

"Father of the Whole Enterprise": Charles S. Storrow and the Making of Lawrence, Massachusetts, 1845-1860

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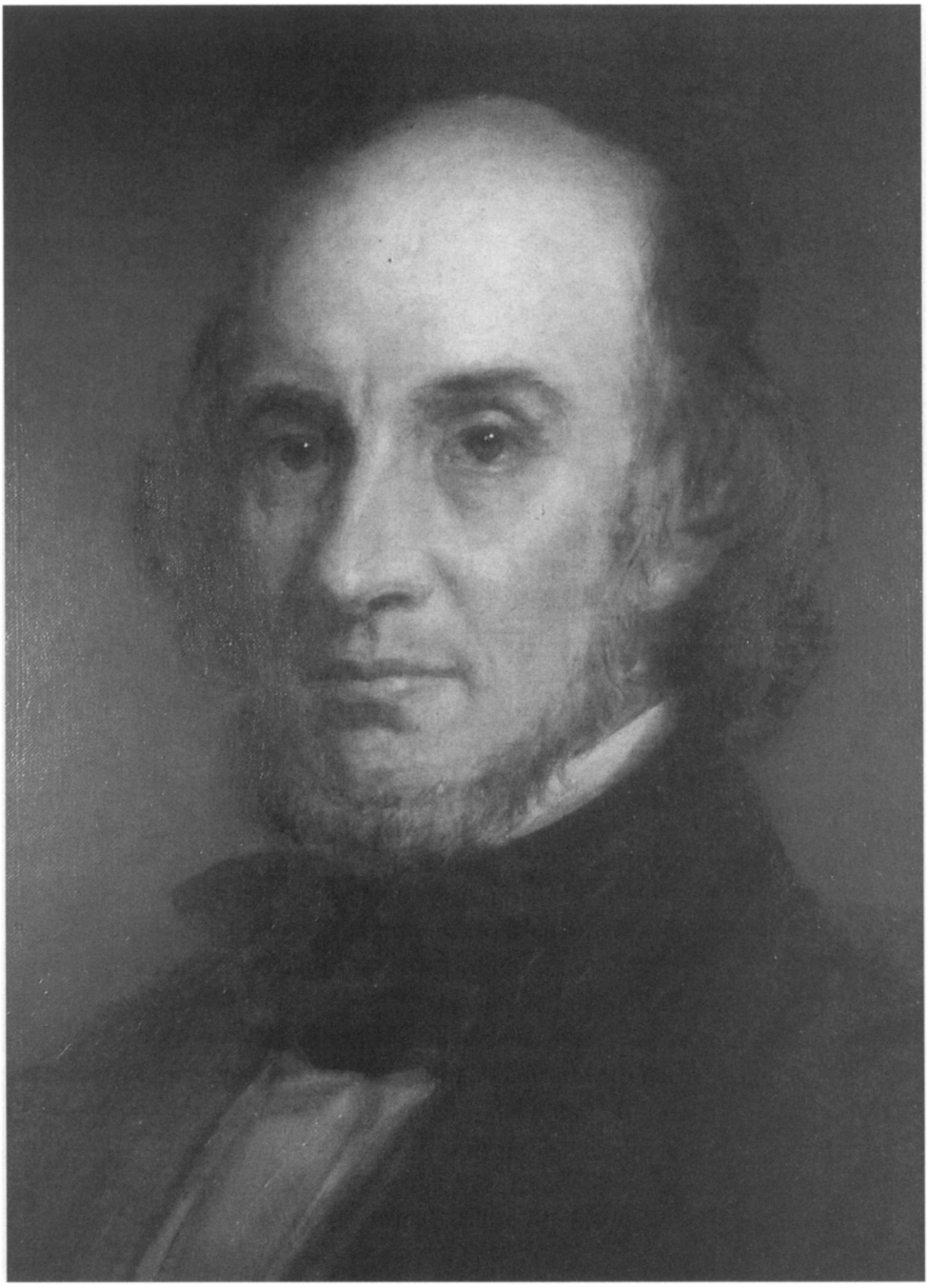

Toward the end of Storrow's term of office as mayor, a group of 48 Lawrence citizens contributed funds to commission this 1854 oil portrait. The portrait is by Joseph Ames and currently hangs in the Council Chamber of Lawrence City Hall. Photo courtesy of the City of Lawrence.

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"Father of the whole enterprise"

Charles S. Storrow and the Making of Lawrence, Massachusetts, 1845-1860

PETER A. FORD



On March 26, 1845, merchant-industrialist Abbott Lawrence met privately in his countingroom in Boston with Charles S. Storrow (1809-1904), the thirty-six-year-old chief engineer and agent of the Boston and Lowell Railroad. Lawrence and his business associates were preparing to build a new textile city along the Merrimack River, and he wanted Storrow to take charge of the project. The terms Lawrence offered were attractive: Storrow would hold the key positions of treasurer, agent, and chief engineer in the Essex Company, the land-and-waterpower company that would develop the enterprise; earn a salary of $5,000 plus travel expenses; and receive a credit advance of $20,000 to buy the company's privately offered stock. Further, if Storrow agreed to take up residence at the site of the factory town (and that was clearly Lawrence's preference), the industrialist promised to build him at cost "a good house there fit for a gentleman." Storrow accepted Lawrence's offer without hesitation, saying that after thirteen years with the railroad he was ready for the challenge. "I am to do all the work," he wrote later that day in an aide-memoire of their meeting, "build the dam, canal, machine shop, purchase & sell land, make all the contracts & payments, to be the father of the whole enterprise."[1]

Storrow did not exaggerate the scope of his new responsibilities. Indeed, few builders of cities in nineteenth-century America were able to exert upon their creations the kind of influence that Storrow exerted upon the city of Lawrence, as the mill town came to be called. Not only did he design and

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construct the industrial center, but in the years that followed he played a central role in its urban and industrial development. As the company man in what was essentially a company town, Storrow was a commanding presence in the young community. Residing in a fine house perched high on Prospect Hill overlooking the factory center, he served—especially in the early years when effective political, social, and cultural institutions were still lacking—as the community's unofficial civic leader and spokesman. Later, when Lawrence was incorporated as a city in 1853, he was elected as its first mayor. He chaired its school, finance, and several other committees; served as president of its first two banks; and guided it through a decade of severe economic difficulty in the 1850s. In these many capacities, he clearly deserves recognition, more than any other individual, for the textile city's ultimate success.

Drawing especially on his private journals, the present article documents not only Storrow's wide-ranging involvement in Lawrence during its early decades but also his reflections upon the social transformations his factory city experienced.[2] Seen in its larger context, the establishment of Lawrence represents an important, though closing, chapter in the pioneering efforts of Boston merchant-industrialists (often called the Boston Associates) to foster American industrialization through large, planned, New England textile complexes, first at Waltham and Lowell, and subsequently at other sites.[3]

In 1814, Francis Cabot Lowell and his associates had established the nation's first complete cloth-making facility at Waltham, Massachusetts. To achieve this goal, they had introduced innovative methods of capital formation, business organization, mechanized production, waterpower generation, and social regimentation. After Lowell's death in 1817, his associates improved upon the Waltham model, first at Lowell in the early 1820s, and then at a half dozen or so other New England locations during the second quarter of the nineteenth century. In terms of industrial production, these textile cities represented a striking increase in the young nation's manufacturing capacity. Equally impressive was the unprecedented magnitude of waterpower created at these sites: the hydraulic installation at Lowell alone produced 10,000 horsepower, a concentration of energy unthinkable a generation earlier. Historians have come to call the overall achievement of the Boston Associates—involving the introduction of planned textile cities, integrated factory production, and the social regimentation of operatives—the Waltham-Lowell system.[4]

The Associates' experiment in corporate paternalism, an important component of their industrial initiative, was initially prompted by the need to attract a workforce in labor-scarce New England and simultaneously to avoid

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creating a permanent class of factory operatives, a condition that many Americans considered to be the root evil of the British industrial experience. With its carefully chaperoned boardinghouses, strict codes of behavior for mill girls, and company blacklisting practices, this effort at social engineering sought to create a controlled human setting that ensured the safety and moral conduct, as well as the obedience, docility, and availability of its workers. First tried at Lowell, the idea of conveniently locating long rows of handsome, brick boardinghouses just across the power canals from the factories soon became an integral part of the urban design of the Associates' factory towns.[5]

The Waltham-Lowell system proved to be a great success, both as a large-scale industrial venture and as a public relations effort aimed at allaying American fears regarding manufacturing. Its greatest accomplishment was clearly its success in introducing the factory system to distrusting Americans by cloaking it (wittingly and unwittingly) in the less threatening guise of a rural setting. By necessity, the factory centers of the Boston Associates sprang up alongside the sites of waterfalls in the New England countryside, a circumstance that permitted supporters of the Waltham-Lowell system to fashion a comforting rural mythology of textile operatives living and working, writing poetry, and attending Sunday church services in bucolic settings.

As company towns, these textile centers occupy an important place in the history of the American city. They were not, however, company towns in the customary understanding of that term. In the classic American company town, the founding business had as its primary purpose—or identity—the manufacture of goods and, by virtue of that, served as a townwide employer. Usually a textile manufacturer or a mining company, it built the industrial facility and the town, rented company-owned houses to its employees, and sometimes operated a company store. Frequently, it also managed the town.[6]

In the case of a Boston Associates town, however, the founding company functioned primarily as the promoter of a great waterpower and real estate venture. It first acquired a sizeable amount of land and then created at substantial cost a waterpower installation, laid out the town, sold mill sites and leased waterpower to textile corporations, built their factories and their operatives' boardinghouses, and finally reaped profits—once it had amortized the initial costs of waterpower development and land acquisition—by selling its waterpower and its greatly appreciated land for industrial, commercial, and residential uses. "We have created the power," wrote Storrow in 1860 of the Essex Company's role in the Lawrence enterprise, "and given value to the land. Our business now is to sell them both."[7] The founding company's only extensive involvement in manufacturing was the operation of a machine

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shop, built to construct locomotives and to make textile machinery for sale to the town's factories.

The founding company with its land and power interest served, in a sense, as the development arm of the textile interests that ran the factories. Although nominally separate from the textile corporations, it was usually linked to them by means of interlocking directorates and often shared with them many of the same major investors. In Lawrence, for example, Abbott Lawrence was a leading investor and president of the Essex Company, the Atlantic Cotton Mills, and the Pacific Mills. Storrow, in addition to the offices he held in the Essex Company, served for several years as treasurer of the Atlantic Mills. These personalized networks translated, of course, into financially meaningful connections: the Locks and Canals Company in Lowell and the Essex Company in Lawrence, for example, customarily constructed factories and boardinghouses for the textile corporations either at cost or for a small profit.[8]

Although the founding company sometimes built housing for its machine shop's employees and their families (as, for example, in Mechanics' Block in Lawrence), it was mainly the textile corporations that provided, in their long rows of brick boardinghouses, the large-scale, employer-owned worker housing usually associated with a company town. The town itself was a full-fledged, socially heterogeneous community with its own retail establishments and privately owned residences. Instead of trying to manage the town directly, the founding company preferred to spin off an independent municipal township and, together with the textile corporations, exert an influence on the town by indirect means.

By the time Storrow undertook the building of Lawrence in 1845, serious questions had arisen regarding the profitability and the public image of the Waltham-Lowell system. Economically, the conditions that once favored the creation of large waterpowered textile centers in New England had ceased, or would soon cease, to exist. Years of overproduction and overcapacity in the textile industry had, by the 1840s, greatly deflated prices for cotton goods and decreased profits, making the launching of new factory cities a risky proposition. The great expectations of a quarter century earlier, when Lowell seemed America's alternative to the specter of Britain's Manchester, by the 1840s had given way to growing disillusionment. Beginning in the 1830s, labor unrest and charges of worker exploitation at Lowell and elsewhere had raised doubts about the vaunted benevolence of the Waltham-Lowell system. The heavy Irish immigration of the late 1840s and 1850s removed one of the very reasons for the corporate paternalism of the Boston Associates; it would eventually render obsolete even the corporation boardinghouses once thought essential to attract workers.[9]

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Abbott Lawrence had not chosen an auspicious time to launch a new textile city in New England. He and his associates felt sufficiently encouraged, however, by recent indications of an upturn in business conditions: profits in the Boston Associates' textile corporations soared abnormally to a record 18 percent in 1844-1846.[10] These promoters were no novices in the establishment of textile factories and textile cities—two of them, Patrick Tracy Jackson and Nathan Appleton, may be counted among the founders of large-scale cotton manufacturing in New England—and their economic judgment generally had been correct in the earlier ventures of the Boston Associates.

