Columbine" grew even on the sides of the "race-way" leading to her mill.[23]

The Shattuck Mall

By 1840, only one block along the Merrimack Canal lacked formal landscaping. When viewers looked south from the railroad station at Merrimack Street, they saw a gap in the greenway before the rows of trees began again at Market Street. Minimal planting had taken place in this long block during the initial development of the railway corridor, but land on the east side of the canal was "afterward greatly beautified" during William Boott's 1840 to 1845 tenure as agent of the Proprietors of Locks and Canals. It then became known as the Shattuck Mall.[24]

The youngest brother of Kirk Boott, whom we described as an enthusiastic horticulturist, designed the Shattuck Mall with the richest landscape treatment of all the planted areas along the Merrimack Canal. It was "artistically 'laid out'" with a variety of species including elm, maple, and cherry. This handsome promenading area was "covered in trees and shrubs," and "great care was had in the selection, and also the arrangement of them."[25] For a few years, the Proprietors of Locks and Canals also took care to protect this landscape from encroachment by new technology. The treasurer told Mr. George in 1845 that "he cannot have the right to erect his telegraph in Shattuck Mall."[26]

Alteration of the Greenway by Railroad Expansion

With the completion of the Shattuck Mall, Lowell now had a greenway along Dutton Street that extended the entire length of the Merrimack Canal. The landscaped corridor coexisted with the railroad until 1852. At that time, demand for more passenger service led to the addition of a third track along Dutton Street south of the depot and replacement of the original station with a larger passenger station, which also contained municipal meeting rooms in the upper story. To effect this, the Proprietors of Locks and Canals gave the railroad rights to build the new depot over the canal just south of Merrimack Street and granted an easement for use of the canal bank. The easement stipulated that the railroad could install a third track along the canal on level ground by building a retaining wall at the water's edge and backfilling the sloping bank.[27] Unfortunately, the building of a new depot and wall meant the loss of canal-edge trees on the west bank south of Market Street and on the east bank occupied by the Shattuck Mall.

The substantial mass of the new railroad station now loomed over the canal, separating the Dutton Street/Merrimack

Figure 8. *Looking north at Dutton Street, the railroad, and the Merrimack Canal from the roof of Building No. 2 at the machine shop (c. 1900). Note the line of trees beside the tracks and the 1852 railroad station spanning the canal in the distance.*
Photograph courtesy of Ann Metherall Collection, Center for Lowell History, Univ. of Massachusetts–Lowell.

Canal corridor into distinctive northern and southern parts. South of Merrimack Street, only the street trees survived. They continued to grace this strip for many years even as industrial development continued; most were still standing as mature trees at the end of the 19th century (see figure 8), and some lasted until the middle of the 20th century.

Formation of the Anne Street Canal Park

North of Merrimack Street, the rapid pace of urban development stimulated popular support for the preservation of green space in the city. By the late 1830s, construction was altering the open vistas of the countryside from the Dutton Mall. Buildings were going up on the eastern side of the Merrimack Canal and on the lands of the former Boott estate. City officials laid out Anne Street parallel to the canal in 1837, and Benjamin F. French, the first agent of the Boott Mills, built a house facing the water. In 1840, the city erected its first high school just north of French's house. Construction of additional houses followed soon after, effectively enclosing the northern reach of the canal opposite the Dutton Mall.

In 1844, several residents of Anne Street took steps to protect their views and the green surroundings of their new houses on the east bank of the canal. Benjamin French and his neighbor, George Carleton,[28] persuaded the Proprietors of Locks and Canals to grant them trusteeship over the strip of land at the canal's edge so they could keep it "as ornamental ground forever." The land so designated was "dedicated and set apart by the grantors for the purpose of beautifying and ventilating the City."[29]

The conveyance stated that the land was to be devoted to trees, shrubs, grasses, and other plantings. This was to assure that Anne Street residents would continue to receive

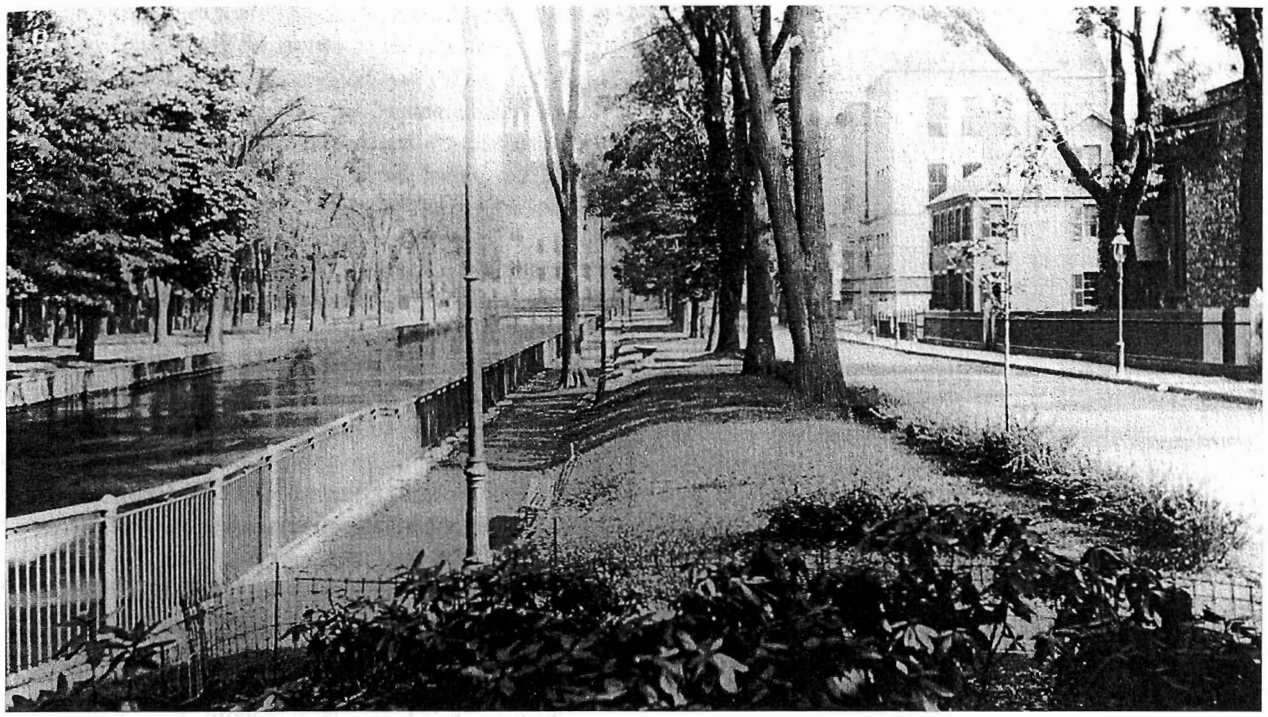

Figure 9. *Anne Street Park after it had been renamed in 1910 to honor the former mill girl and poet, Lucy Larcom. Looking north towards the Merrimack Dressing Mill. The Dutton Mall is across the Merrimack Canal at the left.* "Lucy Larcom Park, Bordering Anne Street Canal." *Tenth Annual Report of the Board of Park Commissioners of the City of Lowell for the Year Ending December 12, 1912* (Lowell, 1913). Courtesy of Lowell Historical Society.

"the advantages of light, air, and prospect that they now enjoy."[30] However, the Proprietors of Locks and Canals carefully retained their right to widen the canal. Hydraulic efficiency and the power demands of the mills came first.

