

Cushing Flour and Grain Mill
Laurel Street Bridge Vicinity
Fitchburg
Worcester County
Massachusetts

HABS No. MA-896

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PHOTOGRAPHS

Historic American Buildings Survey
National Park Service
Department of the Interior
Washington, D.C. 20240

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HISTORIC AMERICAN BUILDINGS SURVEY

SIMONDS MANUFACTURING COMPANY
(Simonds Saw and Steel Company) HABS No. MA-1265

Location: 23-55 North Street
Fitchburg
Worcester County, Massachusetts

USGS Fitchburg Quadrangle
UTM Coordinates: 19.270760.4718000

Present Owner: Thomas W. Callahan, Trustee
North Street Realty Trust
84 Chestnut Street
Marlboro, Massachusetts 01752

Present Use: Vacant (to be demolished 1992)

Significance: The former Simonds Manufacturing Company complex is significant for its historical role in the industrial development of Fitchburg, a noted manufacturing center in the late 19th and early 20th centuries. In addition to textiles and paper manufacturing, Fitchburg had a thriving metal-goods sector that included machine shops and railroad repair facilities; saw production at Simonds Manufacturing was probably the largest specific activity within the overall metalworking category. Begun as a successor to a scythe shop, Simonds prospered in the last quarter of the 19th century by making circular and band saws for industry, as well as industrial machine knives such as planer blades. The company expanded to serve a national market, with agents in all major cities and additional manufacturing facilities in Chicago and Montreal. In 1905, the Company undertook a complete reconstruction of the Fitchburg plant, at which time most of the existing buildings were erected.

Architecturally, the buildings represent standard early 20th-century mill construction: the general-purpose multi-story brick pilaster-walled factory; the single-story steel-framed monitor-roofed structure favored for heat processes; and the reinforced-concrete warehouse.

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PART I.: HISTORICAL AND ARCHITECTURAL ENGINEERING SIGNIFICANCE

Simonds Manufacturing Company is a company significant in the industrial history of Fitchburg, a small city in western Massachusetts. Located on the Nashua River, Fitchburg from the earliest years of the 19th century became involved in the manufacture of textiles and paper. Although these industries remained important (they accounted for 41% of Fitchburg's industrial output in 1910¹), Fitchburg also developed a strong and diverse metalworking sector that included foundries, machine shops, and railroad repair facilities. With Boston capital to supplement local financial resources, good rail transportation, and access to a regional skilled-labor pool second to none, Fitchburg became one of the most highly industrialized cities in New England, producing steam engines, boilers, lathes and other machine tools, and rock drills. Probably the most important single product of the city's metalworking sector in the late 19th and early 20th centuries were the saws and other industrial blades made by Simonds Manufacturing Company.

The company had its roots in a small scythe-making business started by J. T. Farwell and Abel Simonds (1804-1874) in 1832 in West Fitchburg. In 1864 Simonds's five sons took over the business, incorporating it four years later as the Simonds Manufacturing Company and building a new factory at the present site in Fitchburg. Moving with the times, the company turned from scythes and began making mowing-machine blades and other agricultural and industrial machine-knives. In 1876 they started producing circular saws for sawmills, a line that, along with band-saws, eventually became the major part of their business. The plant which the company built following a fire in 1880 served them well for a few years, but as the market for industrial saws expanded, Simonds added facilities to keep up. In 1892 the company built another large factory in Chicago, and in 1900 it built its own steel mill in that city. In 1905 the company started on a major reconstruction program in Fitchburg that resulted in more than 100,000 square feet of up-to-date manufacturing space. The old wooden factory that had faced Main Street was torn down and all-new facilities, fronting principally on North Street, took their place. In 1906, the company began a third factory in Montreal.

With three major manufacturing facilities, its own steel mill, and agents in every important North American city, Simonds Manufacturing Company had become a nationally important producer within its market. World War I brought additional

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expansion, with several additions to the Fitchburg plant. During the war, the company received a contract to produce armor plate for the Russian Imperial Army, though by the time they were ready the Revolution had occurred.