To such men, Charles Storrow must surely have seemed the obvious choice to build their factory town. Not only was he a well-trained civil engineer with several years' experience in both construction and management, but he sprang from the same social class as the Boston Associates and enjoyed close personal and professional ties with several of them.[11] Storrow was the son of the peripetetic, but mostly successful Boston merchant, Thomas Wentworth Storrow. In 1818, when Charles was nine years old, the Storrow family sailed to France, where the elder Storrow established an import-export business in Paris. In 1824, after attending French private schools for six years, Charles returned to the United States to attend the Round Hill School in Northampton, Massachusetts, and then Harvard College. At both institutions he associated with the scions of Boston families prominent, or soon to be prominent, in the New England textile industry, among them the Lowells, Lawrences, and Appletons. After graduation from Harvard in 1829 at the top of his class, he returned to Paris, where his family still resided, and entered the highly regarded engineering program at the Ecole des Ponts et Chaussées.[12]

In the 1820s and 1830s, the Storrow household in Paris was a stopping-off place for Boston merchants and their families on their European tours. In the early 1830s, William Lawrence, the son of Abbott Lawrence's brother Amos, also an industrialist, lived with the Storrows while he studied in the French capital; and in the Fall 1831, William Lawrence and Charles Storrow spent several weeks together traveling through Belgium, Holland, and Germany. Already in these early years, Storrow was forging personal relationships that would serve him well in his later career. When, in 1831, Amos Lawrence learned from Storrow's uncle in Boston that the young man was experiencing financial difficulties (the elder Storrow's bankruptcy in 1828 had brought hard times to the family), he sent a bank draft of $500 as a loan to enable Storrow to continue his engineering education. "I feel much interest," Lawrence wrote, "in your progress and prospects."[13]

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In 1832, after two years at Ponts et Chaussées, Storrow returned to the United States. Shortly thereafter, he took a position as an assistant engineer for the construction of the Boston and Lowell Railroad, the first of several projects that he worked on in which the Boston Associates were major investors. In 1834, when a broken leg incapacitated him for several months, he researched and wrote a 242-page scientific tract, *A Treatise on Water-Works* (1835), which introduced American engineers to European hydraulic theory and quickly earned Storrow a national reputation in professional circles. In 1836, not long after the completion of the Boston and Lowell Railroad, he was promoted to chief engineer and agent—that is, manager.[14]

Already a rising star in the Boston Associates' galaxy, Storrow advanced further into their circle by marrying (also in 1836) Lydia Cabot Jackson, the daughter of a prominent Boston family and the niece of Patrick Tracy Jackson, one of the founders of Lowell, Massachusetts, and the principal promoter of the Boston and Lowell Railroad. Several months before the wedding, Amos Lawrence wrote to Storrow, acknowledging repayment of the timely education loan, expressing his feelings of "affection, and best wishes," and adding: "If it please God to permit the consummation of that holy connexion . . . there will be an additional force given to all these feelings, I now have."[15]

Not surprisingly, given their long familiarity with Storrow and his work, the Boston Associates did not hesitate to entrust him with full responsibility for the Lawrence project. "I told him," Storrow wrote of his conversation with Abbott Lawrence in March 1845, "that my Directors in rail road matters had always left every thing to me. He [Lawrence] replied that was just what they meant to do here."[16] Holding the positions of treasurer, agent, and chief engineer of the Essex Company (Lawrence retained the largely titular post of president), Storrow was able to exercise broad, decision-making authority as well as day-to-day oversight regarding almost every aspect of the venture. As treasurer and agent, he functioned as the company's chief executive officer and on-site manager of operations, while as chief engineer he was in charge of all planning and construction operations. He was accountable, of course, to the company's board of directors (of which he was also a member), whose approval he needed for any major new initiatives; and he was required as treasurer to make a report to the annual meeting of the company's stockholders. But in practice, the directors followed his lead in most matters.

It was not unusual in Boston Associates enterprises for the same person simultaneously to hold the positions of treasurer and agent. Kirk Boott had

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done so in the 1820s and 1830s at the Merrimack Manufacturing Company and the Locks and Canals Company, the parent companies in the founding of the city of Lowell, as had Francis C. Lowell II (in 1836) and John Amory (from 1837 to 1841) in the Amoskeag Manufacturing Company, which built Manchester, New Hampshire. In these earlier ventures, however, the other company directors had played much more active roles than they did at Lawrence. At Lowell, for example, company directors Nathan Appleton, Patrick Tracy Jackson, Kirk Boott, and Paul Moody had worked together to launch the factory city, after which Boott assumed broad responsibility. At Manchester, the directors of the Amoskeag Company closely monitored each step taken by the company treasurer-agent.[17]

The reasons for the less active involvement on the part of the promoters of Lawrence are difficult to ascertain. Frances Gregory has suggested, perhaps rightly, that by the 1840s the impetus for the Boston Associates' establishment of textile centers at Waltham, Lowell, and other sites was weakening, with most of the original participants by this time either dead or advanced in age. It is true that several of the Lawrence project's principal promoters were reaching an age of retirement from active affairs: Patrick Tracy Jackson and Nathan Appleton, two of the oldest of the main promoters, were sixty-five and sixty-six years of age respectively. Yet both men were still engaged in a wide range of industrial and mercantile endeavors. Abbott Lawrence himself, the leading promoter, although a younger man (at fifty-three), was not in vigorous health—yet in the 1840s he still took a leading role in state and national politics via the Massachusetts Whig party. For the most part, the directors of the Essex Company seem to have been content to attend board meetings, make periodic site visits to the new city, offer the wisdom of their long experience, and leave much of the planning of their latest industrial initiative and most of its execution to a younger man of proven capacity.[18]

It took Storrow and the Essex Company three years (1845-1848) to build the factory town of Lawrence. During this time Storrow coordinated and supervised a complicated set of operations in which he laid out the plan of the town, negotiated contracts with construction companies, conducted public land auctions, sold mill sites to textile corporations, and constructed a sophisticated waterpower facility. To assist him, he assembled a fifteen-person staff of engineers, lawyers, a land agent, and a business manager. For the first few months, he did much of the engineering work himself, spending several weeks in the summer of 1845, for example, surveying along the banks of the Merrimack River prior to setting the levels of the dam and canal. Beginning in 1846, he received valuable assistance by hiring the West Point-trained Cap-

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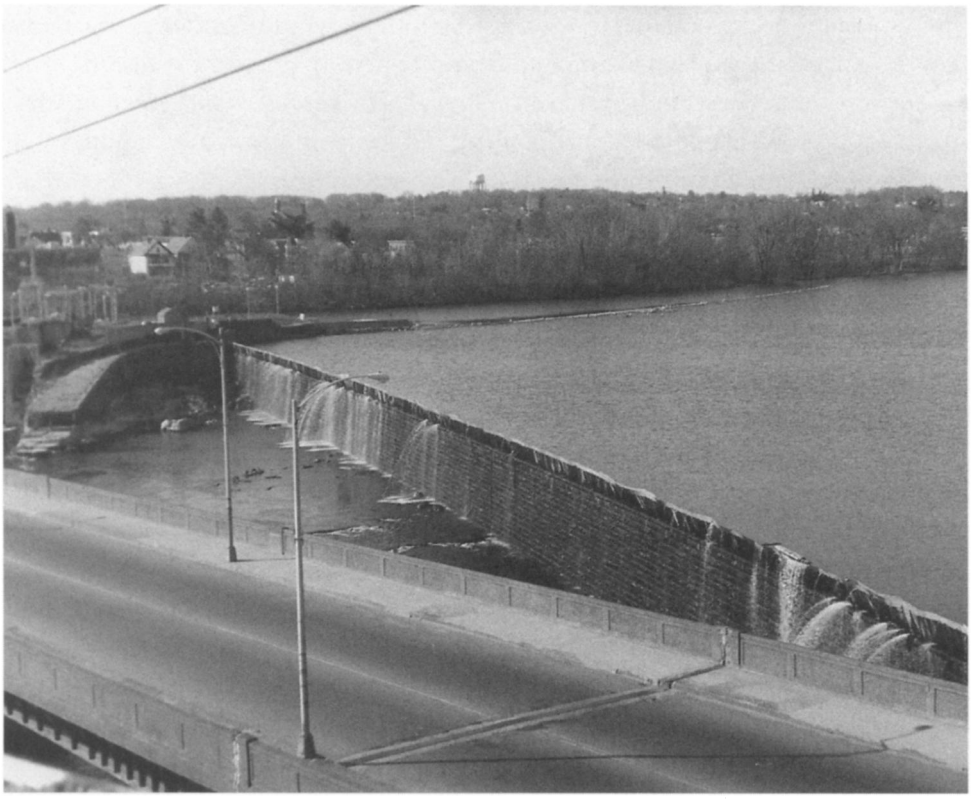

"We have created the power." Charles S. Storrow, 1860.

Storrow's Great Stone Dam was the key element in the hydraulic system that once powered Lawrence's factories. By taking advantage of a succession of smaller upstream falls in the Merrimack River, the dam raised the level of the river over 30 feet and created a millpond covering an area of about one square mile. Wooden boards (called flashboards), supported by vertical iron rods, are installed from time to time on the top of the dam in order to increase the millpond's storage capacity. Photograph taken by author from the roof of the Pacific Paper Products Co. warehouse.

tain Charles Bigelow, a recently resigned officer from the Army Corps of Engineers, as his assistant engineer. Bigelow took charge of construction of the dam, canal, factories, and boardinghouses, releasing Storrow to pay greater attention to his duties as Essex Company agent and treasurer.[19]

Storrow planned for a city of some 30,000 people, all of it located in Methuen on the north side of the Merrimack River where the Essex Company had acquired about 3,000 acres of land. Although the company also owned 1,000 acres on the south side in Andover, he decided to keep that land off the market and not develop it for twenty or so years, when he estimated the population of the north side would reach 30,000.[20]

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In designing the layout of the city, Storrow took advantage of the prior experience of the Boston Associates in building factory centers at other sites. They and their engineers had worked out a successful urban-planning formula that could be replicated, with adjustments made for different topography. Storrow found the textile cities of Lowell and Manchester particularly helpful as planning models, and he made frequent trips to both cities in the summer and fall of 1845 to examine such things as their dams, canal systems, factory layouts, boardinghouses, zoning practices, and land sales procedures. Drawing principally on the urban plan of Manchester, which had been constructed in the late 1830s, Storrow laid out the new town in a series of mile-long strips paralleling the river: a four-hundred foot wide industrial "island" between the river and the North Canal, the canal itself, two parallel streets of boardinghouses, a broad commercial avenue just to the north of the industrial zone, and beyond that a seventeen-acre common and a residential district platted in a gridiron pattern.[21]

Although Storrow relied on a tried-and-tested formula in planning the city's layout, the same cannot be said of the Great Stone Dam across the Merrimack River. Regarded today as a monument of nineteenth-century American engineering, this massive granite structure, standing thirty-two feet high and over sixteen hundred feet long, was Storrow's creation. A brilliant application of the mathematical hydraulic theory in which he had been trained in France, the dam proved an engineering achievement without precedent in the United States. "The finest stone dam that I know of," wrote James B. Francis, the renowned hydraulic experimenter of Lowell's Locks and Canals Company, in 1871, "is across the Merrimack River in Lawrence, Mass."[22] Built to create a millpond for industrial waterpower, Storrow's overflow weir would influence the design of other New England dams for the next several decades. By means of the dam and the North Canal, Storrow harnessed some 10,000 horsepower, roughly the same amount of energy generated at Lowell.[23]

As the implementor of the plans of the Boston Associates and the Essex Company, Storrow fully understood his responsibilities, not only for the construction of a manufacturing center, but for the formation of its human community as well. Indeed, from the time that a small settlement began to emerge at the construction site in 1845, he watched it closely and intervened in its affairs often, determined that only the right type of community should take root. "Our thoughts," he would remark in his journal in 1848 as the construction neared completion, "have been almost as much absorbed in the creation of a social edifice . . . as in the creation of material structures."[24]

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This stereopticon photograph was taken c. 1875 from the chimney of the Upper Pacific Mills. It shows a section of Lawrence's industrial district on the north side of the Merrimack River, with the rows of corporation boardinghouses on Canal and Methuen streets on the left, the North Canal in the center, and textile factories on the industrial island on the right. Photo courtesy of the Immigrant City Archives.