It is unclear whether the Proprietors of Locks and Canals or the Anne Street Trust maintained what became known as the Anne Street Canal Park. Whoever was responsible, the land across the canal from the Dutton Mall was preserved and kept planted in shade trees, mostly elms, like the opposite bank (see figure 9). Although the Anne Street Canal Park remained a restricted enclave, fenced off at the street line (probably to maintain the unfenced canal bank necessary for breaking up ice in the canal), it did complete the landscaped surround of the power canal north of Merrimack Street.

This tree-lined water *alleé* had an equally graceful architectural perimeter. A harmonious group of residential, institutional, commercial, and industrial buildings enclosed the greenway with a unified and balanced edge. This handsome but unpretentious corridor figures among the significant explorations of urban design in the 19th century. Readily accessible and open to multiple levels of society, it tapped social democratic impulses that were only beginning to be explored by America's nascent park movement.[31] Here the boarding houses of mill operatives faced the homes of the gentry across a shaded greenway in the center of a busy city.

The park-like surroundings of the Merrimack Canal and its flanking streets provided a safe and attractive place for people to walk in the company of their fellow citizens or to pause for periods of personal contemplation. Although canals may have been relegated to back-alley status in some places, Lowell celebrated its *raison d'être* with a delightful greenway that was soon the most popular gathering place in the city.[32]

Promenading in the City

Traditionally, "promenading" has meant walking for pleasure in public. This venerable European practice came early to America but gained increasing social importance here in the 19th century. It was associated with "seeing and being seen," usually in an urban setting with one or more companions. On a promenade, there were opportunities to watch and perhaps to meet interesting people, including members of the other gender. Well-dressed promenaders might show off their finery while enjoying fresh air and stimulating scenery.[33]

The scenery for promenaders could include landscaped parks and gardens, tree-lined boulevards, urban skylines, waterfronts, and factories.[34] Many Americans who walked for enjoyment appreciated a stimulating look at prominent features of the industrial landscape, which included not just mines, mills, and shops, but also public works, transportation structures, and power systems. In Lowell, promenaders were drawn to the rivers and the glistening canals that laced the city. They strolled down company-owned walkways and along the public streets, admiring beautiful features of both the natural and the built environment.

Dutton Street was a popular place for promenading, particularly on Sundays and holidays when the mills ceased work. Many of the so-called Lowell "mill girls" took part in this outdoor activity. Nineteenth-century social reformers, including numerous advocates of urban parks, believed that walking about in the fresh air was a restorative exercise that helped keep workers healthy. They also stressed the importance of bringing people of different classes together and inspiring urbane, cultivated behavior through appropriate example.[35]

Public Relations and Public Display

Industrialists with a stake in Lowell saw clear benefits in keeping workers satisfied with their lives, proud of their community, and in good health. They also recognized the public relations value of Lowell's image as a model industrial city where young women could find both productive employment and cultural uplift.[36]

It was common for female workers to save several hours each Sunday, their one day of leisure, for promenading in their best dresses and hats. Many set aside part of their wages earned in the mills for the purchases of stylish clothing. Mary Paul wrote in 1845 of spending her leftover earnings on a "bonnet and some small articles." Sarah Hogdon, in 1830, even sent bonnets and cloth home to her sisters but got less-than-an-enthusiastic thank you. She seemed uneasy about her new purchasing power, saying she hoped "it may not be said of me when I come home that I have sold my soul for the gay vanitys of this world."[37]

Some family members resented this conspicuous consumption. Fathers, in particular, were often taken aback by the "airs" of their newly independent daughters in Lowell.[38] There was also, as one would expect, a positive response to conspicuous displays of clothing in a city built on textiles and eager to present a cultivated appearance. John Greenleaf Whittier approved of the female operatives dressing up and promenading in the city. Whittier said that following the afternoon service on Sunday, the streets blossomed as if the flowers in a garden "should take it into their heads to promenade for exercise. Thousands swarm forth, who during week days are confined to the mills." To a city with such a large workforce, "the weekly respite from monotonous in-door toil, afforded by the first day of the week was particularly grateful."[39]

Certain members of the growing female labor reform movement had a different response to working women who dressed well in public while accepting speed-ups and low wages in the mills. Promenading with expensive clothing actually became an issue in the factory debates of the 1840s. In 1848, a contributor to a newspaper called *The Protest* said that the "Cotton Lords" used such behavior by mill operatives to prove that existing wages were too high: industrialists could claim that "The girl who works in the mill, *The factory girl,* dresses as well as our daughters." In the same edition, "An Appeal to Mothers in the Country" argued that it was better to keep a young woman in the "rags" of rural poverty "than that she should be found in this city flaunting in silks and dressed out in gew-gaws, soulless, healthless. What can fine clothes and shining [gold] dust repay the loss of health and a good name."[40]

Some of the criticism toward operatives who promenaded had an interesting ethnic dimension. Those who walked about on Sunday after church could see Irish immigrants working in the power canals. The only time when water could be shut off for cleaning or repairing a canal without halting textile production was on Sunday. A satirical vol-

ume called *Easy Catechism for Elastic Consciences* written by a pseudonymous author (Israel of Old) for the "Sabbath-Labor-Christians of Lowell" in 1847 noted the unfairness of a system that relegated Irish workers to making "heave offerings" with their shovels from the beds of the canals, giving up religious services as well as "all the pleasures and fashionable amusements" that others enjoyed on the normal day of rest.[41] Whittier agreed with those who found this treatment of the Catholic Irish by Protestant managers hypocritical. He noted with sarcasm that "True, the Sabbath is holy, but the canals must be repaired."[42]

Promenading did not eliminate social barriers based on class, ethnicity, and occupation, but it did bring people of widely varying backgrounds together in public places. In Lowell, it was a sociable activity that also satisfied common needs for contact with nature. The distinctions between public and private space blurred as company officials encouraged recreational use of their property, and as the city began to acquire corporate land for public parks.

The Proprietors of Locks and Canals, having turned their attention to the operation of the canal system, decided to sell off much of their extensive property holdings in the 1840s. They let the Tremont and Suffolk Mills buy a parcel of land in 1842, on the condition that it be "leveled for a public walk or promenade and planted with trees, with suitable avenues and enclosures . . . for the use of the public, as a mall or promenade . . ."[43] In 1845, they sold the city enough land to create two sizeable parks or commons. City officials added diagonal promenades to these open areas, flanking them with rows of trees in a formal style reminiscent of Baroque parks.[44]

James B. Francis

Landscaping continued to be a high priority in the headquarters of the Proprietors of Locks and Canals after 1845, when the corporation became simply a provider of power, wholly owned by the 10 textile corporations and the newly independent machine shop on the canal system. The new agent, James B. Francis, was as fond of gardening as he was of designing water turbines and gate controls. He earned international renown for his work in hydraulics and structural theory, but his true love was really the horticultural realm of flowers, shrubs, and trees. He was a member of both the Boston Society of Civil Engineers and the Boston Society of Natural History. Francis as a planner and designer personified the green engineer who sought a rational synthesis of the natural world and the built environment. He worked tirelessly to beautify land owned by the Proprietors of Locks and Canals and to make it accessible for the people of Lowell.

After training on construction projects in Britain and working briefly for an American railroad, Francis joined the engineering staff of the Proprietors of Locks and Canals in 1834. He rose rapidly in the corporate hierarchy, becoming the power company's chief engineer in 1837 and its agent in 1845. Before he gave up those dual positions in 1885, he also served as the president of the American Society of Civil Engineers. His classic book, *Lowell Hydraulic Experiments* (1855), was the first work of American engineering science to win widespread acclaim in Europe. To Francis, designing with nature was part of the engineer's mandate. It was also a personal pleasure. Throughout his busy professional career, he found ways to include botanical cultivation in both his work and his personal life.