Business remained strong in the 1920s. In order to rationalize production in a more modern plant, the company, renamed Simonds Saw and Steel Company in 1922, made plans to replace its North Street factory with a single-story building, to use electrical power only, on the outskirts of town. Because of the Depression, the company did not occupy the plant until about 1940, when it moved from downtown. Known today as Simonds Industries, the company continues in that location as one of Fitchburg's major employers. The North Street plant then was occupied by a series of plastic-goods manufacturers, until becoming vacant in the 1980s.

The buildings at Simonds Manufacturing Company represent standard early 20th-century factory engineering. Reflecting both fire safety and the industrial processes of the day, these forms were repeated thousands of times, with little variation, throughout industrial America. Where once common, however, such factories are today becoming increasingly rare, as fire, decay, and radical alteration reduce their numbers to a remnant.

The buildings are of two types. The multi-story brick factory represented by Buildings Nos. 2 and 3 was the period's standard general-purpose manufacturing building. The form had been pioneered by textile mills and found suitable for any kind of production that relied on ordinary machinery. The long and narrow proportions reflect both the use of steam-powered, belt-drive machinery and the continuing importance of natural light, even in the early 20th-century. Good lighting was also an advantage of the wide windows made possible by brick-pier walls. Concern for fire safety is evident in the use of brick construction; the brick firewalls partitioning off the stairways; the metal-clad doors between compartments; the planked floors; the flat roofs, which avoided fire-susceptible attics and roof framing; and the use of timber posts and beams, which had been found to be far more fire-resistant than iron or steel. The fact that two rows of posts interrupted the manufacturing area was not crucial to processes that used machines of moderate size. Such buildings were used for manufacturing hardware, textile, wooden mill work, and an endless variety of other industrial products.

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In contrast, the two hardening/blacksmithing buildings, Building No. 1 and Building No. 14, represent a standard type that evolved especially for processes involving hot metal. Appearing as early as the 1850s, the type is characterized by its single-story height, often much higher than a normal factory ceiling; wide clear-span working areas; and a monitor roof. First used for forges and foundries, this kind of building was well-suited to processes that used large, heavy machines such as drop forges; generated heat and fumes, the removal of which was the principal function of the monitor; or required the movement of heavy materials and products. Over the course of several decades, ever-larger examples of such monitor-roofed buildings were built, and metal trusses replaced wooden framing, allowing much greater clear spans and larger monitors. If one exterior wall were also framed in steel, as in Building No. 14, subsequent expansion could be accomplished simply by adding another bay. The final step was to eliminate the masonry altogether in favor of an all-steel frame. Improvements in ventilation and self-contained, electrically-powered heat processes eventually eliminated the need for this type of specialized structure.

The two types of buildings appear in the Simonds Manufacturing Company complex because saw manufacture required both machining and heat-treatment. The company attributed its success to improvements in the processes of saw production, particularly hardening and tempering, and as these were proprietary, contemporary descriptions are not very specific about how the saws were made. An 1883 government report², however, probably applies in a general way to saw production at Simonds even at the turn of the century. Saw blades were first cut out of rolled steel plate and then trimmed to the desired size and shape. Next, the teeth were punched out using tothing machines, after which they were filed. The saws were then hardened by heating them in various materials. One technique involved heating the saws in oil, which was then blazed off. Further tempering was accomplished by hammering the saws, then they were ground to the desired thickness, hammered again, glazed, and polished. Finally, the teeth were set (bent off-center in an alternating pattern) and sharpened.

The earliest part of the plant, dating from the 1905-1906 reconstruction, was designed by Dean & Main, one of Boston's leading mill-engineering firms.³ The partners in the firm, Francis W. Dean (1852-1940) and Charles T. Main (1856-1943), not only had the design of numerous major industrial complexes to their credit, but also they were influential as teachers of

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other engineers. Dean taught at Harvard Engineering School from 1874 to 1888, and Main was on the faculty at Massachusetts Institute of Technology for several years. Main, moreover, wrote one of the most important books of the period, Notes on Mill Construction (1886), which helped establish and disseminate standard practices in mill engineering, many of which were exemplified in the Simonds Manufacturing Company's Fitchburg plant. Shortly after this project, the two men went their separate ways, each continuing with a consulting engineering practice. Main's was especially successful, and Charles T. Main, Inc. achieved national prominence.

The later buildings in the Simonds complex, including Buildings No. 10 and No. 7 (the reinforced concrete storehouse), were designed by a less well-known Boston engineer, John O. DeWolf.