Storrow's journal leaves no doubt that he shared the social vision of the men who had founded Lowell years earlier as a model industrial community. He wholeheartedly embraced the corporate paternalism of the Waltham-Lowell system and took for granted its beneficence toward the worker, never recognizing the growing criticisms of the Waltham-Lowell system. "Our aim, thus far," he wrote in 1851, "has been to give to the whole town a complexion and character derived from the policy of the great [textile] companies,

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and shown in the general provisions for the comfort & welfare & industry of the operatives."[25] Nor did he see any reason to question the factories' boardinghouse system as an integral and permanent part of Lawrence's employee arrangement. In 1847, for example, when he drew up an urban plan for the south side of the river that would, by his own estimate, not go into effect for twenty years, he confidently included several blocks of operatives' boardinghouses on the plan.[26]

Storrow was fascinated by the very idea of bringing a new community into existence and exhilarated at the prospect of playing a determining role in that process. "Where else," he wrote in 1848 to educator Horace Mann, "can you find as here the elements of society ready to be moulded into a good or an evil shape, nothing to pull down, all to build up; a whole town composed of young people to influence and train as you would a school[?]"[27] In the relish that he felt for the creation of a new society, Storrow may have reflected, perhaps more than the thirty-year-old social vision of the Waltham-Lowell system, the strongly reformist impulses of the 1840s. This decade witnessed, in particular, the establishment of numerous utopian communities in the United States (one historian has estimated the founding, on the average, of more than one such community every three months in the 1840s).[28] Brook Farm in West Roxbury, Massachusetts, one of the most famous of these utopian efforts, was established just four years before Lawrence, in 1841. Perhaps, as John Coolidge has suggested in *Mill and Mansion*, the planned mill towns of the Boston Associates and the Transcendentalist utopian experiments at Brook Farm and Fruitlands were "attempts to build a new abode of sweetness and light according to a preconceived plan for the ideal society which were characteristic of Transcendentalist New England."[29]

In his planned industrial city, Storrow shared with the founders of these short-lived utopian communities—inspired by the philosophical, religious, and socialist thinking of the day—the conviction that a better society might be achieved by the creation of human institutions *de novo*. Nonetheless, it needs to be pointed out that, however idealized, industrial efficiency and social control comprised the impulse behind the Boston Associates' and Storrow's urban planning. These are a far cry from the Transcendentalists' alienation from early industrial society; their efforts to return to earlier, precapitalist modes of work and living; and their radical and fundamental critique of accepted conceptions of labor, class, property, family, freedom, the individual, and even diet.[30]

By the 1840s, it had become difficult to speak, as proponents of the Waltham-Lowell system had done in its early years, of a pastoral industrial-

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ization. The reality of large, urban industrial centers founded by the Boston Associates had rendered this rural mythology increasingly obsolete. (Lowell had reached a population of nearly 18,000 in 1836, only fourteen years after its establishment.[31]) Instead, we read in statements made by Storrow and other defenders of New England industrialization of the time a different and updated mythology. No longer "the machine in the garden" (to cite Leo Marx's apt characterization), the factory city of the Boston Associates came to be depicted as an island of human progress in sharp contrast to the surrounding "unproductive" countryside. Repeatedly, in his journal and correspondence, Storrow spoke of how he had raised his city upon the site of "neglected farms" and how he had created "an abode of civilization and the useful arts" in an otherwise unprogressive rural setting.[32]

Storrow considered himself to be a close and astute observer of social change. As a twenty-one-year-old engineering student in Paris in 1830, he had witnessed the three-day July Revolution that overthrew King Charles X. Several times during that revolution and in the days that followed, he ventured into barricaded streets, each evening writing in his journal a detailed account of what he had seen as well as his own assessment of the revolutionary situation.[33] Now, as he constructed the factory town of Lawrence some fifteen years later, he took note of the smallest of milestones in its history as a young society—from the appearance of the first horse-drawn hack to the arrival of the first undertaker—and carefully recorded each in his journal. With an uncommon perceptiveness, he discerned larger social changes as well, describing, for example, what he recognized to be the main stages in its rapid social evolution from construction camp to settled factory town.[34]

To the historian of the Waltham-Lowell system, Storrow's social observations are especially valuable, given the paucity of commentary from the pens of the Boston Associates themselves regarding their industrial-social experiment. One of the few works of substance on such matters is Nathan Appleton's *The Introduction of the Power Loom and Origin of Lowell* (1858). It must be said, however, that for all his alertness to social change, Storrow tended to filter what he saw through the lens of his privileged position and social rank, which caused him to miss not only the significance but, on occasion, even the very occurrence of major social developments taking place before him.

He was at his most observant in describing the different phases of Lawrence's genesis and growth as a community. As he saw it, from the beginning of construction down to its completion in 1848, there were four distinct stages in the town's social evolution, each marked principally by the arrival of

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a new class of residents. First came the "crowd of constructors"—that is, the construction workers brought in by the Essex Company in 1845 to build the dam and canal; next to arrive, in 1846, was "a class of reckless shopkeepers to supply the constructors"; the third stage began with the arrival of a "steadier class of trades people" in 1847; and in the fourth stage, in 1847 and 1848, "the permanent manufacturers" came to town.[35]

The first of these phases took place in the fall and winter of 1845. At that time, the only social class at the site, aside from the two hundred or so farmers and their families living in the area, were several hundred construction workers who had been hired to excavate the dam and canal. Immediately, Storrow faced the problem of providing the workers with adequate food and lodging. While some boarded at local farmhouses, Storrow resolved the problem by constructing twelve large wooden boardinghouses capable of holding 400 workers. As a social element, however, he viewed these laborers as no more than "a rough and temporary class of sojourners, with no permanent interest here."[36]

Storrow identified the start of the community's second stage in April 1846, when the Essex Company held its first public land auction, an event that Storrow saw as the beginning of a more complex social development. "Then came the rush," he observed rather harshly, of people "without capital or character," many of them would-be shopkeepers seeking to sell supplies to construction workers. "They came," he wrote with disapproval, "to speculate not only in land but . . . on trade, and in many cases were utterly reckless people." Other new arrivals were carpenters and other craftsmen who saw an opportunity to work on the construction of private homes and business buildings. In no time, eating places, clothing stores, and makeshift boardinghouses ("with 3 in a bed," Storrow noted) were operating. Newspapers started up. Ministers held religious services in rented rooms. By the end of the year, Storrow counted nine lawyers and ten doctors. To his chagrin, "gamblers, horsejockeys and drunkards" also began to arrive. The desire for quick profit was the order of the day. Landlords charged enormously inflated rents, and real estate speculators and developers, hoping to "secure land by the acre to be afterwards sold by the foot," bought up farms not owned by the Essex Company. They laid out enough streets, it seemed to Storrow, to accommodate 100,000 people.[37]

The picture Storrow paints in his journal of the rapidly growing community—by February 1847 it numbered almost 3,600 persons—resembles a late-nineteenth-century Western boomtown.[38] At first called variously New City, Merrimack, and Essex, the settlement seemed wild and lawless, lacking

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such basic necessities as proper law enforcement and schools. There was no regular police presence because it was simply a settlement—not a legal entity—on the outskirts of the town of Methuen, which lacked the resources to maintain order. Storrow managed to convince Methuen officials to appoint extra constables (and to acquire constable powers for himself), but conditions remained lawless. "Now," he wrote in December 1846 about a specific incident of lawlessness, "the law issues a warrant, the constables arrest but the prisoner escapes for want of a *jail*."[39]

This lack of law and order caused Storrow grave concern regarding the type of society he was creating. "I have never felt so strongly as I do now," he confided to his journal in March 1847, "how much the comfort, welfare and happiness of a community depends [sic] upon its moral condition." He was convinced that, no matter how excellent the site for the industrial community or how successful a financial venture it might prove to be, "our place is cursed if we do not grow up a sober, temperate, industrious and order-loving people."[40]

Greatly complicating this already unstable situation was the arrival in 1846 of the first wave of Irish immigrants. Fleeing the Potato Famine in their native land, they came to work as unskilled laborers on the dam and canal, most taking up residence in wooden shanties erected on land rented from the Essex Company on both banks of the river. Although he had recently built large wooden boardinghouses for the first construction workers to arrive at the site, Storrow showed no intention of providing similar accommodations for the Irish. The textile corporations' brick boardinghouses were rising at the same time, but the companies intended these buildings not for transient construction workers but for a workforce of female textile operatives. By the beginning of 1847, the Irish numbered about one third of the community's population of 3,577.

Storrow had an ambivalent attitude toward the Irish. On the one hand, he seems to have sincerely sympathized with their plight, at least in Ireland. For example, he led a local contribution drive in February 1847 that raised over $1,000 to be sent abroad "for relief of the starving poor of Ireland," and he personally made the largest contribution—$50.[41] On the other hand, he harbored typical Yankee opinions of the Irish—which did not appreciably mellow with the passage of time. In these early years, as the Irish flooded into the settlement and took jobs as construction workers, Storrow could not envision them as a part of his planned community. So accustomed was he to thinking of native New England farm girls as the workforce in the Boston Associates' textile factories that he could only regard the Irish as a transient population

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POPULATION OF LAWRENCE
AND NUMBERS OF IRISH-BORN, 1846-1865

Year	*Total Population*	*Irish-born*
1846	1,160	—
1847	3,577	1,271*
1848	5,949	2,139
1849	7,225	—
1850	8,282	—
1855	16,081	4,783
1857	17,800	—
1858	15,300	—
1860	17,639	—
1865	21,678	6,047

*The figure given here, taken from the "Sanitary Survey" of 1850, refers to persons living in "Irish dwellings," the great majority of whom would have been Irish-born.

Sources: [Shattuck], "Sanitary Survey of Lawrence," in *Report of a General Plan for the Promotion of Public and Personal Health*, 447; Dorgan, *History of Lawrence*, 174; and Cole, *Immigrant City*, 209.

that would move on, like other construction workers, when the great building projects were completed. Thus in 1848, when the factories were about to begin full production, he spoke of "the crowd of young women soon to assemble here"—in other words, the classic workforce of the Waltham-Lowell system—taking no notice of the many Irish immigrants already living there. In fact, when speaking of the geographical origins of the town's inhabitants, Storrow boasted that they "have come here mostly from New England homes," a statement that was technically correct but which ignored the Irish birth of a third of the population.[42]

Hoping to transform the settlement into a more orderly community, Storrow and the other Essex Company directors decided in January 1847 to petition the Massachusetts legislature to approve its incorporation as a town.

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This step involved carving a total of six square miles on both sides of the Merrimack River out of the towns of Methuen and Andover. Incorporation would allow the Essex Company to transfer responsibility—which it was eager to do—for providing essential services, such as a police force, a jail, a courthouse, and schools, to the community itself. For example, although the company had donated a piece of land and $50 for the building of a schoolhouse, it proved reluctant to proceed further. "More than that," Storrow wrote in April 1846, "we ought not to do. Nobody else will take any interest in such matters if we do everything."[43] Storrow and the other directors were also concerned that company land stood in two different civil jurisdictions (Methuen and Andover) and were anxious that it all be joined in one town. They believed, however, that it would be politically expedient if the petition for incorporation originated with the inhabitants of the community rather than with the company.[44]

On January 13, 1847, Storrow convened a group of the community's "most prominent inhabitants" (his words). He proposed the petition for incorporation and that the town be named Lawrence after the family most active in its establishment. When they agreed, Storrow drafted a petition to be presented to the General Court. In it he asserted that the community had only one schoolhouse, which had been built for fifty students but was now crowded with 140; that more than 300 children in the community had no schoolhouse at all; that a police force was an absolute necessity; that a poorhouse was desperately needed; that the town offices of Methuen and Andover were too distant (two and three miles away respectively) from the new community; and finally that the new town be named Lawrence.[45]

Strong opposition quickly greeted the move to incorporate, especially from Methuen, whose residents resented the plan to carve the new town out of their territory. Methuen elected a delegation to travel to Boston to speak against the bill before the legislature. For their part, the working-class population of the new community, especially the Irish, and some of the local press opposed the proposed name of Lawrence on the grounds that it was elitist and smacked of obeisance to wealth. The Irish in particular felt they had reason to be resentful: only a few months earlier the Essex Company had cut the wages of its Irish construction workers during a slack time from .95 to .84 cents a day. All of them, several hundred workers, had staged a walkout in protest but returned to work after only five days. Not surprisingly, when in April 1847 someone presented a petition in the legislature to substitute the name "Merrimack" for that of "Lawrence" in the pending bill of incorporation, many of the petition's three hundred signatures bore Irish names.[46]