William Worthen, a friend and colleague, said that Francis was born in an English cottage surrounded by a garden. After his marriage in 1837, all of Francis' homes in Lowell had plots for cultivation. To his first one, "he gave personal attention with his usual persistence, and the result was that it became noted for its vegetables, fruits, and flowers." Remarking on Francis's characteristic generosity, Worthen wrote that "he plentifully supplied his neighbors" with the products of his gardening.[45]

The Northern Canal

The Northern Canal was James Francis' greatest professional triumph and remains one of the premier landmarks of American engineering. Designed and constructed under his direct supervision in 1846 and 1847, this vast undertaking was the culmination of decades of efforts to harness the flow of the Merrimack River at Pawtucket Falls.[46] The canal started at the head of the falls and ran roughly parallel to the river for over 2,000 feet (see figure 1). Then it turned inland for approximately the same distance to join the existing canal system at the Western Canal. By cutting through the elevated terrain below the falls, Francis created a spectacular island. Where the canal extended into the natural bed of the river, he built something even more dramatic. Here the "Great River Wall" holds the canal above the

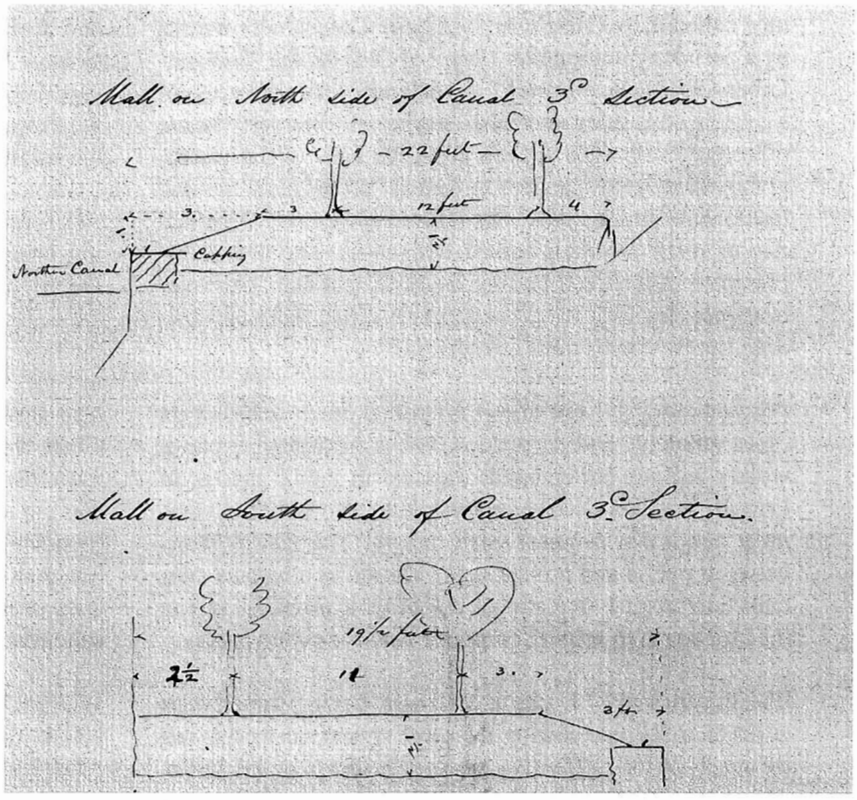

Figure 10. *Sketches by James B. Francis showing the malls he planned for both sides of the Northern Canal along its inland section.* Records of the Proprietors of Locks and Canals, vol. A-18, 1 April 1848. Courtesy of Baker Library, Harvard Univ.

rapids and provides an elevated platform with unsurpassed vistas. This massive wall with its exterior of heavy granite blocks is up to 36 feet in height and 1,000 feet long.[47]

Francis wanted the citizens of Lowell to share the views along the Northern Canal. Once the canal was completed in 1847, he added a walkway from its entrance to the Suffolk Mill. The directors' minutes note that

> Matters of ornament such as covering the banks with soil, planting trees, making walls, fences, etc. . . . which are not essential to the safety of the canal were not included in Francis' estimates of costs and were not attended to until the canal and its structures were finished.

Official authorization for "suitable shade trees" and iron fences came in 1848.[48]

Sketches for malls that Francis planned to build on either side of the Northern Canal still exist (see figure 10). Intended for the inland section of the canal, these malls had double lines of trees. The note that accompanies his sketches is revealing of the man: "The above sections represent the form I want to have the banks when completed . . . "[49] Here is an engineer concerned with form in the broad sense. He is thinking like a landscape architect, trying to design not just the shape of the earthwork behind each canal wall but also the form of the tree-lined malls that will beckon the citizens of his community.

Francis' journals imply that he took personal charge of the selection of trees and their placement. His annual entries on the accomplishments of the past year almost always mention plantings. He specified types of trees and shrubs, showing considerable knowledge of arboriculture.[50] However, Francis faced the same problem that perplexed Kirk and William Boott: the slow growth patterns of the most-admired shade trees. His solution along the Northern Canal was to plant an additional set of fast-growing trees (black Italian poplars) to provide immediate shade while the

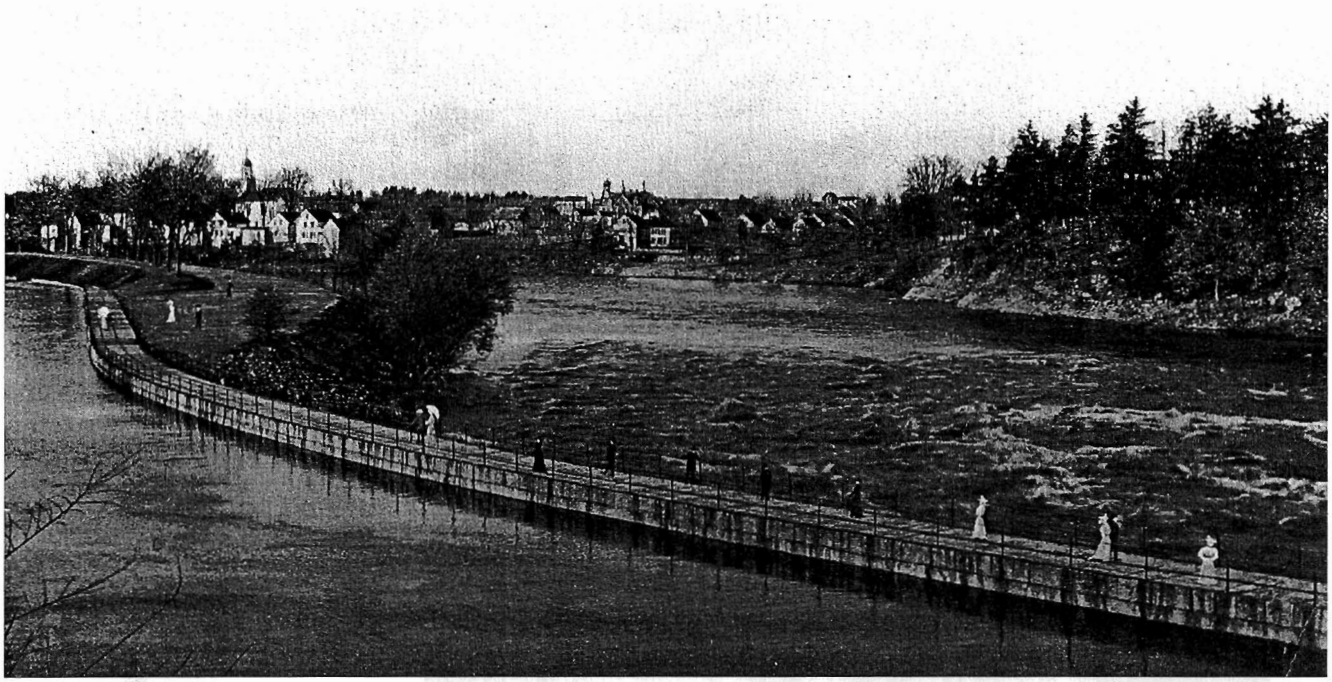

Figure 11. *Postcard showing James B. Francis' Canal Walk. This turn-of-the-century view shows promenaders on the Great River Wall of the Northern Canal and on the landscaped "island" section in the distance at the left. Both the Merrimack River and the canal are flowing from left to right.* "Canal Walk Lowell, Mass.," (G. Prince and Son: Lowell, Mass., c. 1905). Author's collection.