PART II. DESCRIPTIVE OVERVIEW

The Simonds Manufacturing Company plant, as it exists today, is a complex of six buildings occupying most of the southern part of a block bounded by North, Main, Willow, and Green streets a short distance east of Fitchburg's downtown commercial area. The buildings all date from the 1905-1906 reconstruction or later. The complex includes the following buildings, named according to the numbers used by Simonds Manufacturing Company throughout its occupancy and continued by subsequent owners:

BUILDING NO. 1 (1905), a large one-story structure consisting of three parallel gable-roofed sections, each with a large ridge monitor. Used for hardening and forging, it has brick exterior walls and steel girders for interior and roof framing. The east third was built about 1925, partly on the site of an earlier two-story manufacturing building.

BUILDINGS NOS. 2 and 3 (1905), a 350'-long, three-story, brick-pier factory used for grinding, polishing, and machining. Though numbered as two buildings (it has a brick firewall at its midpoint), it appears as a single large structure. The company offices occupied the north end of the building, where a large three-story vault and remnants of elaborate interior finish remain.

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BUILDING No. 5 (1905-1906), a small brick building that originally accommodated the boilers and steam engine that powered the plant; its 128'-tall chimney is painted with the words "Simonds Saws."

BUILDING NO. 14 (c.1916), a heat-treatment and blacksmithing structure similar to Building No. 1, to which it is connected by a shed structure that also encloses part of the railroad spur that formerly ran between the buildings into the interior of the block.

BUILDING No. 7 (c.1920), a three-story reinforced-concrete storehouse built in the interior of the block; it was extended southward about 1925, replacing earlier manufacturing buildings.

BUILDING No. 10 (1918), a three-story factory building similar to Buildings Nos. 2 and 3, except that it has wider windows, concrete foundation and window sills, and tiled parapet coping.

Only Buildings No. 1, Nos. 2 and 3, No. 5, and No. 14 are included as part of this documentation.

The plant as conceived in 1905 was built on the hollow-square principle, in which large factory buildings occupy the perimeter of a block, with ancillary facilities in the interior. The north portion of the square, a three-story building known as Building No. 4, used for straightening saws, survives only as a remnant attached to its neighbor to the west. Also now demolished is the line of two-story buildings at the southeast corner, probably at least started in 1905-1906 and known Building No. 6; this part of the plant was used for pattern-making and storage. Other original portions of the plant were removed to make way for Building No.14 (c.1916), No. 7 (1920-c. 1925), and the addition to No. 1 (c.1925).⁴

Although it is beyond the scope of this documentation to address the buildings' structural condition, they appear to be seriously deteriorated. Broken skylights and inadequately boarded-up windows have allowed weather penetration, causing wooden floors to buckle and suffusing the complex with dampness that will eventually affect the masonry. Debris left behind by the last manufacturing occupant is everywhere, and many of the walls are covered with graffiti. Fire destroyed part of the east monitor on Building No. 1, and there have been other fires as well. None of the buildings are secured to prevent entry.

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PARTIII.PROJECT INFORMATION

This documentation was undertaken in fulfillment of a Memorandum of Agreement among the City of Fitchburg, the Massachusetts State Historic Preservation Office, and the Advisory Council on Historic Preservation dated June 18, 1992. Because of the hazardous condition of the four buildings, the City anticipates demolishing them using Community Development Block Grant funds from the U.S. Department of Housing and Urban Development.

Prepared by: Bruce Clouette
Title: Senior Historian
Affiliation: Historic Resource Consultants, Inc.
Date: July 23, 1992

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NOTES

1. U.S. Bureau of the Census, Thirteenth Census of the U.S., 1910, Vol. IX, Manufactures (Washington: Government Printing Office, 1912), 502.
2. U.S. Bureau of the Census, Report on the Manufactures of the U.S. At the Tenth Census, 1880 (Washington: Government Printing Office, 1883), 725.
3. This attribution is based on the notation "D & M" for the plans and elevations of the 1905 buildings, listed in an inventory of drawings in the Simonds Industries archive.
4. The artist's view published in 1907 probably represents a concept of the eventual development of the plant rather than an exact depiction of what had been built in 1905-1906. The part at the northeast corner, for example, clearly dates from a later period than the first buildings, to judge by its use of concrete and tile, yet it is shown in place as part of the hollow square.