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When the foes of incorporation maneuvered to table the matter until the following year's legislative session, Storrow lobbied successfully with local state representatives for its timely passage. On April 17 the General Court approved incorporation and the governor signed it into law. A few days later (on April 23) Storrow, acting on a warrant instructing him to do so, called a caucus to nominate town officers. On April 26 he convened the first town meeting to organize Lawrence's government and elect its officers.[47]

A riot that broke out that evening in front of a rum shop—reputed to be a house of ill-fame—underscored the need for effective municipal government. The incident may have been an early expression of animosities between the community's Irish Catholic and Protestant residents. The violence stemmed from a false rumor spread by one of the brothel's residents, an Irish prostitute named Maria Sullivan, who charged that a man had been murdered in the house and his body dumped into the nearby Merrimack River; later that same day, a mob ransacked the building. Shortly thereafter, Storrow and Captain Bigelow arrived at the scene. As Storrow reported that night in his journal, he "took things in hand." Possessing police powers, he and his assistant engineer, with the help of the sheriff and several volunteers, arrested ten of the rioters and confined them overnight in the town's concert hall to await arraignment in the morning. Three of them were then removed to the court in Ipswich for trial.[48]

Though town government gave the community the authority to elect the officials it needed, Storrow continued to serve in an unofficial capacity as its leader and spokesman. In May 1847, for example, even though he was not at the time a member of the new school committee, Storrow took it upon himself to invite Horace Mann, the nationally known educator, to meet with its members at his house to advise them on the best way to create a school system. He met again with Mann several months later, this time alone in Abbott Lawrence's countingroom in Boston, to discuss the planning of a high school. As they talked, Storrow sketched for Mann a map of the new town on the back of a letter; together they decided on the best site for the school.[49]

Storrow also wanted to hear Mann's reaction to his idea of locating a state normal school in Lawrence to train the teachers of Essex and much of Middlesex counties. He had high hopes that such a school, in addition to the obvious benefit of supplying teachers to a rapidly urbanizing area of Massachusetts, would serve as a source of inspiration for the factory town. He envisioned it standing high on Prospect Hill for all to see, signaling the importance of education to the town below. How could the young women working

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in the factories, he asked rhetorically in a letter written to Mann in February 1848, not help but be uplifted by the sight of "others of the same age & sex zealous for high objects & filled with noble aims . . . a daily proof of the high estimation in which education is held by all those whose approbation is worth having[?]" We do not know Mann's reaction to Storrow's plan for a normal school, but nothing came of it.[50]

Storrow identified the third stage in his chronology of the town's social evolution as occurring in 1847. Already, he noted, some of the earlier arrivals who had sought to make quick profits by means of land speculation or by overcharging construction workers for provisions had left, discouraged by the high price of land or having failed at business. At its second land auction in April 1847, the Essex Company sold much of its land to purchasers who, it seemed to Storrow, intended to settle permanently in the town. During the summer he noticed a definite improvement in the quality of those who began to arrive. "Some men of property and character have come in," he recorded, a change he attributed to the partial start-up of the textile corporations.[51]

The fourth and final stage came in late 1847 and over the course of 1848. As the major building projects wound down in 1847, construction workers and teamsters began to leave, and textile workers—mostly single female operatives, married male mechanics, and other skilled workers and their families—started to arrive. Storrow felt some anxiety in this transitional period between the construction and manufacturing phases, since the factories were not quite ready to take up the slack in the town's economy by commencing full operations. He saw this, however, as only a temporary dislocation, in his words, "a little lull in the growth of the town."[52]

Large numbers of construction workers, however, especially the Irish, did not move out with the slowing down of construction in late 1847. And lacking employment, they suffered a great deal of hardship during the winter months. While he acknowledged that the completion of construction work was partly responsible for their impoverishment, Storrow held their own "improvidence" mostly to blame. He expressed astonishment and some distress at how quickly the still-arriving Irish swamped the young town's newly created institutions. In the course of 1847, their number nearly doubled to about 2,100, so that no sooner did the town government provide schools, a poor house, and a hospital than, in his words, "the influx of Irish immigrants flying from famine in their own land filled them to overflowing."[53]

Storrow noted with pleasure the arrival of "the permanent manufacturers . . . and the professional men of character, and the [textile] company agents

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who give stability and character to a place, infuse vigor and strength into the useful institutions of society, and render the town a habitation fit for civilized men and women."[54] By May 1848, Storrow wrote, the "general state of our town has changed much for the better." The departure of the "coarse teamsters and other unruly spirits" pleased him immensely. "Sunday," he reported, "is now as quiet a day in this town as in any country village. Intemperance no longer stalks abroad." Law and order were now the rule and no longer the exception. Although gambling continued, he learned that "the police are on the alert to break it up." A better class of people, he believed, was building better houses and becoming the backbone of the town. He cited one example to indicate the improved social climate. In May, the circus came to town, and the 1,500 to 2,000 people that it attracted were, he boasted, "well dressed, orderly, healthy and handsome . . . an audience to be proud of." Nor was there in a gathering of that size anything offensive to be seen or heard, "except for the occasional vulgarity of the itinerant clown."[55]

In 1848, as he looked back at the rapid social transformations of the previous three years, Storrow was struck especially by the extraordinary equality of opportunity available in the young community. "There never perhaps," he reflected with more than a bit of hyperbole, "was an organization of civil society in which all started out more nearly on an equality. . . . There was no prestige of honor or dishonor, of poverty or riches." Within a short time, as he saw it, the town's inhabitants underwent a sorting out—a "crystallization," he called it—based on ability. "Men are tried and sifted," each "gradually finding the level to which he is entitled." Resourcefulness and innate talent, it seemed to Storrow, often counted more than background or wealth.[56]

There undoubtedly had been an element of rough-and-ready equality in the first year or two of the town's history, at a time when the community resembled a Western frontier settlement and when raw talent and individual initiative often spelled success for shopkeepers, land speculators, and petty entrepreneurs. Once Lawrence had become a settled factory town, however, its social composition reflected not Storrow's picture of a Social Darwinian-like process of natural selection but the predetermined social structure of the Waltham-Lowell system—with factory agents and overseers at the top (most mill owners lived in Boston); businessmen, bankers, and the like somewhere in the middle; mill operatives near the bottom; and immigrant laborers at the lowest levels. Such social stratification, of course, had very little to do with the "sifting out" process of which he speaks.

Indeed, in 1851 Storrow hand-copied for his own use an anonymously compiled list of the town's prominent citizens that in its own way rebuts his

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social theory. It contains the names of 309 citizens—most of them textile corporation agents and business and professional men (Storrow's name heads the list)—along with their former places of residence. All but four of them were native-born (two of the four were born in Ireland), a remarkably small number of prominent foreign-born citizens—by 1851, Irish immigrants in Lawrence numbered some 3,000 persons—if indeed all in the community started out on a near-equal footing.[57]

By the summer of 1848, with the major work of construction completed and the factories in operation, Storrow had reason to feel proud of what he and the Essex Company had accomplished. During the relatively short span of three years, they had brought into being a major industrial city of some 6,000 people and three large manufacturing firms. Two of these corporations, the Bay State Mills and the Atlantic Cotton Mills, were extensive complexes of factories and boardinghouses erected for the manufacture of woolen broadcloths, shawls, and cassimeres, as well as coarse cotton fabrics. Touted at the time as the world's largest producer of woolen textiles, Bay State Mills expected to employ some 2,500 operatives when in full operation. The Atlantic Mills, which would go into operation in 1849, expected to employ about half that number. The third manufacturing complex, the Machine Shop, had been built and was owned by the Essex Company for the production of textile machinery, turbine wheels, and locomotives. Probably the largest machine shop in the country, it was capable of employing up to 1,000 workers. The new community also boasted police and fire departments, a gas works, two banks, eight churches, a high school and three grammar schools, a library, and a train station.[58]

Once it had built Lawrence, the Essex Company ceased to function primarily as a construction company, although it continued to do some construction work, mostly on a subcontracting basis, through the 1860s. Henceforth, it operated chiefly as a large real estate enterprise engaged in the sale of its land and waterpower. "The operations of a company like ours, where its works are completed," Storrow explained in a report in 1856, "are nothing but a process of selling off, and winding up."[59] His own role in the enterprise now changed correspondingly as he devoted a greater portion of his time to these sales, an effort that involved placing newspaper advertisements for public land auctions; arranging special trains to bring prospective buyers from Boston, Lowell, Salem, and Haverhill; and, finally, running the auctions.[60]

Unfortunately, the factory town that Storrow had created failed to prosper. Caught first in a depressed market for textiles in the late 1840s and the 1850s

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and then in the national depression triggered by the Panic of 1857, Lawrence fell far short of its founders' expectations during the first dozen years of its existence. As early as 1851, the economic picture was all too clear: textile corporations had purchased less than half of the mill sites, the Essex Company's huge machine shop—Storrow's pride and greatest hope—proved to be a major money loser and was near failure, the company's debt was growing rapidly while the value of its stock declined, the town's previously booming population growth had slowed, and many of Lawrence's "most enterprising and best citizens" (Storrow's characterization) were leaving in reaction to the stagnation.[61] Although the mid 1850s briefly raised hopes of recovery, the Panic of 1857 proved disastrous in the short run for the young factory city. Two of its textile corporations and its machine shop went bankrupt, causing losses of more than $4,000,000 and putting thousands of factory operatives out of work.[62] For the first time, the city lost population—about 15 percent—as workers went elsewhere in search of employment. If Lawrence's economic woes were not disheartening enough, tragedy struck the city in 1860 when the collapse of the five-story Pemberton Mill, and the subsequent fire amid the ruins, killed over eighty people.

The plight of the city caused Storrow profound disappointment, all the more so for the high expectations he had entertained for it just a few years earlier. In 1851, faced by one setback after another, he wrote dejectedly to Abbott Lawrence: "I am now met on every side with disappointment for the past and discouragement for the future."[63]

For more than a decade, Storrow labored to guide the Essex Company and the city through the crisis and lift them out of the economic doldrums. With Abbott Lawrence, the man to whom he would ordinarily have turned for advice and direction, serving as American minister to Great Britain for three years in the early 1850s, Storrow frequently found himself alone to contend with angry stockholders and sometimes uncooperative and hostile fellow directors. As Storrow was well aware, many of the problems afflicting the city resulted from the long-term contraction in the textile industry. As such, they were beyond the power of any one individual to reverse. He did his best, however, to give the Essex Company sound and prudent management, take steps aimed at making the town's manufactured products more marketable, experiment with different industrial initiatives, and in general keep the whole Lawrence enterprise intact while awaiting a return of more prosperous times.[64]

Storrow successfully resisted worried stockholders' demands that he sell off or open up for industrial and urban development the company's 1,000

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acres on the south side of the river, insisting that the Essex Company should "fill up the north side, before touching the south."[65] He attempted to save the machine shop with new marketing strategies aimed at reaching a wider market for its products and expanding its product line. When these efforts failed, he reluctantly but realistically agreed with his fellow company directors that the Essex Company divest itself of the shop. With the market for the coarse cotton textiles normally made in Lawrence saturated, he encouraged a diversification to the production of fancier cotton fabrics. Similarly, he sought to broaden the market for Lawrence's top-of-the line woolen fabrics (such as shawls) by encouraging the production of worsteds and mixed blend cloths for such items as men's suiting and blankets. For this reason he traveled to England in 1851 to talk with British manufacturers (as well as to confer with Abbott Lawrence) and to purchase a set of worsted machinery to be tested and then duplicated in the machine shop. He had some success in attracting new textile corporations interested in producing finer or specialty (e.g., duck) cloths. And, anxious to prime the pump of the city's textile economy, he continued the Essex Company practice of erecting factories for the corporations at cost, and in the case of two factories (the Pemberton Mill and the Lawrence Duck Mill), he allowed repayment of construction costs to be spread out over five and ten years respectively.[66]

In the end, especially when some of these efforts failed to produce positive results, Storrow's most effective strategy was to sell off losing Essex Company operations, pay down its dangerously high debt, and avoid large new initiatives. In 1857, at the lowest ebb in the company's fortunes, several directors of the Essex Company personally underwrote $466,000 of its debt, with Storrow pledging his property and other assets for $250,000 of that amount. While he regarded this step as essential for the company's existence, he did not take it without great personal apprehension and some resentment. "With no large interest at stake," he wrote in his journal in October 1857, "without one dollar remuneration, I am endorser for ten times the amount of my whole property on the Essex Company's paper. This ought not to be. I risk complete pecuniary ruin, for no consideration. Be this remembered hereafter."[67] Duncan Hay, the historian of the Essex Company, in characterizing Storrow's doggedly unrelenting efforts to save the Lawrence enterprise, has taken accurate measure of the man: "we see an intelligent, well-educated, compassionate manager with a vision of a great city, and backed by experienced industrialists, struggling to keep his company and community from sliding into bankruptcy."[68]