more-desirable elms were maturing. He cut the poplars down in 1859, when they began to crowd the elms. Charles Cowley, a local historian and civic booster, wrote of the Northern Canal in 1868 that "the banks are lined with a double colonnade of trees, tastefully laid out with green plats and beautiful summer promenades."[51]

Documentary accounts of the enthusiasm which people displayed for the Northern Canal's walkway are supported by a wealth of photographic evidence, including numerous stereo and postcard images of people promenading on various sections (see figure 11). Edward Thomas provided the following account:

> Years ago, it was one of the sights of the city for its citizens on Sunday afternoons to promenade from Cabot Street along the side of the Northern Canal, up toward Pawtucket Street under the high bridge; and along the stone dividing wall, between the canal and the river, thence to the Pawtucket Falls bridge. The writer clearly recalls the hundreds, who enjoyed the walk, which presented a singularly attractive view of its entire length, and was known as the Canal Walk.[52]

The Canal Walk was obviously an important amenity for the city. An illustrated history of Lowell published in 1897 compared the promenade and its surroundings to a park and commented on the relief it provided urban dwellers:

> This island [between the Northern Canal and the river] is grassy and wooded, and supplies an outing-ground with many rural elements still clinging to it. Its proximity to some of the most-densely populated streets of the city gives it a special value as a park. For a quarter of a mile beyond the island, the canal is separated from the river by a high stone embankment which serves as a fine promenade. The island and the embankment together constitute what is called the Canal Walk, and offer as fine an opportunity for a half hour's stroll as one could well wish. It is well away from the dust and noise of the city. Moreover the view of the river at this point is of peculiar interest.[53]

The orderly spacing of trees along the canal is apparent in a number of historical photographs (see figure 12). Unfortunately none of the graceful elms planted in 1848 survived the ravages of Dutch elm disease in this century. Also sadly missing from the present landscape is a tree of

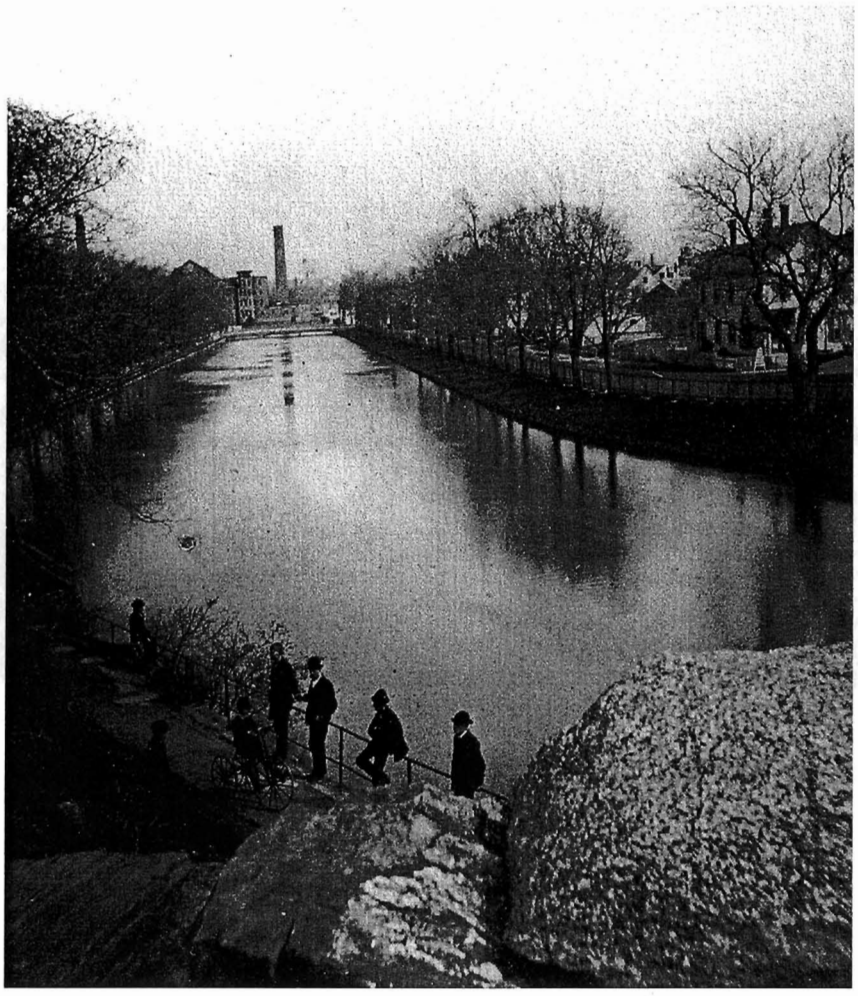

Figure 12. *Trees planted along the inland section of the Northern Canal. Looking southeast from a point above the Canal Walk toward the Tremont Mills. The crooked tree on the far right is a hackberry* (Celtis occidentalis) *moved by James B. Francis to the head of an existing row of elms.* Photograph courtesy of Lowell Historical Society.

considerable renown that Francis saved from destruction in 1875.

This grand specimen of the hackberry, or *Celtis occidentalis,* grew naturally near the Northern Canal but was marked for cutting because it encroached on a road. Instead of allowing the sawyers to proceed, Francis used heroic and innovative procedures to move this large tree to the head of "the row that stretches from Pawtucket Street down the southern bank of the canal." A reporter commented that "Owing to its rarity, Mr. Francis, the agent of the Locks and Canal Company, wanted to save it. Now, when Mr. Francis wants to have a thing done, he is in the habit of finding a way to do it." He dug a trench 21 feet in diameter around the tree, waited till a period of cold weather, then hoisted and moved the entire tree with its root system safely encased in a disk of frozen ground. "When the ground thawed in the spring, the tree settled down to its bed and is now in thrifty condition." The newspaper said that his efforts "deserve the acknowledgments of every lover of nature."[54]

Greenways and Park Systems

It should not surprise us that designers of lengthy canal systems would think of parks as systems and stress the extended greenway more than the isolated, discrete greenspace. Landscaping along the Northern and Merrimack canals followed the routes of these constructed channels. Walkways linked sections with different characters and

offered promenaders on the Northern Canal a particularly striking sequence of visual experiences.

In the second half of the 19th century, Frederick Law Olmsted Sr. would become famous for planning such sequences at New York's Central Park, Brooklyn's Prospect Park, and Boston's Emerald Necklace. He would go on to become our nation's most influential advocate of park systems and greenways. Charles Little, in *Greenways for America,* argues that "if any single person 'invented' the idea of greenways," it was Olmsted. Lowell already had a rural cemetery, two city parks, and a well-developed system of canal greenways a decade before Olmsted designed his first park in 1858, 17 years before he proposed his first greenway, and more than a quarter of a century before he began planning a full system of parks for Boston. The very active "greenway movement" of today may really have its origins in Lowell.