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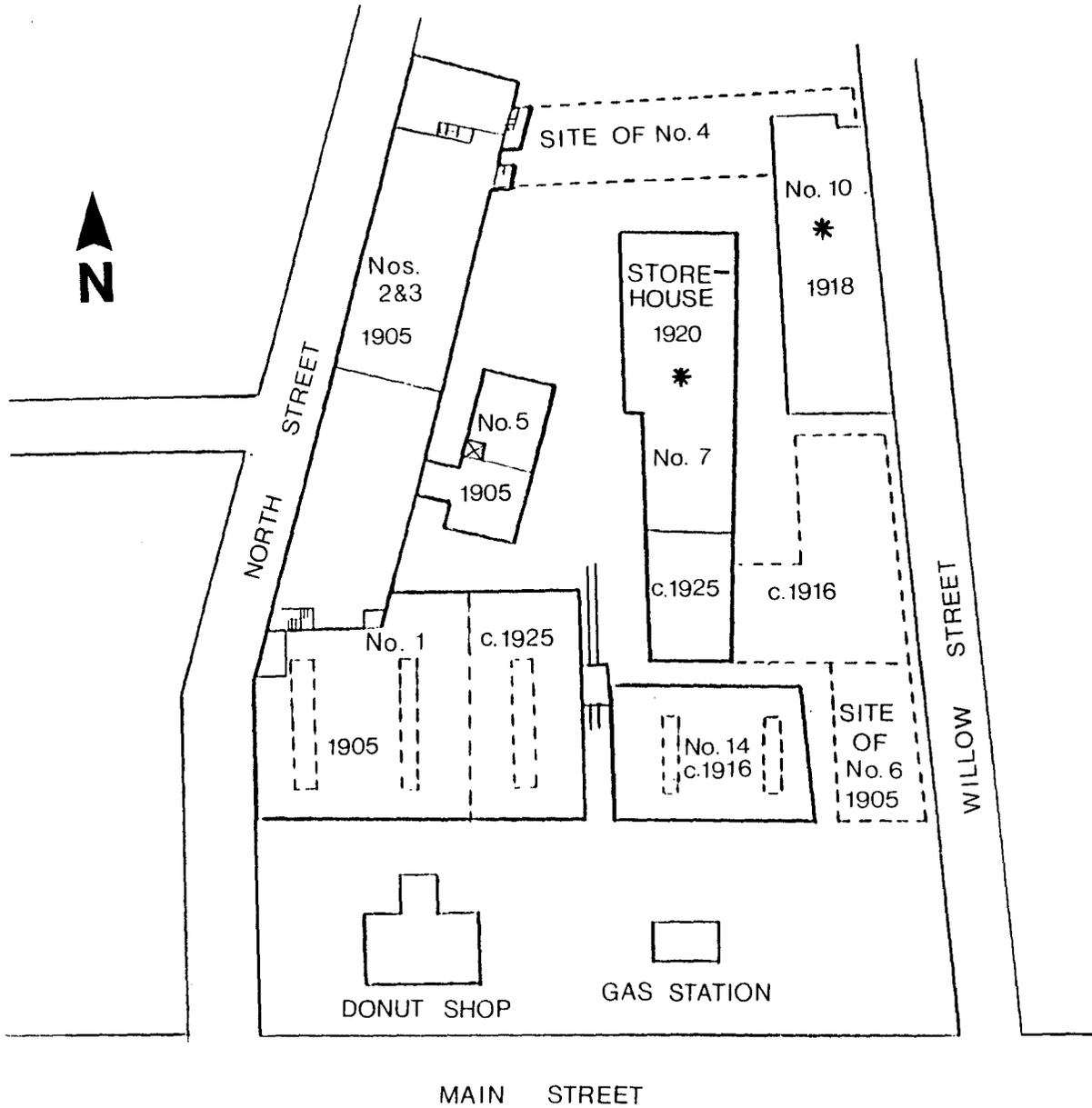
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SITE PLAN