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As he strove to make Lawrence a viable industrial center in the difficult 1850s, Storrow brought his influence to bear on the young city in other ways as well. Perhaps his greatest influence stemmed from his management of Essex Company land policy as company treasurer. By deciding on what land to sell (by auction in the early years and by private sale thereafter), when to sell, and to whom to sell, as well as by placing deed restrictions on certain parcels and enforcing compliance with these restrictions, Storrow, more than anyone, was in a position to determine the area, timing, and quality of the town's physical growth. His signature, along with that of one other company director, was required on every deed of land sold by the company.[69]

Chiefly by means of its ownership of a very large portion of the city's land and its setting of the terms of land sales, the Essex Company maintained its influence over the development of Lawrence for the remainder of the century. This continuing control is especially evident in the deed restrictions regulating land use and the number and types of structures that the company placed on the lots that it sold. Decades before American municipalities began to enact comprehensive zoning ordinances in the twentieth century, the Essex Company and the other founding companies of the Boston Associates not only routinely inserted restrictions in their land deeds but also regularly took steps to enforce these restrictions.[70]

As in any such real estate venture, Storrow's policy was to offer enough land to allow for the town's economic and physical growth but withhold enough to maintain market values. He was particularly sensitive to the need to make and keep the city as attractive and livable as possible and was well aware that such abuses as overbuilding and the erection of unsightly structures helped deflate land values and prices. He took both personal and professional pride in maintaining the appearance of the city; he acted on numerous occasions in order to stop building practices and violations of deed restrictions that he felt would be aesthetically undesirable.

When in 1860 the treasurer of the Pacific Mills asked permission to build a warehouse over the North Canal (which was Essex Company property), Storrow considered the request so threatening to the attractiveness of the factory district that he not only turned it down but described to the treasurer the aesthetics of his plan for the area. The visual appeal of the long horizontal vista down the canal, he wrote, was enhanced by the rows of trees along the canal, the "handsome fronts" of the boardinghouses, and the "neat and sightly" canal bridges. The proposed warehouse, he explained, "would most materially mar the beauty of the whole line," particularly since its location near the head of the canal would block the view down the canal for visitors

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entering Lawrence either by rail or on the road over the only bridge over the Merrimack into town at that time. Nor was all this simply a matter of aesthetics, Storrow insisted, because a harmonious urban setting was commercially advantageous to the Essex Company: "The circumstances of having the town and its streets and its buildings present an attractive appearance to the eye of strangers is one the value of which may, to the Essex Company, truly appear in dollars and cents."[71]

Storrow was especially vigilant about the development of Essex Street, the streets bordering the Common, and Prospect Hill. For Essex Street, the city's nearly mile-long commercial spine, he wanted to avoid the ragtag appearance of wooden buildings of varying heights and types of construction. Following the practice already in use at Lowell and Manchester, he attached deed restrictions to Essex Street lots, requiring that all structures be three or more stories high; be built of brick, stone or iron; and have slate or metal roofs. Over the years, he tirelessly enforced these restrictions.[72] Additionally, he kept the lots on the south side of Essex Street off the market for more than two decades in order to encourage the construction of a long, continuous line of three-story buildings on the north side. Only when that had happened by the 1870s did he open up the south side of the street for development.[73]

He envisioned the Common as a dignified and handsome park surrounded by churches, municipal buildings, and attractive homes. To this end, he placed strict zoning restrictions on lots facing the Common (prohibiting manufacturing and commercial uses in some cases and allowing no more than one building per lot in others, for twenty years), gave free lots to religious congregations wanting to build churches facing the Common, and even did the landscape planning without reimbursement for his services.[74]

For more than twenty years, Storrow closely monitored the appearance of the highly visible residential neighborhoods being constructed on the heights above the city's industrial center. For Prospect Street, which ran along the brow of Prospect Hill (and on which he himself lived), Storrow wanted "a handsome range of houses facing the town," and he took steps to assure the high quality of its development. He also watched over the types of houses built on nearby High Street, especially on lots fronting on Storrow Park (see below). When in 1866, for example, a person of less than ample means sought to purchase a house lot there, Storrow turned him down, explaining in a letter to an Essex Company employee that he was reserving the lots in that neighborhood "for houses of the best class" and expressing his conviction that the lot in question "eventually will have a good Yankee house." He

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instructed the employee to "put this man somewhere on the back slope" of the hill.[75]

Storrow initially was not as careful when it came to controlling the growth of sections of the city set aside for ordinary housing. This was particularly the case with the area near the edge of Essex Company land to the west and north of the Common known as the "Plains." Here, he competed for sales with cheaply priced land nearby that was not in company hands. In his first two auctions in 1846 and 1847, he offered lots in this section with a "take-it-or-leave-it" attitude, with minimum site preparation—"On the plain," he wrote in 1847, "do as little as possible, merely enough to satisfy purchasers"—and without restrictive conditions of any kind, such as regulating the number of dwellings per lot.[76] The result was predictable: in a very short time, serious overbuilding and overcrowding occurred. The *Lawrence Courier* reported in 1849 that over 230 houses—out of a total of 849 in the town—stood on just three streets in the Plains section. The rising tide of immigration into the town in the late 1840s propelled this rapid and highly concentrated growth. Athough few of the surnames of purchasers of lots on these streets appear to be Irish, it is likely that they crowded into the Plains area as renters and boarders.[77]

The local newspaper and the highly regarded "Sanitary Survey of Lawrence" (1850) reported the results of Storrow's planning misstep. The "Survey," part of a larger report commissioned by the Massachusetts legislature to determine the need for a state board of health, commended Storrow's use of deed restrictions in parts of the town and generally approved the living conditions that it found. It criticized his failure to apply restrictions on all parcels of residential land and blamed this failure for the building abuses that had taken place. "It is to be regretted," the author of the report commented, "that restrictions could not have been laid upon all the lands, as they might have prevented some inconveniences and sanitary evils." Among its recommendations, the report urged that the town establish density levels to prevent "crowding too many houses upon one lot, and too many families or persons into one house."[78]

Storrow learned a valuable lesson. In his next public offering of Essex Company land in 1855, he placed restrictions on many (although not all) of the deeds, regulating land usage, the number of buildings per lot, and the distance of structures from property lines.[79] For the next thirty years, both during the time he lived in Lawrence and while he resided in Boston, he exercised enormous influence over the city's growth by imposing deed restrictions and taking the necessary steps to enforce them.

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In effect, Storrow's efforts to control development foreshadowed the city's municipal zoning ordinances of the twentieth century. His deed restrictions, however, were covenants between private parties, namely the Essex Company and purchasers of its land. As such, they lacked the full legal force of later comprehensive zoning ordinances.[80] Moreover, many of the restrictions that Storrow imposed on deeds were limited to terms of twenty or twenty-five years. This limitation would cause problems for Lawrence in later years, but it was not an unreasonable practice given the legal uncertainty about how long and through how many subsequent purchases of a lot the restrictions would "run with the land."

On numerous occasions, property owners in Lawrence complained to Storrow about violations of deed restrictions by their neighbors; sometimes Storrow himself spotted irregularities in land use. He then wrote to the offending party, urging compliance with the terms of the deed and, if he thought it necessary, threatening litigation. "I give you this notice," he wrote in 1868 in a typical warning to an offending property owner, "in order that you may take such measures as will at once remove from the neighbors all cause for complaint, from me all necessity for legal interference, and from yourself the danger to your title resulting from a breach of the condition in the deed which may involve a forfeiture."[81]

Despite the many ways Storrow served Lawrence during its early years, he exerted relatively little influence as the city's first mayor in 1853. The city charter gave the mayor little authority and two run-off elections limited Storrow's actual term to only six months. His most notable contribution was to donate to the city, in the Essex Company's name, a ten-acre parcel of wooded land at the summit of Prospect Hill for use as a park. It later became Storrow Park.[82]

In contrast to his modest role as the city's mayor, Storrow figured prominently in the events that followed the collapse of Lawrence's Pemberton Mill in 1860. More than anything else that he did in Lawrence, his leadership and work in the relief effort after the collapse illustrated his deep commitment to the community. The Pemberton tragedy, one of the worst industrial accidents in American history and certainly one of the city's darkest hours, stunned the nation and for a brief time placed the city of Lawrence, the Essex Company, the Pemberton Mills Company, and the New England textile industry itself in the glare of national attention. The collapse occurred late in the afternoon of January 10, with about 670 workers inside the mill. Cast-iron support pillars in the factory's spinning room on the third floor cracked, and as the columns crumbled, the upper two floors collapsed, bringing the entire build-

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ing down. In less than one minute, the five-story Pemberton building was reduced to a thirty-foot-high mound of rubble. Amazingly, 300 workers escaped the disaster by jumping from windows, running down stairwells, or crawling out from spaces in the rubble. In the next few hours, hundreds of volunters, their efforts illuminated by bonfires set around the ruins, managed to rescue all but about 100 workers trapped in the debris. Tragedy struck again after 9 p.m., however, when a rescue worker's lantern accidentally ignited a fire in the mill's remains, burning to death many of those still trapped in the debris. In all, 88 textile workers were killed and 315 injured.[83]

Storrow came forward to offer both leadership and reassurance. The most urgent need in the aftermath of the tragedy was to secure assistance for the hundreds of families left without incomes because of the death or serious injury of a family member. On January 13, Storrow, along with several other leading citizens, organized a relief committee. As treasurer of the committee, he carried out his task with efficiency and dispatch, collecting and distributing over $65,000 in contributions. He did not hesitate to use moral suasion and his Essex Company leverage in soliciting funds. For example, he politely but firmly informed the president of the Boston and Lowell Railroad that he expected a large contribution from that company, given the handsome profits it had realized from transporting hundreds of curious sightseers to and from Lawrence in the days following the disaster.[84]

The committee did its work over the course of a year, meeting every day for the first two weeks and once a week thereafter. Storrow coordinated the complex task of determining the need for help and allocating funds; he also handled the bulk of the record-keeping and accounting. In a precursor to the concept of the "friendly visitor" that underlies modern social work, the committee hired inspectors to make door-to-door visitations to the homes of every family affected by the tragedy. Storrow gathered the hundreds of reports written by the inspectors and, with the committee, decided on a case-by-case basis the money to be allocated for medical care, food, clothing, financial support, and compensation. When the committee's work was done and Storrow issued his final report in February 1861, 98 percent of the funds raised had been expended on goods, services and cash payments to the victims and their families, the remaining 2 percent representing overhead costs.[85]

Although he has little to say about the mill's collapse in his journal, Storrow revealed his personal anguish over the tragedy in an interim report that he issued as treasurer of the relief committee on June 1, 1860. Before presenting his detailed list of contributions and distributions of relief funds, he

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wrote, in uncharacteristically emotional terms, of the human dimensions of the tragedy. He reported, for example, the stories of child workers trapped in the wreckage of the factory and about to be consumed by the fire. Most poignant of all was the story he recounted of a little girl trapped in the rubble and holding out her pay slip: "'Give this to my father; I shan't see him, but you will,' said little Mary Ann Bannan, an Irish child of ten years, to the girl near her, as she gave her pay roll certificate which she had received that afternoon. The [other] girl escaped, and the partly-burnt paper was given to the father. Mary Ann was never seen again."[86]

Beyond the distress that he felt for the Pemberton's victims, Storrow experienced great apprehension for the Essex Company in the aftermath of the mill's collapse. Construction crews under contract to the Essex Company had built the Pemberton Mill in 1853 and Captain Bigelow, the man he had hired as his assistant engineer in 1846, had designed the factory and superintended its construction. Although Storrow, as the company's corporate executive and chief engineer, could have been cited among those held responsible for any structural flaws in the building, his name was at no time linked to the disaster. Whether he owed this to his general reputation for probity in the community, his early and reassuring performance as relief committee treasurer, his lack of any close involvement in the design and construction of the Pemberton Mill, or a combination of these factors, is difficult to say. However, in the days after the collapse, the local and national press began to point the finger of blame at Captain Bigelow, even though, strictly speaking, it had been Bigelow's deputy engineer, Benjamin Coolidge, who had monitored the day-to-day, on-site supervision of the mill's construction.[87]