Maturity of the Merrimack Canal Corridor

After the completion of the Anne Street houses, the most significant change along the northern reach of the Merrimack Canal was the erection in three stages, from about 1862 to 1875, of the Merrimack Company's Dressing Mill that bridged the canal. The dramatic Romanesque tower of this mill terminated the sight line from Merrimack Street, just as the 1823 stair tower of Mill No. 1 and the 1845 cupola of Mill No. 6 had done (see figures 6 and 9).[56] Coupled with the first phase of the Dressing Mill construction was the widening of the Merrimack Canal.[57] To do this, the Proprietors of Locks and Canals exercised their right to take part of the Anne Street Canal Park, thereby reducing its width from about 40 to 30 feet. If there was a double row of trees here at the time, this widening would have forced the removal of the water-side elms.[58] Whatever the case, a single well-maintained row remained in place.

After the changes wrought by the railroad spur and the enlarging of the canal, the lower reach of the Merrimack Canal (the section north of Merrimack Street) remained essentially unchanged, and the trees grew to maturity (see figure 13). Indeed, referring to the modest stature of the trees in mid-1840s Lowell, Whittier had predicted that

> Time will remedy all this; and when Lowell shall have numbered half the years of her sister cities, her newly planted elms and maples, which now only cause us to contrast their shadeless stems with the leafy glory of their parents of the forest, will stretch out to the future visitor arms of welcome and repose.[59]

In 1903 an English observer of Lowell, undoubtedly referring to the Merrimack Canal's lower reach, noted that "this canal, shaded on both sides with old trees, and flowing swift and clear down the middle of the street leading to the mills, is an ornament as well as a profitable servant to the town."[60]

Other industrial cities looked to this canalside landscape as a planning model. In 1906, a published report of the Metropolitan Park Commission in Providence, Rhode Island, included an illustration of the Merrimack Canal in Lowell. It noted that this "artificial waterway created for a wholly utilitarian purpose, shows how easily the banks of the Woonasquatucket might be made attractive instead of forbidding and repulsive."[61]

Redevelopment as Lucy Larcom Park

The Merrimack Canal greenway was well maintained over the years, but civic reformers in the early-20th century saw that it could be improved. The City Beautiful spirit of the times inspired a 1908 proposal in Lowell to further develop some of the city's canal margins and river frontage for purposes of urban improvement and recreation.[62] Little came of this with regard to the rest of the canal system, including the truncated, deteriorating Northern Canal Walk. However, the city did assume the Anne Street Canal Park trusteeship and authorized expenditures for a landscape enhancement program on both sides of the Merrimack Canal.[63] City officials worked out an arrangement with the Proprietors of Locks and Canals to repair and cap the walls and upgrade the Dutton and Anne streets parks.

Work took place on the Anne Street side from 1909 to 1911; then on the Dutton Street side in 1916 and 1917. First, the Proprietors of Locks and Canals repaired and raised the walls about 2 feet and leveled them with new granite capstones. Following this project, the city installed edge railings with cast-iron posts and round-bar picket panels of steel, perhaps inspired by those at the new Charles River Esplanade in Boston. Additionally, on the Anne Street side, the city added a cinder path at the water's edge, five widely spaced, unshaded arc lights on cast-iron and steel crook-neck posts, several park benches, a turned-granite drinking fountain, a rhododendron bed, and a long barberry hedge.[64] The design concept for some of this work came from a landscape plan for the Anne Street side prepared by the Olmsted Brothers, although the final results were less sophisticated than the Olmsted plan.[65]

The city renamed the Anne Street Canal Park in 1910, calling it Lucy Larcom Park to honor the famous writer, poet, and editor who had once been a Lowell "mill girl."[66] As stated in Lowell's 1910 Park Commission report,

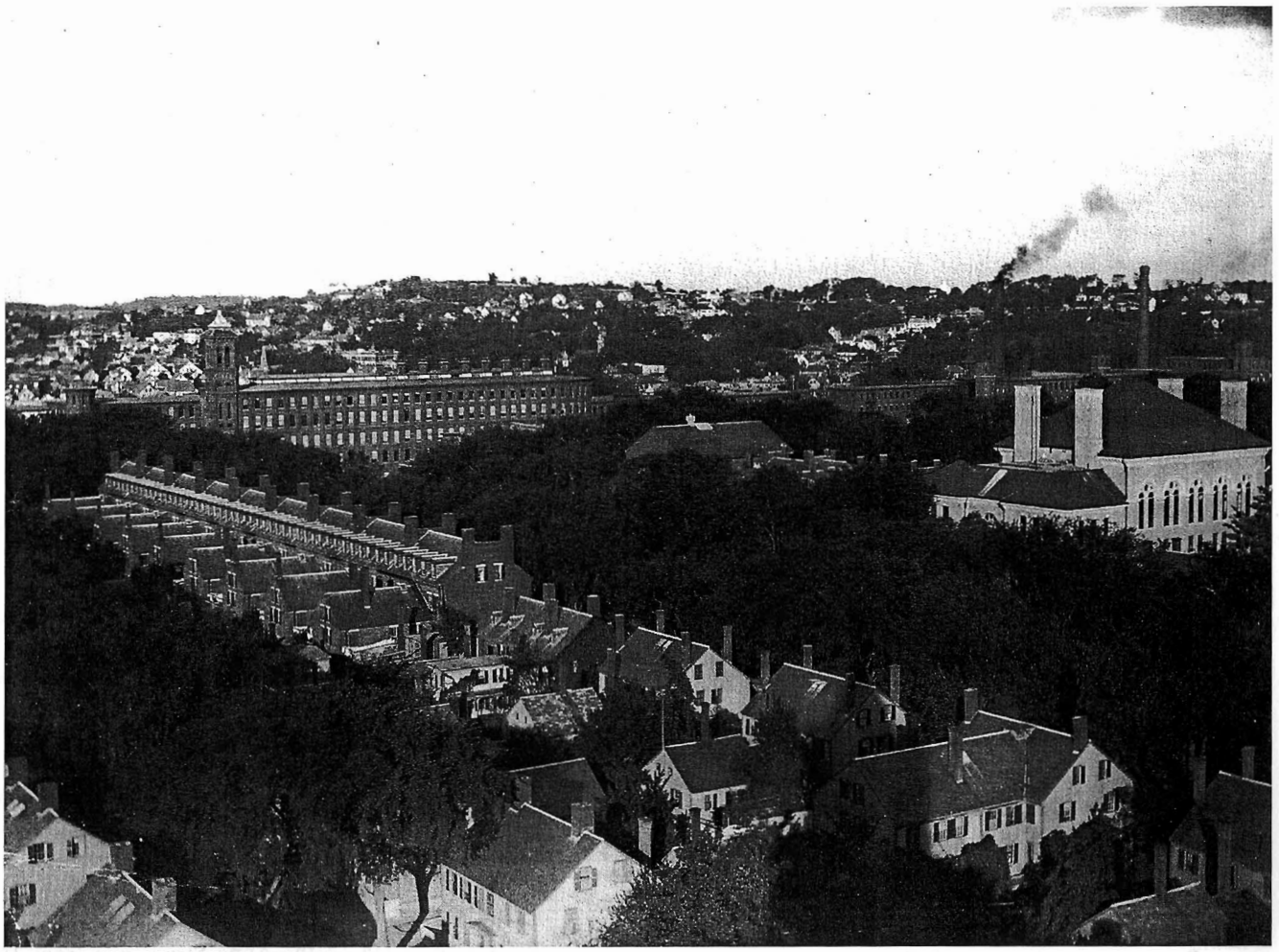

Figure 13. *Photograph taken from the tower of the Lowell City Hall, c. 1900, looking northeast at the green corridor along the Merrimack Canal. The line of Dutton Street boarding houses runs diagonally across the scene, parallel to the foliage-obscured canal.*
Photograph courtesy of Univ. of Massachusetts–Lowell.