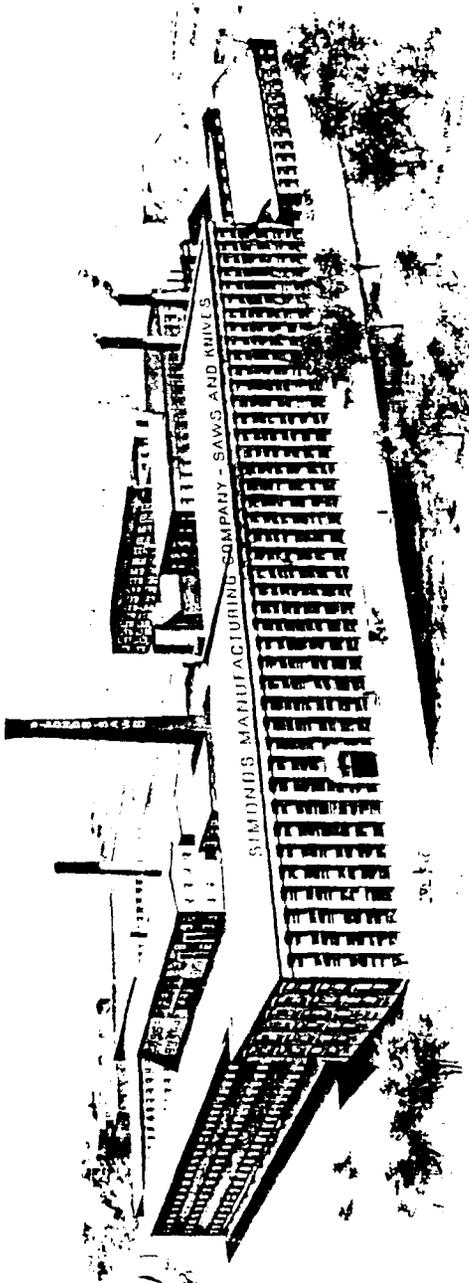


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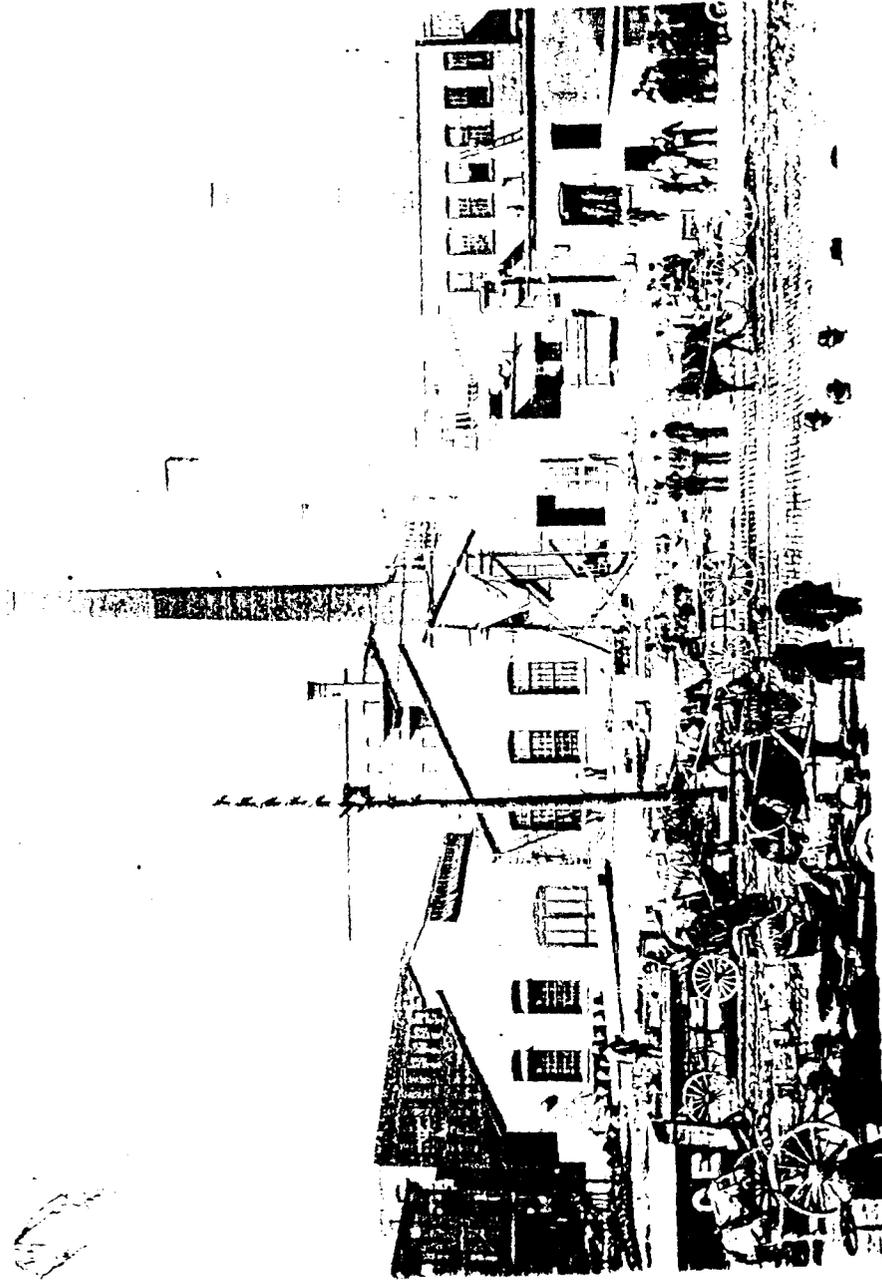
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Engraving of plant, 1907 (Seventy Five Years of Business Progress)