A coroner's jury convened in Lawrence on January 12, two days after the disaster, to determine the cause of the Pemberton deaths. Storrow was called before the jury on January 14. In his testimony, he supported his former assistant engineer, stating that he had had "perfect confidence in Captain Bigelow" during the construction of the Pemberton. He admitted that at the time he "didn't notice the details of the work," a statement that was no doubt truthful but which also served to distance himself from responsibility for the collapse. In support of Bigelow, Storrow asserted that, although his assistant engineer had drawn up the plans of the factory, he had done so "under the direction of Mr. [J. Pickering] Putnam [the treasurer of Pemberton Mills Company], whose orders were obeyed and whose sugestions we were glad to have." Storrow might have helped Bigelow even more had he, as Essex Company treasurer, stressed the unusual nature of the construction contract that the company had signed with the Pemberton Mills Company in 1852. It

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stipulated that the owners of the Pemberton reserved the right to contract for their own materials, as, in fact, they had done in the case of the iron pillars purchased from a foundry in South Boston.[88]

The coroner's jury made its findings public on February 2: the iron pillars supporting the factory's floors had been defective and their failure had caused the collapse; Bigelow, in neglecting adequately to inspect the pillars upon their arrival from the foundry, was held personally responsible for the collapse and for the deaths of those killed in the collapse, though not for the deaths attributable to the subsequent fire in the mill's ruins. Shortly thereafter, Bigelow defended himself in a long and detailed letter to the *Boston Courier*. Though no subsequent criminal action resulted from the jury's findings, Bigelow, savagely attacked by some of the press as an incompetent and a murderer, was a ruined man. He died in 1862, after working for two more years as a civil engineer in the city of New Bedford.[89]

The Pemberton disaster could have turned out far worse than it did for the Essex Company and for New England industrialists in general. For a time, it had threatened to become a national cause célèbre, provoking as it did a bitter debate in the press over the evils of the factory system. Additionally, coming at a time of the heated sectional controversy just before the Civil War, it was drawn into the larger tensions between North and South—partisans of slavery jumped eagerly on this latest instance of "wage slavery" in the industrial North. Ironically, Northern industrialists were spared a more searching inquiry into industrial abuses when interest in the Pemberton matter fell off abruptly as the nation's attention was diverted by the presidential election later in the year and then the outbreak of the war.[90]

Tragic as it was, the Pemberton collapse at least occurred at a time when Lawrence was finally recovering from the economic distress of the 1850s. As early as 1858 and 1859, newly incorporated textile firms began putting the city's factories back into operation. By the start of the Civil War all of its factories had returned to production. As an indication of the swiftness of Lawrence's turnaround, within a year of the collapse of the Pemberton a new Pemberton Mill had been constructed and was turning out cotton fabrics. The war brought some dislocations to Lawrence's textile industry, caused mainly by the cut off of southern cotton. Nonetheless, the city's industry prospered thanks to large supplies of cotton stockpiled by the textile corporations prior to the war, the securing of government wartime contracts for woolen goods, and an ability to shift some textile machinery from cottons to woolens and worsteds. As prosperity arrived, textile corporations purchased long vacant mill sites on the industrial island, new factories were constructed, some of the

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land on the south side of the river was opened up for development (in the late 1860s), population growth resumed, and the industrial center embarked on a period of expansion that would continue almost to the end of the century.[91]

Only when it appeared that the city had achieved surer economic footing did Storrow feel free to leave. "I left," he wrote in his journal, "when everything looked prosperous in the City, so that there be no seeming to be running away." He sold his house on Prospect Hill in 1860 and moved with his wife and three of his children to rented quarters in Boston to await the construction of their townhouse at 192 Beacon Street in the Back Bay.[92] Henceforth, he worked out of the Essex Company's office on State Street in Boston, where he continued to serve as company treasurer and agent until 1882 and thereafter as its president until his retirement in 1889 at the age of eighty. During these years he managed the company's real estate and waterpower interests in Lawrence and in the late 1860s planned and directed the urban and industrial development of the land south of the river. Otherwise, his days of active involvement and leadership in the community were over.

By the time Storrow and his family left Lawrence in 1860, an era in the history of American company towns had come to an end. Already by this date, economic and demographic forces at work not only in Lawrence but in the older mill towns of the Boston Associates had undermined important elements of the Waltham-Lowell system. Over the years the textile corporations had introduced new practices—wage cuts and speed-ups, for example—and new machinery, such as the labor-saving looms, to combat growing competition in the industry; the changes represented a major reversal of the philosophy of corporate paternalism on which the Waltham-Lowell system had been founded. The heavy Irish immigration into the Associates' factory cities in the late 1840s and 1850s and the rapid entry of the Irish into the textile workforce—effectively substituting labor plenty for labor scarcity—sealed the fate of the system.[93]

In this context, it is possible to see Storrow's departure from Lawrence in 1860 and his disengagement from the community's affairs as manifestations of the transformation of the Waltham-Lowell system. He had been for fifteen years the most active practitioner of the Boston Associates' policy of close supervision of their factory cities: the company chief executive officer and agent living and working in the city he had built, involved in its government at almost every level, shaping its urban development, promoting its cultural institutions, chronicling its social changes, and striving to make it not only an economic success but also "a fit habitation" for its citizens. In contrast, after 1860 Storrow functioned simply as the absentee manager of a Boston-based

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company. Although his greatly reduced role in Lawrence was motivated primarily by personal considerations, it marked nonetheless, in both symbolic and real terms, the end of the Waltham-Lowell system.

Any assessment of Storrow's contribution to the establishment of Lawrence must take into account his achievement in designing and constructing the city and its waterpower infrastructure. The imprint of his work as an engineer and city planner still inheres in the city's plan, the Great Stone Dam, the North and South Canals, and the Machine Shop building, to mention only a few of his surviving monuments in the city. His subsequent leadership in the civic and cultural life of the company town in its early years proved to be critical to the formation of the young community. Perhaps his most notable achievement in the city—one that called for the greatest patience, determination, and managerial skills on his part—was his success in holding together and sustaining the Essex Company and the whole Lawrence enterprise in the face of the most discouraging economic setbacks and uncertainties of the late 1840s and the 1850s.

An appreciation of this last accomplishment may be gained by looking at what happened at Holyoke. As with Lawrence, a corporate founder, the Hadley Falls Company, launched the city as a planned waterpower, textile center in the late 1840s, just as the economic picture for such projects began to darken. The two cities struggled against the same depressed economic conditions and shocks of the 1850s. Holyoke, however, was severely handicapped from the beginning by disinterested absentee ownership and a lack of close managerial supervision. Large tracts of land lay unsold and waterpower rights remained untaken; only two factories went up in space set aside for forty-eight. With the Panic of 1857, Holyoke, in the words of Constance McLaughlin Green, "all but fell apart."[94] The Hadley Falls Company went bankrupt and high unemployment in the city's textile factories worsened an already bleak economic situation. At the time, Storrow himself pointed to a crucial difference in the economic fortunes of Holyoke and Lawrence in 1857: his Essex Company, unlike the Hadley Falls Company and the Lewiston Water Power Company in Maine, had been strong enough to ride out the Panic. "These large companies for land and water power and town building," he wrote in 1858 of the three enterprises, "started nearly at the same time. That at Lewiston and that at Holyoke have yielded to the difficulties of the attempt. Our own stands; and whether it is more or less prosperous, at least it is secure."[95]

Like Lawrence, Holyoke recovered from the economic distress of the 1850s, thanks to a spurt in textile orders during the Civil War and the growth

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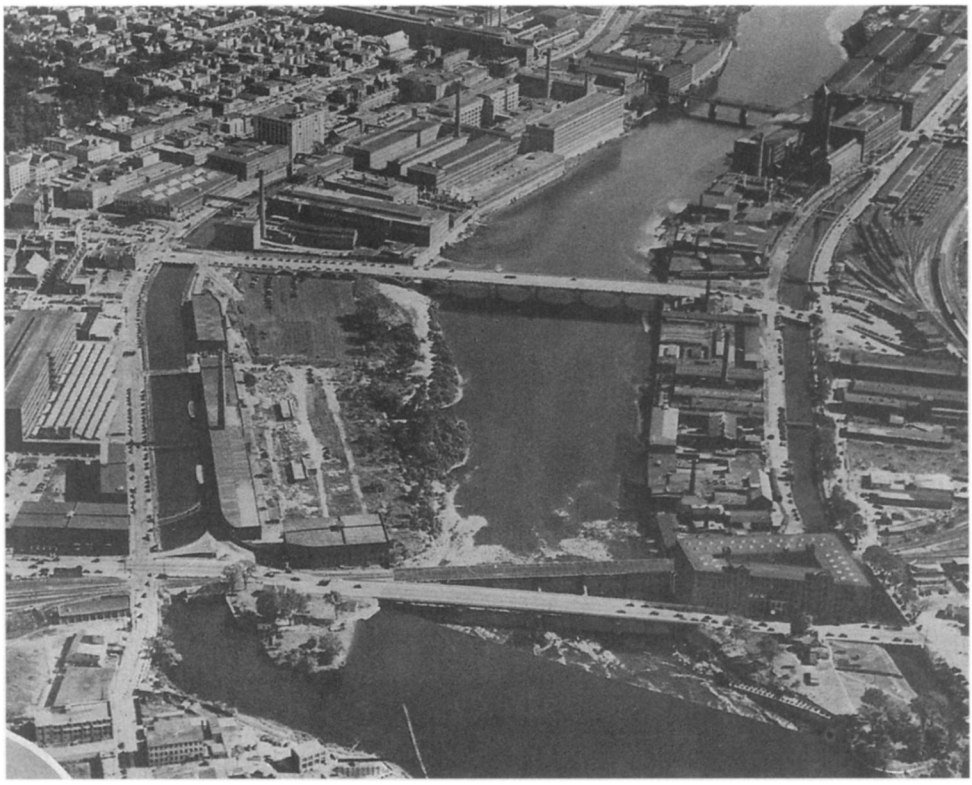

Lawrence's original layout is still recognizable in this 1940 low-level aerial photograph, taken from the west. The Great Stone Dam is represented by the dark diagonal line in the near foreground, with the North and South Canals on the left and right respectively. Note, however, that by 1940 the mile-long rows of corporation boardinghouses along the North Canal had almost entirely disappeared, replaced by factories, warehouses, and office buildings. Lawrence Evening Tribune, *April 1940. Courtesy of the* Lawrence Eagle-Tribune.

of the paper industry after the war. Although Lawrence went on in the late nineteenth century to become one of the world's leading woolen and worsted manufacturing centers, Holyoke never did live up to its original expectations. "Holyoke," wrote Green in the 1950s, "now over a century old, has never flowered."[96] A Charles Storrow might have made a difference.

By the time of Storrow's death in 1904, it has been observed, Lawrence was no longer the model mill town that he had built six decades earlier.[97] Over the years, working and living conditions had deteriorated substantially for textile workers. Beginning in the 1890s and continuing into the early 1900s, the period of Lawrence's heaviest immigration, the neighborhood around the lower end of Common Street had become a slum. With its huge, closely packed,

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four-story wooden tenement blocks, this area had become one of the most densely occupied, overbuilt, and unsanitary sections of any city in Massachusetts. These abuses attained notoriety for Lawrence when exposed in the 1912 *Lawrence Survey* and subsequently spotlighted in the aftermath of the internationally famous textile workers' strike in the city that same year.[98]

By the end of the nineteenth century, the Essex Company had little influence on overbuilding in the central districts of the city; its land had largely passed out of its hands years before and its deed restrictions had expired. Nor did Storrow's successor as company treasurer, Howard Stockton, show much interest in assuming Storrow's role as watchdog over the quality of the city's physical growth. After his retirement in 1889, local residents continued to appeal to Storrow to act on deed violations and property disputes between neighbors, but he usually refused to intervene, not wishing to intrude into Stockton's jurisdiction.[99]

Storrow's clearly defined plan of the city, with its different functions assigned to different zones, had not survived intact. By the twentieth century, the corporation boardinghouses, no longer needed by the textile companies and shunned by arriving immigrants who lived in family groups, had been converted to tenements, sold to private parties, or demolished. Beginning in the 1880s, a second generation of larger, more efficient, and increasingly steam-powered factories had risen on the industrial island. In the early 1900s, industrial operations, warehouses, and business offices had started to spill across the North Canal from the cramped island into the zone once set aside for boardinghouses.