> The name Lucy Larcom is an honorable name among women in the annals of the early history of the City, and may fittingly be associated with a breathing place for its citizens near the mills and near to the dwelling places of the men and women who labor in them.[67]

Dissolution and Renewal

While one of Lowell's canalside greenways was getting a new lease on life as Lucy Larcom Park, another was falling into serious decline. Part of Francis' walkway and line of trees along the inland reach of the Northern Canal had disappeared in the 1880s, when the Proprietors of Locks and Canals allowed construction of triple-decker housing right up to the edge of the canal. By 1908, the remaining walkway along the river had become, in one newspaper account, "the resort of disorderly persons."[68] It was soon fenced off and then allowed to deteriorate for most of this century. Other parts of the canal system suffered similar neglect as Lowell went into decline.

The unraveling of Lowell's industrial economy and the culture it supported began in the mid-1920s and soon adversely affected the landscaped areas beside the Merri-

mack Canal. When the textile industry started to shut down its mills, the tax base in Lowell shrank rapidly. During the Great Depression, it became impossible for the city to maintain Lucy Larcom Park. Plantings died, and the lighting, benches, and walkway disappeared.[69] The Proprietors of Locks and Canals could no longer afford expenditures for landscaping the margins of any waterway.

Wrecking balls and bulldozers also played a role in the decline of the Merrimack corridor. The private houses north of the high school were leveled about 1920, to make room for a bland, hulking addition to the school. At the same time, the city tore out the granite block paving of Anne Street and replaced the roadway with a concrete walk. The final insults were the demolition of the Dressing Mill in the early 1940s, the rest of the Merrimack mills complex in 1960, and the entire line of Dutton Street boardinghouses in 1966.

A few of the corporate elms lived through these years, but their days were numbered. Dutch elm disease was as merciless along the Merrimack Canal as it was on the Northern Canal Walk. Today there is not one of the towering elms that once shaded Lowell's promenaders. However, there are new trees to take their places, and flowers are blossoming again in Lucy Larcom Park.

The Lowell Historic Preservation Commission restored both sides of the remaining greenway north of Merrimack Street for the City of Lowell and the Lowell National Historical Park. This rehabilitation program, completed in 1991, was based on the early-20th-century redesign of the park by the city and the Olmsted Brothers. The new project included restoration of the historic edge railings, reinterpretation of the walkway and benches along the Lucy Larcom Park edge, and reinstitution of the green *alleé* of trees. Arborists incorporated an ancient ash and a few other trees from the past in a new planting effort that, through infilling, recreated single rows on each side of the canal. Whittier would again lament the small size of the young trees and, again, counsel us to be patient.

On the Northern Canal, work has begun to reopen the long closed canal walk and replace missing elements of the greenway that James Francis designed. Part of the inland section now has a park-like setting again. The Lowell National Historical Park is committed to the recreation of a pedestrian walkway for the entire length of the canal. The project is a fitting tribute to a renowned engineer with a green thumb.

Conclusion

Although much of the historic context of the canalside greenways is gone, those that have been renewed are again attracting users who are focused toward the water—the resource that prompted the urban and industrial development of Lowell. The city's greenways are survivals of the linear (and curvilinear) parks developed by industrialists and engineers long before Olmsted promoted the idea of urban park systems or created his own green corridors. The Merrimack Canal, flowing by Lucy Larcom Park, is the sole industrial remnant of the city's first textile corporation. This preserved channel, and the rehabilitated greenway that borders it, are effective vehicles for interpreting the designed landscape of the early textile era. They are links to a lost architectural setting and a time when promenading was the height of social fashion, not only for corporate executives and their wives, but also for the mill operatives, shopkeepers, and artisans of Lowell.

Even more evocative is the spectacular walkway along the Northern Canal, with its truly sublime view of the extended rapids below Pawtucket Falls. Restoration of this lengthy riverside promenade is underway and will soon provide public access to the Great River Wall. When planned landscaping of the connecting island section is completed, visitors will again stroll down a sylvan path to James Francis' astounding stone retaining wall, there to experience the full impact of green and civil engineering on a grand scale.

Notes

The authors would like to thank the following individuals and institutions for assistance in the preparation of this article: Jill Desimini, Hunter Dupree, Beth Frawley, Lance Gasparian, John Goodwin, Richard Greenwood, Lisa Harlow, Charles Hyde, Gloria LaDouceur, Susan Lyons, Lyn Malone, Joanna Mareth, Pat Martin, Martha Mayo, Dan Walsh, Molly Yancovitz, Baker Library of Harvard University, Brown University, Center for Lowell History of the University of Massachusetts at Lowell, Dibner Institute, Historic American Engineering Record, Lowell Historical Society, Lowell Historic Preservation Commission, Lowell National Historical Park, Massachusetts Horticultural Society, and Museum of American Textile History.