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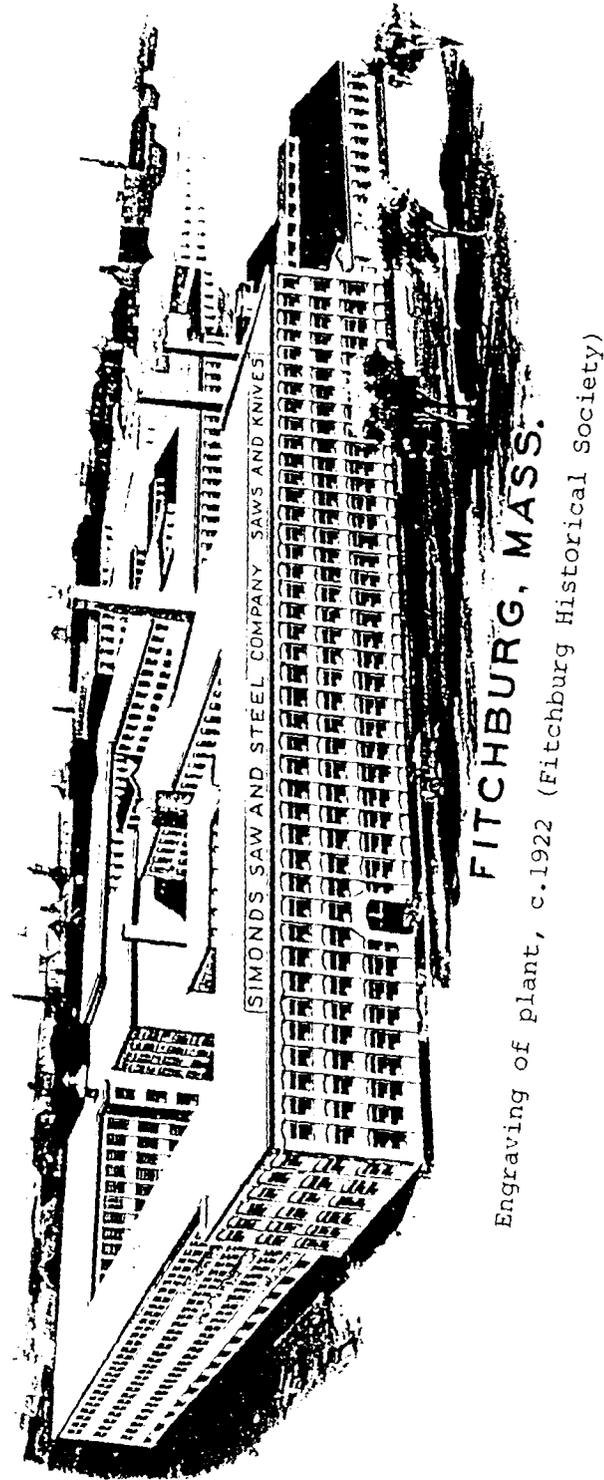
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Demolition of old factory chimney, c.1910 (Fitchburg Historical Society)

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Engraving of plant, c.1922 (Fitchburg Historical Society)