We do not know what Storrow thought of these changes in Lawrence during the last years of his life (he lived to the age of ninety-five). Residing in the Back Bay, in a genteel world far from the din of the loom and the squalor of the tenements, he received from time to time invitations to return to Lawrence to help celebrate its anniversaries as a city and to accept the naming of a new school in his honor. He politely turned down each of these requests, citing the infirmities of old age and the pleasures of remaining in one's home; he instead sent along, as he did in 1897, the assurance of his "warmest interest in the prosperity of the place with which I was so long and so intimitely connected."[100]

In recent years historians have begun to rediscover Charles Storrow and to reassess his place in American history. He is now recognized as a central figure in the early history of American technology. His *Treatise on Water-Works* and his Great Stone Dam, in particular, are acknowledged as significant contributions to the theory and practice of nineteenth-century civil engineering.

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Storrow is also now regarded as the founder of New England's leadership in hydraulic experimentation, a roster that includes such influential engineers as James B. Francis, Uriah Boyden, and Hiram Mills.[101]

Storrow's historical importance goes beyond his technological accomplishments, however. It lies above all in his participation in the unique experiment of the Boston Associates in building entire industrial communities in the New England countryside. From the day he took on the Lawrence project, Storrow subscribed fully and enthusiastically to the idea of creating not just an industrial center but also new human institutions. Nowhere does he express these sentiments with such intensity as in his previously quoted letter to Horace Mann in 1848: "Where else can you find as here," he wrote of the emerging mill town, "the elements of society ready to be moulded into a good or an evil shape, nothing to pull down, all to build up; a whole town composed of young people to influence and train as you would a school[?]" He was convinced that good planning and sustained individual effort would surely produce a more refined and more liveable human society, one that managed to escape the abuses of the Old World, as well as a more efficient and profitable textile enterprise. In the pursuit of that goal he dedicated the better part of his professional life.

Notes

The author wishes to express his indebtedness to the late Charles S. Denny, great-grandson of Charles S. Storrow, for his kindness in allowing access to the Storrow papers in the Denny family collection. He also expresses his gratitude to the editors of MHS, the readers of the paper, and Professor Clarisse A. Poirier of Merrimack College for their many helpful suggestions.

1. Charles S. Storrow, "Memorandum of Conversation with Abbott Lawrence and Engagement with Him," Mar. 26, 1845, Denny Collection (the family-held collection of Storrow papers) (Charles S. Storrow and Denny Collection hereafter cited as CSS and DC respectively). The best studies of Storrow's work in Lawrence are Peter M. Molloy, "Nineteenth-Century Hydropower: Design and Construction of Lawrence Dam, 1845-1848," *Winterthur Portfolio* 15(1980):315-343; and Duncan E. Hay, "Building 'The New City on the Merrimack': The Essex Company and Its Role in the Creation of Lawrence, Massachusetts" (Ph.D. diss., University of Delaware, 1986). Theodore Steinberg, *Nature Incorporated: Industrialization and the Waters of New England* (New York, 1991), examines the role played by Storrow and others in the Boston Associates' harnessing of New England waterpower. See also John A. Garraty and Mark C. Carnes, eds., *American National Bi-*

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ography, (New York, 1999), 20:888-889. On the history of Lawrence, see J. F. C. Hayes, *History of the City of Lawrence, Massachusetts* (Lawrence, 1868); Robert H. Tewksbury, "Lawrence," in *Standard History of Essex County, Massachusetts* (Boston, 1878), 210-238; Maurice B. Dorgan, *Lawrence Yesterday and Today, 1845-1918: A Concise History of Lawrence, Massachusetts* (Lawrence, 1918) and *History of Lawrence, Massachusetts, with War Records* (Cambridge, Mass., 1924); and Donald B. Cole, *Immigrant City: Lawrence, Massachusetts, 1845-1921* (Chapel Hill, 1963).

2. Storrow kept a set of pocket-sized private journals (he called them memorandum books), 15 in number, from 1845 to 1882—that is, during the entire time he directed the Essex Company as its agent and treasurer (hereafter cited as Memorandum Book). He stipulated that these journals remain in family hands, as they have since his death in 1904 to the present. Until recently, the only historians to consult them directly were Robert L. Edwards, a Harvard graduate student who used them and other Storrow papers in 1940 while researching an (unfinished) doctoral dissertation on Abbott Lawrence, and Frances W. Gregory for her *Nathan Appleton, Merchant and Entrepreneur, 1779-1861* (Charlottesville, Va., 1975). Edwards's research notes were subsequently deposited in the Houghton Library, Harvard University.
3. Among the many works on Waltham, Lowell, and the Boston Associates, see especially Robert F. Dalzell, Jr., *Enterprising Elite: The Boston Associates and the World They Made* (Cambridge, Mass., 1987); Caroline F. Ware, *The Early New England Cotton Manufacture* (Boston, 1931); Thomas Dublin, *Women at Work: The Transformation of Work and Community in Lowell, Massachusetts, 1826-1860* (New York, 1979); John Phillips Coolidge, *Mill and Mansion: A Study of Architecture and Society in Lowell, Massachusetts, 1820-1865* (New York, 1942); Gregory, *Nathan Appleton*; John F. Kasson, *Civilizing the Machine: Technology and Republican Values in America, 1776-1900* (New York, 1976), ch. 2; and Howard M. Gitelman, "The Waltham System and the Coming of the Irish," *Labor History* 8(1967):227-253.
4. François Weil has challenged the expressions "Boston Associates" and "Waltham-Lowell system" as legitimate historiographical conceptualizations. In "Capitalism and Industrialization in New England, 1815-1845," *Journal of American History* 84(Mar. 1998):1334-1354, he contends that both conceptions are insufficiently grounded in historical analysis and have been uncritically accepted by historians as convenient usages. The expression "Boston Associates," he points out, was coined only in the twentieth century, first appearing in Vera Shlakman, *Economic History of a Factory Town: A Study of Chicopee, Massachusetts* (Northampton, Mass., 1936), 31. Robert F. Dalzell, Jr.'s *Enterprising Elite* remains the most persuasive case for employing the two expressions. Also see Clarisse A. Poirier, "Pemberton Mills, 1852-1938: A Case Study of the Industrial and Labor History of Lawrence, Massachusetts" (Ph.D. diss., Boston University, 1978).
5. Thomas Bender, *Toward an Urban Vision: Ideas and Institutions in Nineteenth-Century America* (Lexington, Ky., 1975), ch. 2. Carl Siracusa, *A Mechanical People: Percep-*

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tions of the Industrial Order in Massachusetts, 1815-1880 (Middletown, Conn., 1979), ch. 2, does not find in the political literature of Massachusetts during this period the same hostility toward early industrialization that Leo Marx and other historians have detected in the works of the state's literary luminaries Emerson, Thoreau, and Hawthorne.

6. Margaret Crawford, *Building the Workingman's Paradise: The Design of American Company Towns* (London, 1995), 1-2; "Company Towns: The Strange Death of Corporationville," *The Economist*, Dec. 23, 1995, 73-75; John W. Reps, *The Making of Urban America: A History of City Planning in the United States* (Princeton, 1965), ch. 15.
7. CSS, *Report Presented to the Stockholders of the Essex Company at their Annual Meeting, on Tuesday, May 29, 1860* (Boston, 1860), 12.
8. James F. Sullivan, "Building a Mill Town: History of the Essex Company, 1845-1855" (master's thesis, Boston College, 1959), 41-43, 73-74, 82.
9. Robert V. Spalding, "The Boston Mercantile Community and the Promotion of the Textile Industry in New England, 1813-1860" (Ph.D. diss., Yale University, 1963), ch. 8; Kasson, *Civilizing the Machine*, 86-99.
10. Dalzell, *Enterprising Elite*, 162.
11. Dalzell, *Enterprising Elite*, x and 59, points out that many of the leading Boston Associates were not Bostonian by birth but had been born and raised in the "hinterland," in towns such as New Ipswich, New Hampshire (the Appletons), and Groton, Massachusetts (the Lawrences).
12. On Storrow's education in France and the United States, see Peter A. Ford, "Charles S. Storrow, Civil Engineer: A Case Study of European Training and Technological Transfer in the Antebellum Period," *Technology and Culture* 34(Apr. 1993):271-299.
13. Amos Lawrence to CSS, Feb. 3, 1831, Samuel Storrow Papers, Massachusetts Historical Society (hereafter cited as MHS). On William Lawrence and the Storrows, see Peter A. Ford, "An American in Paris: Charles S. Storrow and the 1830 Revolution," *Proceedings of the Massachusetts Historical Society* 104(1992):34. Numerous references to visitors from the United States at the Storrow residence in Paris can be found in the journals of Washington Irving, a friend of the family and himself a frequent guest at the Storrow table during his Paris years. See Walter A. Reichert, ed., *The Complete Works of Washington Irving*, vol. 3, *Journals and Notebooks, 1819-1827* (Madison, Wis., 1970), passim.
14. On Storrow's early engineering career and on his treatise's contribution to the diffusion of European hydraulic theory, see Ford, "Charles S. Storrow, Civil Engineer," 271-299.
15. Amos Lawrence to CSS, July 7, 1836, Samuel Storrow Papers, MHS.
16. CSS, "Memorandum of Conversation with Abbott Lawrence and Engagement with Him," Mar. 26, 1845, DC.
17. *American National Biography*, 3:202-203; "Manuscript History of the Amoskeag Manufacturing Company and the Amoskeag Company, 1805-1948," 4, Amoskeag

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Collection, mss. N-3, Baker Library, Harvard University. Although he relinquished his position as agent in 1841, John Amory continued as treasurer of the Amoskeag until 1859.

18. Gregory, *Nathan Appleton*, 206-209; Dalzell, *Enterprising Elite*, 191-204.
19. On Storrow's organization and reorganization (1846) of the Essex Company staff, see CSS, ms. memoranda "Sept. 2, 1845. Organization," and "New Organization Proposed," June 19, 1846, DC. On his hiring of Captain Bigelow: CSS, Memorandum Book II, Dec. 24, 1845, DC.
20. CSS, Memorandum, Apr. 1, 1847, DC.
21. In attempting to estimate the proper dimensions of factories, boardinghouses, and the North Canal, the number of spindles in the factories, the new city's population and the like, Storrow devised mathematical formulas based on the data of Lowell and Manchester. These formulas were useful rules-of-thumb expressing, for example, the ratio of the number of boarders to the length of boardinghouse block. CSS, Memorandum Book I, n.d.; CSS, Memorandum, Feb. 21, 1846, DC.
22. James B. Francis to Frederick Graff, Aug. 25, 1871, Proprietors of the Locks and Canals on Merrimack River, Records, v. DB-6, Baker Library, Graduate School of Business Administration, Harvard University (by permission).
23. On the historical significance and influence of Storrow's dam, see Molloy, "Nineteenth-Century Hydropower," 315-343.
24. CSS to Major G. T. Poussin, Nov. 9, 1848, in CSS, Memorandum Book V, DC.
25. CSS to the Directors of the Essex Company, June 5, 1851, DC.
26. CSS, "[Plan] to attach to J. K. Barker's plan of Methuen," Mar. 22, 1847, DC.
27. CSS to Horace Mann, Feb. 8, 1848, Horace Mann Papers, MHS.
28. Everett Webber, *Escape to Utopia: The Communal Movement in America* (New York, 1959), 171.
29. Coolidge, *Mill and Mansion*, 22 (Reprinted with the permission of the publisher, © Columbia University Press). Storrow's cousin Waldo Higginson used the term "utopia" in referring to the new mill town in a letter he wrote to Storrow in 1846, recommending the services of a young lawyer friend. This young man, he assured Storrow, would be "an orderly and reputable citizen of your Utopia." Waldo Higginson to CSS, Sept. 9, 1846, Essex Company Papers, ms. 69/306, box 17, American Textile History Museum, Lowell, Mass. (hereafter cited as ATHM) (by permission).
30. See especially Anne C. Rose, *Transcendentalism as a Social Movement, 1830-1850* (New Haven, 1981); and Richard Francis, *Transcendental Utopias: Individual and Community at Brook Farm, Fruitlands and Walden* (Ithaca, 1997).
31. George F. Kenngott, *The Record of a City: A Social Survey of Lowell, Massachusetts* (New York, 1912), 11.
32. CSS to the City Council, Lawrence, Mass., Oct. 31, 1853, Director's Office, Lawrence Public Library (by permission); and Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (London, 1964).
33. Ford, "An American in Paris," 21-41.
34. CSS, Memorandum Book III, Dec. 27, 1846; IV, Dec. 12, 1847; V, Feb. 3, 1849, DC.