1. Henry David Thoreau, *The Concord and the Merrimack* (New York: Bramhall House, 1954), 77.
2. The Proprietors of Locks and Canals had opened the Pawtucket Canal around the falls in 1797, but it was never a financial success. See Patrick Malone, *Canals and Industry: Engineering in Lowell, 1821–1880* (Lowell, Mass.: Lowell Museum, 1983). This is also included with other contributions in Robert Weible, ed., *The Continuing Revolution: A History of Lowell, Massachusetts* (Lowell: The Lowell Historical Society, 1991). For discussion of the Boston Associates, see Robert F. Dalzell Jr., *Enterprising Elite: The Boston Associates and the World They Made* (New York: W. W. Norton, 1993). Still useful on the development of Lowell is *John Coolidge, Mill and Mansion* (New York: Columbia Univ. Press, 1942), but *Report: Lowell National Historical Park and Preservation District Cultural Resources Inventory* (Boston: Shepley Bulfinch Richardson and Abbott, 1980) reflects more recent and extensive research on the city's physical history.
3. For an environmental critique and a discussion of interests shown by Boston Associates in nature, see Theodore Steinberg, *Nature Incorporated: Industrialization and the Waters of New England* (Cambridge: Cambridge Univ. Press, 1991), 15, 70–6, 94–5.
4. Some Lowell boosters promoted that pastoral ideal. Quotes to that end by several of them are in Thomas Bender, *Toward an Urban Vision* (Baltimore: Johns Hopkins, 1975), 74–6. On p. 79, Bender interprets the painting as having "no clear distinction between cityscape and landscape." The artist apparently intended his work to give that impression. Although its provenance is unknown, it was likely commissioned by someone highly placed in Lowell's owner/manager elite with a stake in maintaining the pastoral mill village image as long as possible. The painting should be viewed through that lens.
5. By March 1822, Boott was the agent and treasurer of both the Merrimack Manufacturing Company and the Proprietors of Locks and Canals. Brad Parker, *Kirk Boott: Master Spirit of Early Lowell* (Lowell: Landmark Printing, 1985), 43, 47, 56.
6. During this period, the factory village seamlessly fitted into the rural landscape was still the norm. See Richard Greenwood's article in this issue; Richard Candee, "New Towns of the Early New England Textile Industry," in *Perspectives in Vernacular Architecture,* ed. Camille Wells (Vernacular Architecture Forum, 1982), 31–50; and Gary Kulik, Roger Parks, and Theodore Penn, eds., *The New England Mill Village,* 1790–1860 (Cambridge: MIT Press, 1982). The scale of the building campaign of the 1820s in Lowell was greater than in any previous mill village. The first mill complex was nearly two miles from the falls, and its corporate housing could shelter hundreds of workers.
7. Samuel T. Picard, "Whittier in Lowell," *The Middlesex Hearthstone* 1, no. 6 (May 1896): 13–15, and Whitman Bennet, *Whittier, Bard of Freedom* (Port Washington, N.Y.: Kenikat Press, 1972 reprint of 1941 ed.), 196–7.
8. John Greenleaf Whittier, *The Stranger in Lowell* (Boston, Waite, Pierce and Company, 1845), 12–13.
9. Ibid.
10. The distinctive New England arboriculture of this romantic tree had its beginnings in private plantings starting in the mid-17th century. However, it became highly popular in the early-19th century because of its superb effects on the streets and commons of such cities as New Haven, Boston, Springfield, and Northampton. See Andrew Jackson Downing, *A Treatise on the Theory and Practice of Landscape Gardening* (Sakonnet, R.I.: Theophrastus, 1977 reprint of the 9th ed. of 1875), 130. Planted adjacent to Boston's Tremont Street in the early-18th century was the first of the tree-lined malls or promenades that, by 1834, encircled Boston Common with double or triple rows of elms. See Walter Muir Whitehill, *Boston, a Topographical History* (Cambridge: Harvard Univ. Press, 1968), 59; and Shiela Conner, *New England Natives* (Cambridge: Harvard Univ. Press, 1994), 231.
11. See Alan Emmet, "Kirk Boott [Sr.] and the Greening of Boston," *Arnoldia* 47, no. 4 (Fall 1987): 4–34; Parker, *Kirk Boott,* 40 (see n. 5); and Steinberg, *Nature Incorporated,* 72–5 (see n. 3). Steinberg points out that 37 Boston Associates were members of the Massachusetts Horticultural Society in its first 40 years. We are grateful to Hunter Dupree for advice on the horticultural and botanical interests of Boott family members.
12. Harriet Robinson, *Loom and Spindle: Or Life among the Early Mill Girls,* New York: Thomas Y. Crowell & Company, 1898, 10.
13. *Essex* (Salem, Mass.) *Gazette* (12 August 1825), as quoted in John O. Green, "Historical Reminiscences," *Proceedings in the City of Lowell at the Semi-Centennial Celebration of the Incorporation of the Town of Lowell, March 1, 1876,* (Lowell: H. Penhallow, 1876), 67.
14. For discussion of boarding houses, see Stephen A. Mrozowski, Grace Ziesling, and Mary C. Beaudry, *Living on the Boott: Historical Archaeology at the Boott Mills Boardinghouses, Lowell, Massachusetts* (Amherst: Univ. of Mass. Press, 1996); Stephen Mrozowski and Mary Beaudry, "Archaeology and the Landscape of Corporate Ideology," in *Earth Patterns: Essays in Landscape Archaeology,* ed. William M. Kelso and Rachel Most (Charlottesville: Univ. Press of Va., 1990), 189–208; and Priscilla Brewer, "The Boarding House System in Lowell," in *Exhibits Planning Report, I, Boott Mills Area* (Lowell: Lowell National Historical Park, 1983). Mrozowski and his fellow archaeologists show the potential of excavated plant remains (combined with stratigraphy, documentary research, etc.) to inform us about historical landscapes such as lawns and gardens. They have done archaeobotanical analyses of wood, seeds, pollen, and phytoliths ("inorganic casts of plant structures") from the yards of several boarding houses and agents' houses in Lowell. For further discussion of landscape archaeology, see Patricia E. Rubertone, "Historical Landscapes: Archaeology of Place and Space," *Man in the Northeast* 31 (1984): 123–38; and Patricia E. Rubertone, "The Common Ground of Contested Space: Historical Archaeology and American Landscapes," *American Anthropologist* 99-4 (1997): 827–9.
15. M, "Shade Trees," *Lowell Offering,* series II, vol. I (1841): 233.
16. *Webster's New World Dictionary of the American Language* (New York: World Publishing, 1970), 857. The term also referred to a game and would later be applied to certain shopping areas. See "Shattuck Mall" and James Francis' use of "mall" later in this article.
17. Quit Claim Deed from Proprietors of Locks and Canals on Merrimack River to Boston and Lowell Rail Road Corporation, 25 January 1847. Middlesex South Registry of Deeds (Cambridge), book 502, p. 185. Copy at Middlesex North Registry of Deeds (Lowell), book 51, p. 376.
18. *Lowell Machine Shop* (Lowell, 1898), 112. The illustrations in this catalog appear to be very accurate. Perspectives drawn from the same station point to illustrate the plant as it existed in dates from 1870 to 1898 show only the trees flanking the street.
19. The spur tracks to the mills first appear on an 1837 map of the city. See Plan of Lowell, 1837 (L & C Drawing Archive, Lowell National Historical Park).
20. J. L. B. [Josephine L. Baker], "The Factory Girl," *Lowell Offering,* series II, vol. 5 (1845): 274. This piece of fiction describes what is surely a scene on the Dutton Mall.
21. We are grateful to Professor John Goodwin, a Lowell historian and textile expert, for this information about horses being used on the freight spur.
22. See Lucy Larcom, *A New England Girlhood* [1889](Gloucester, Mass.: Peter Smith, 1973), 163; Lucy Larcom to Charles Cowley, 28

February 1876, *Proceedings in the City of Lowell,* 93–5 (see n. 13); and William Worthen, "Life and Works of James B. Francis," in *Contributions of the Old Residents Historical Association* V (Lowell, 1894): 237.