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35. CSS, Memorandum Book IV, Dec. 12, 1847.
36. CSS, Memorandum Book II, May 1846; IV, Dec. 12, 1847.
37. CSS, Memorandum Book III, Dec. 27, 1846.
38. [Lemuel Shattuck], "Sanitary Survey of Lawrence," in *Report of a General Plan for the Promotion of Public and Personal Health* (Boston, 1850), 447. A similar observation is made by Robert Tewksbury in "Lawrence," in *Standard History of Essex County*, 215. Noting the plank sidewalks on Essex Street and the muddy streets in the early years, Tewksbury remarks that "the town had all the peculiarities of a western pioneer city."
39. CSS, Memorandum Book III, Dec. 29, 1846, DC.
40. CSS, Memorandum Book III, Mar. 20, 1847.
41. "List of Subscribers to the Irish Relief Fund, Lawrence, Feb. 22, 1847"; Josiah Quincy, Mayor of Boston, to CSS, Feb. 27, 1847, both documents in Samuel Storrow Papers, MHS.
42. CSS to Horace Mann, Feb. 8, 1848, Horace Mann Papers, MHS. Thomas Dublin, "Lowell, Massachusetts and the Reinterpretation of American Industrial Capitalism," *Public Historian* 11(Fall 1989):161, comments on the tendency of the Boston Associates at Lowell to ignore the presence of the Irish in their workforce.
43. CSS to H. K. Curtis, Apr. 3, 1846, Essex Company Papers, ms. 69/306, box 14, ATHM.
44. CSS, Memorandum Book III, Jan. 9, 1847, DC.
45. CSS, Memorandum Book XV, Sept. 8, 1874. In this entry Storrow records his recollection of the meeting some 27 years earlier. "Draft of a Petition of Incorporation to the Mass. Senate and House," n.d., in Storrow's hand, Essex Company Papers, ms. 69/306, box 369, ATHM.
46. Opposition from the town of Methuen is described in newspaper clippings in the Tewksbury Collection, Essex Company Papers, ms. 69/306, box 375, ATHM. On press commentary on the petition to incorporate, see Edwards's notes, 50M-576, box 2, Houghton Library, Harvard University. On the Irish work stoppage, see CSS, Memorandum Book III, Oct. 1, 1846, DC. And on the "Merrimack" petition and the Irish signatures, see John P. Bigelow to CSS, Apr. 1, 1847, Essex Company Papers, ms. 69/306, ATHM.
47. Correspondence dealing with the legislative maneuvering over the petition can be found in Essex Company Papers, ms. 69/306, box 18, ATHM. Storrow describes the steps taken in calling a town meeting and holding elections in his Memorandum Book III, Apr. 17-23, 1847, DC.
48. CSS, Memorandum Book III, Apr. 26, 1847. See also Cole, *Immigrant City*, 32-33.
49. CSS to Horace Mann, May 3, 1847, Feb. 8, 1848; Abram V. Pells to Horace Mann, Feb. 1, 1848, Horace Mann Papers, MHS.
50. CSS to Horace Mann, Feb. 8, 1848, Horace Mann Papers, MHS.
51. CSS, Memorandum Book IV, Dec. 12, 1847, DC.
52. CSS, Memorandum Book IV, Dec. 12, 1847, DC.
53. CSS, Memorandum Book IV, Dec. 12, 1847, May 28, 1848, DC.

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54. CSS, Memorandum Book IV, Dec. 12, 1847, DC.
55. CSS, Memorandum Book IV, May 28, 1848, DC.
56. CSS, Memorandum Book IV, May 28, 1848, DC.
57. "Register of the Names of a Portion of the Citizens of Lawrence, Mass. with Their Native Towns and States, Dec. 1851," Essex Company Papers, ms. 69/306, box 369, ATHM.
58. The most detailed contemporary inventories of Lawrence's industrial and municipal structures in ca. 1850 can be found in [Shattuck], "Sanitary Survey of Lawrence," 437-457; and [John S. Skinner], "How Industry Thrives and Towns Grow Up," *The Plough, the Loom and the Anvil* 1(Dec. 1848):345-352.
59. CSS, ms. memorandum "State of Affairs of Essex Company . . . to Mar. 31, 1856," Essex Company Papers, ms. 490, box 3A, ATHM. In actuality, the Essex Company could not "wind up" completely, because even after it had sold all its land, mill sites, and waterpower, it was still required to manage and supply waterpower to the textile corporations, which paid an annual rent for the service in perpetuity.
60. "Plan of 60 Corner Lots in Lawrence to be sold at Public Auction," June 25, 1855, Essex Company Papers, ms. 69/306, box 105, item 105.22, ATHM.
61. CSS, Memorandum to Essex Company Directors, June 5, 1851, p. 2, DC.
62. Spalding, "Boston Mercantile Community," 198. Total losses, including those suffered by Essex Company and Pacific Mills Company stock, came to more than $6,000,000.
63. CSS to Abbott Lawrence, July 7, 1851, DC.
64. Hay, "Building 'The New City,'" 6-10, 34, and chs. 4-8, provides a detailed account of Storrow's direction of the Essex Company during these difficult years. See also Spalding, "Boston Mercantile Community," 196.
65. CSS, Memorandum to Essex Company Directors, June 5, 1851, p. 8, DC.
66. Hay, "Building 'The New City,'" 283-289, 295-297, 304-332; Spalding, "Boston Mercantile Community," 187-188; S. W. Mason and E. B. Haskell, comps., *An Authentic History of the Lawrence Calamity* (Boston, 1860), 69.
67. CSS, Memorandum Book X, Oct. 1857, DC.
68. Hay, "Building 'The New City,'" 10 (by permission).
69. Storrow once calculated that between 1845 and 1867 he had executed over 2,200 deeds. CSS, Memorandum Book XIII, Oct. 1867, DC.
70. Although sanitary regulations in Lawrence date back to the inception of town government in 1847 and fire hazard codes to the late nineteenth century, the city did not enact comprehensive zoning ordinances until 1943. *Revised Ordinances of the City of Lawrence, Massachusetts, 1954* (Charlottesville, Va., 1955), 363n.
71. CSS to J. Wiley Edmunds, Treasurer, Pacific Mills, Mar. 5, 1860, Letter Book, 1856-1882, Essex Company Papers, Immigrant City Archives, Lawrence, Mass. (by permission). The Pacific Mills had been incorporated in 1853.
72. There are numerous documents recording Essex Company deed restrictions on lots, violations of restrictions, and actions taken by Storrow in Essex Company Papers, ms. 69/306, boxes 21, 24, 34-37, 105, 113, and 319, ATHM.

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73. Tewksbury, "Lawrence," in *Standard History of Essex County*, 215; CSS to H. H. Hall, June 27, 1871, Essex Company Papers, ms. 69/306, box 34, folder 34.8, ATHM.
74. For examples of deed restrictions that Storrow placed on lots around the Common, see *Catalogue of Six Hundred and Two Lots of Land in Lawrence, Mass. . . . to be Sold by Public Auction on Thursday, December 6th, 1855*, p. 3, in Essex Company Papers, ms. 69/306, box 105, ATHM. Documents dealing with the Essex Company's deeding of the Common to the city and the improvement of the Common in the 1850s can be found in Essex Company Papers, ms. 69/306. boxes 104, 105, and 369, ATHM.
75. CSS to Josiah G. Abbott, Feb. 6, 1847, Essex Company Papers, ms. 69/306, box 18; CSS to H. H. Hall, Mar. 1, 1866, Essex Company Papers, ms. 69/306, box 34, ATHM.
76. CSS, ms. "Memorandum of Work to be done in 1847," Essex Company Papers, ms. 69/306, box 110, folder 110.2, ATHM.
77. *Lawrence Courier*, Apr. 4, 1849. Storrow wrote the names of purchasers of lots up to April 1847 on a "Plan of Lots in Methuen to be sold by the Essex Company at Auction, on the 28th of April, 1846." Immigrant City Archives. Also becoming overcrowded at an early date was a stretch of Common Street southeast of the Common. See also Sullivan, "Building a Mill Town," 27; and Cole, *Immigrant City*, 28-29.
78. [Shattuck], "Sanitary Survey of Lawrence," 539, 557.
79. *Printed Catalogue of Six Hundred and Two Lots of Land in Lawrence, Mass. . . . to be Sold by Public Auction on Thursday, December 6th, 1855*, Essex Company Papers, ms. 69/306, box 105, ATHM.
80. Norman Williams, Jr., *The Structure of Urban Zoning and Its Dynamics in Urban Planning and Development* (New York, 1966), 11-12, 18.
81. CSS to M. S. Dodge, July 31, 1868, DC.
82. For an account of the 1853 mayoral election, see J. P. Keogh, comp., *Semi-Centennial History of Lawrence* (Lawrence, Mass., 1903), 41. On the Essex Company's deeding of land to the city for Storrow Park, see CSS to City Council, Lawrence, Mass., Oct. 31, 1853, Director's Office, Lawrence Public Library.
83. Poirier, "Pemberton Mills," 58-65.
84. Poirier, "Pemberton Mills," viii, 88-89; CSS to Francis Cogswell, Jan. 18, 1860, Pemberton Relief Committee, ms. 117, box 1, ATHM.
85. Poirier, "Pemberton Mills," 90-115.
86. CSS, *First and Second Reports of the Treasurer of the Committee of Relief for the Sufferers by the Fall of the Pemberton Mill* (Lawrence, Mass., 1861), 12.
87. Clarisse A. Poirier, "Aftermath of a Disaster: The Collapse of the Pemberton Mill," in *Labor in Massachusetts: Selected Essays*, ed. Kenneth Fones-Wolf and Martin Kaufman (Westfield, Mass., 1990), 83; Mason and Haskell, *Authentic History of the Lawrence Calamity*, 74.
88. Mason and Haskell, *Authentic History of the Lawrence Calamity*, 69; Poirier, "Aftermath of a Disaster," 81.

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89. Poirier, "Pemberton Mills," 81-83, 88-89. The *New York Times* and *Vanity Fair* were especially critical of Bigelow. On Bigelow's life and career, see Francis E. Griggs, ed., *Biographical Dictionary of American Civil Engineers* (New York, 1972, 1991), 2:12.
90. Poirier, "Aftermath of a Disaster," 83-87.
91. On Lawrence's economic recovery in the 1860s, see Hay, "Building 'The New City,'" 359-362, 389, and 398-401.
92. CSS, Memorandum Book IX, entry undated but prior to Nov. 7, 1860, DC.
93. On the transformation of the Waltham-Lowell system, see especially Gitelman, "The Waltham System"; Crawford, *Building the Workingman's Paradise*, 27-28; Dublin, *Women at Work*, chs. 6-9; and Bender, *Toward an Urban Vision*, 104-109.
94. Constance McLaughlin Green, *American Cities in the Growth of the Nation* (London: The Athlone Press, 1957), 83 (by permission); and Holyoke, *Massachusetts: A Case Study of the Industrial Revolution in America* (New Haven, 1939), 55-65.
95. CSS, ms. "Report to Essex Company Directors, Dec. 29, 1858," Essex Company Papers, ms. 490, Box 3A, ATHM.
96. Green, *American Cities*, 81.
97. Hay, "Building 'The New City,'" 536.
98. Robert E. Todd and Frank B. Sanborn, *The Report of the Lawrence Survey* (Lawrence, Mass., 1912), 33, 37, 87; *Report of the Board of Health, Lawrence City Documents, 1898-1899* (Lawrence, 1899), 329.
99. Hay, "Building 'The New City,'" 535.
100. CSS to J. L. Brewster, Superintendent of Schools, Oct. 31, 1883; CSS to Mayor Robert H. Tewksbury, Apr. 24, 1897, DC.
101. For assessments of Storrow's contributions to engineering theory and practice, see Charles W. Sherman, "Great Hydraulic Engineers of New England's Classic Period," *Engineering News-Record* 107(Sept. 24, 1931):475-479; Steponas Kolupaila, "Early History of Hydrometry in the United States," *Journal of Hydraulics Division: Proceedings of the American Society of Civil Engineers* 86(Jan. 1960):4-5; Neil FitzSimons, "Charles S. Storrow and the Transition in American Hydraulics," *Civil Engineering* 38(Dec. 1968):81-82; Molloy, "Nineteenth-Century Hydropower," 315-343; Edwin T. Layton, Jr., "Scientific Technology, 1845-1900: The Hydraulic Turbine and the Origins of American Industrial Research," *Technology and Culture* 20(1979):72; and Ford, "Charles S. Storrow, Civil Engineer," 271-299.

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