23. Robinson, *Loom and Spindle,* 37 (see n. 12).
24. Paul Hill, "Personal Reminiscences of Lowell, Fifty Years Ago," *Contributions to the Old Residents Historical Association* V (Lowell, 1894): 279.
25. H, "Reminiscences—No. 3" in *Lowell Historical Society Scrapbook* I [c. 1872], 70.
26. John T. Morse, Treasurer, P.L.& C., to J. B. Francis, Agent, P. L. & C., 27 September 1845, Locks and Canals Papers, vol. DA-2A, p. 32, Baker Library.
27. Indenture between Proprietors of Locks and Canals on Merrimack River and Boston and Lowell Rail Road Corporation, 1 July 1852. Middlesex South Registry of Deeds (Cambridge), book 642, p. 508. Copy at Middlesex North Registry of Deeds (Lowell), book 21, p. 249.
28. In 1855, Carleton, a local druggist and partner in Carleton and Hovey, manufactured Father John's Medicine, which became a widely popular patent medicine. See "73, 79, 91 Market Street, Research Report, Father John's Medicine Buildings" in Shepley, Bulfinch, Richardson, and Abbot, *Lowell Cultural Resources Inventory, Lee Street through Merrill Street* (Boston National Park Service, 1979).
29. Deed of Trust from Proprietors of Locks and Canals on Merrimack River to Benjamin F. French and George H. Carleton, Trustees of the Anne Street Canal Park Trust, Middlesex South Registry of Deeds (Cambridge), book 450, p. 431. Copy (20 March 1844) at Middlesex North Registry of Deeds (Lowell), book 46, p. 138,
30. Ibid.
31. See Bender, *Towards an Urban Vision,* 88, 168–9, 178–80 (n. 4), and Roy Rosenzweig and Elizabeth Blackmar, "Urban Parks," in *Encyclopedia of American Social History III* (New York: Charles Scribner's Sons, 1994), 1689–95.
32. New England industrial communities that followed the Lowell pattern often had landscaped corridors along power canals. Examples include Dover and Great Falls, N.H.; Lewiston, Maine; Lawrence and Holyoke, Mass. Some smaller mill villages, such as the Crown and Eagle Mills in North Uxbridge, Mass. also had this feature.
33. The best discussion of promenading is in Daniel Bluestone, "From Promenade to Park: The Gregarious Origins of Brooklyn's Park Movement," *American Quarterly* 39-4 (Winter 1987):529–50.
34. Industrial sightseeing has received attention in two recent books: John Sears, *Sacred Places: American Tourist Attractions in the Nineteenth Century* (N.Y: Oxford Univ. Press, 1989); and David E. Nye, *American Technological Sublime* (Cambridge: MIT Press, 1994).
35. See n. 31.
36. Bender, *Towards an Urban Vision,* 32–6, 41–3 (see n. 4). For discussion of model industrial towns, see the article by Arnold Alanen and Lynn Bjorkman in this issue of *IA.* See also John S. Garner, *The Model Company Town* (Amherst: Univ. of Mass. Press, 1984); John S. Garner, ed., *The Company Town* (New York: Oxford Univ. Press, 1992); and Margaret Crawford, *Building the Workingman's Paradise* (New York: Verso, 1995).
37. See Paul letter quoted in Thomas Dublin, ed., *Farm to Factory: Women's Letters, 1830–1860* (N.Y.: Columbia Univ. Press, 1981), 101; and Hogdon letter quoted in Susan Douglas, "The Migration of Young Women from New Hampshire to Lowell, Massachusetts," (seminar paper, Brown Univ. 1973), 9.
38. We are indebted to Susan Douglas and Nicholas Ward, whose 1973 seminar papers at Brown Univ. explored this theme.
39. Whittier, *The Stranger in Lowell,* 90–4 (see n. 8).
40. *The Protest* (Lowell: 25 November 1848). We are grateful to Michael Folsom for finding this source.
41. Israel of Old, *Easy Catechism for Elastic Consciences* (Lowell: Sabbath-Labor-Christians of Lowell, 1847) 11–13.
42. Whittier, *The Stranger in Lowell,* 92–3 (see n. 8).
43. Deed restrictions quoted in Shepley, Bulfinch, Richardson, and Abbott, "Suffolk Mfg. Co.," cultural resources inventory report for the Lowell National Historical Park (1979), 6.
44. Bender, *Toward an Urban Vision,* 88 (see n. 4). This was an early example of the establishment of municipal parks in this country. Galen Cranz does not begin her periodization of urban park development until 1850. See Galen Cranz, *The Politics of Park Design: A History of Urban Parks in America* (Cambridge: MIT, 1982).
45. Worthen, "Life and Works of James B. Francis," 232 (see n. 22). Worthen had worked with Francis at the Proprietors of Locks and Canals, and like him, served as president of the American Society of Civil Engineers. Another biographical sketch of Francis can be found in Hiram Mills, "James Bicheno Francis," read to the Corporation of the Institute of Technology [MIT], 14 December 1892.
46. See Malone, *Canals and Industry* (n. 2); Patrick M. Malone, "James B. Francis and the Northern Canal," in *Boston's Water Resource Development: Past, Present, and Future,* ed. Jonathan French (N.Y.: American Society of Civil Engineers, 1986), 10–18; and Donna Mailloux, "James B. Francis and the Northern Canal," unpublished report for the Lowell National Historical Park, 1978.
47. Ibid. and numerous Proprietors of Locks and Canals plans now in the collections of the Lowell National Historical Park. See also the Historic American Engineering Record (HAER) documentation of the Lowell Canal System at the Library of Congress. The authors were the co-supervisors of the HAER teams in 1974 and 1975.
48. Proprietors of Locks and Canals, Directors' Records, 5 March 1847, 14 April 1848.
49. J. B. Francis section sketches and notes, 1 April 1848, P. L. & C. Collections, V. A-18, Baker Library.
50. Bound notebooks found by the authors in the offices of the Proprietors of Locks and Canals at Boott Mills and now in the possession of the Lowell National Historical Park.
51. Charles Cowley, *Illustrated History of Lowell* (Boston: Lee and Shepard, 1868), 137.
52. Edward Thomas, "A Retrospect of the Early Manufacturing in the City of Lowell," *Lowell Historical Society Contributions* II (1926): 464.
53. *Illustrated History of Lowell* (Lowell, Mass.: Courier Citizen Co., 1897), 771–2.
54. "Moving a Large Tree," *Vox Populi* (Lowell, Mass.) (24 July 1875).
55. Charles E. Little, *Greenways for America* (Baltimore: Johns Hopkins Press, 1990), 7–11. Olmsted's first park was Central Park in New York City, designed with Calvert Vaux. He proposed a greenway along a creek for the Univ. of Calif. at Berkeley in 1865 and, in the following year, suggested a parkway linking Brooklyn's Prospect Park with Coney Island. The first connected park system may be Olmsted's in 1868 at Buffalo, N.Y. His planning for the Emerald Necklace, which includes greenway connectors, began in the mid 1870s. Little credits William H. Whyte with first mentioning the term "greenway" in a publication in 1959.
56. Prior to the Dressing Mill, the Merrimack Manufacturing Company maintained other focal elements to terminate the view down the canal corridor. The large cupola centered atop Mill No. 6 shows in figure 6. Also notable was the octagonal stair tower at the southwestern corner of Mill No. 1's 1853 replacement.

57. "Widening the Merrimack Canal," *Lowell Daily Courier* (29 August 1862), 2. The width at the bottom was widened about 20 feet, eliminating the sloping sides. The new alignment was biased toward Anne Street, resulting in margin narrowing only along that side.
58. Two 1855 plans for unexecuted canal feeder schemes show different tree configurations in the Anne Street Canal Park. One shows a single row of trees, the other a double row. See drawings 118-198 and 118-265, Locks and Canals Drawing Archive, Lowell National Historical Park.
59. Whittier, *The Stranger in Lowell,* 13 (see n. 8).
60. T. M. Young, *The American Cotton Industry* (N.Y.: Charles Scribner's Sons, 1903), 28.
61. *Report of the Metropolitan Park Commission* (Providence, R.I., 1906), 76.
62. "Lands along River and Canals That Might be Spots of Beauty," *Lowell Courier-Citizen* (25 January 1908).
63. See "An Act of the Commonwealth authorizing the City of Lowell to accept trusteeship of Anne Street Canal Park," M.G.L., Chapter 20, 1909, passed 5 March 1909, and an agreement between the Proprietors of Locks and Canals on Merrimack River, and the City of Lowell regarding transfer of the trusteeship to the City, and the development of and public access to the park, 10 May 1909.
64. The Locks and Canals wall work is documented in the Locks and Canals Photograph Collection, Center for Lowell History, U. Mass., Lowell. The railings, path, and site amenities were installed by the city. That work is documented in the *Seventh (1909), Eighth (1910),* and *Ninth (1911) Annual Reports of the Board of Park Commissioners of the City of Lowell.* See Lowell City Documents in the Center for Lowell History for those years.
65. Anne Street, Lowell, Mass. Planting Plan, Olmsted Brothers, Landscape Architects, Brookline, Mass., 7 March 1910 (Olmsted file no. 3970, plan no. 7). The planting list, consisting of 18 beds of 10 varieties of shrubs, is contained on the plan. The plan also contains recommended removal of six trees to regularize their spacing.
66. Larcom, *A New England Girlhood* (see n. 22).
67. *Eighth (1910) Annual Reports of the Board of Park Commissioners of the City of Lowell* (Lowell: Hood, 1911), 10.
68. "Lands along River and Canals" (see n. 62).
69. All had long since disappeared by the time of a photo taken by John Coolidge in the late 1930s. See photograph no. P1781-5A-17, American Textile History Museum, Lowell.