

Sanitary survey of the town of Lawrence / by the chairman of the commissioners appointed under a resolve of the legislature of Massachusetts, relating to a sanitary survey of the state.

Contributors

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SANITARY SURVEY
OF THE
TOWN OF LAWRENCE,

BY THE
CHAIRMAN OF THE COMMISSIONERS

APPOINTED UNDER A RESOLVE OF THE LEGISLATURE OF
MASSACHUSETTS, RELATING TO A SANITARY
SURVEY OF THE STATE.

REPRINTED FROM THE REPORT OF THE COMMISSION.

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1850.

The Sanitary Commission consisted of LEMUEL SHATTUCK, Esq., chairman, of Boston; N. P. BANKS, Esq., of Waltham; and JEHIEL ABBOTT, M. D., of Westfield.

SANITARY SURVEY OF LAWRENCE.

1. *Natural and Atmospheric Condition of the Town.*

Lawrence was projected as a manufacturing town, in 1844, and incorporated April 17, 1847. It is 26 miles from Boston, 20 from Salem, 24 from Newburyport, and 29 from Manchester, N. H. Its latitude is $42^{\circ} 42' 57.67''$, and its longitude $71^{\circ} 09' 05.84''$, west of Greenwich. It contains 4,374 square acres, 344 of which is covered with water. 1,980 acres of the land on the south side of the Merrimack River was taken from Andover, and 2,050, on the north side, from Methuen.

The general character of the soil is a dry, sandy alluvial, resting on a rocky base, at a greater or less depth from the surface. Clay gravel prevails in the northerly parts of the town. On the south side of the river it is generally level, and also in the central parts on the north side. The top of the dam across the Merrimack is 45 feet above tide water. In the populous part of the town, the foot of Lawrence street is the lowest elevation, being 4 feet above the crest of the dam, and 37 feet below the highest elevation of the streets. Two hills, one on the easterly and the other on the westerly borders of the town, rise to the height of about 140 feet above the dam.

There are three streams of water—the Merrimack, near the centre ; the Spicket, on the north ; and the Shawsheen, forming, in its sluggish course, the easterly boundary of the town, on the south side of the Merrimack. The first two are rapid, but neither is subject to overflow its banks. The Merrimack, in its natural passage through the town, has a rapid here, known as Bodwell's Falls, which in some places falls 4 or more feet in a 300 feet passage. In a medium current, about 5,000 cubic feet of water passes per second, and it sometimes rises to 60,000 per second, thus affording a water power here nearly or quite equal to that of Lowell. Lake Winnepisiogee, in New Hampshire, containing about 120 square miles, the principal source of the Merrimack River, has been purchased by the owners of the water power in this and the other manufacturing towns above, to make the flow of water at all seasons equal to the general average. The Spicket falls 40 feet over a succession of dams, and discharges about 100 cubic feet per second. The Shawsheen has very little perceptible fall in this town.

The town seems to be free from natural sources of malaria ; though meteorological and other similar observations have not been made for a sufficient time, nor with sufficient accuracy, to determine, with much exactness, the true natural character of the locality, nor to ascertain whether any atmospheric peculiarity or sanitary impurity exists.

2. *Artificial and Local Condition of the Town.*

The lands now comprised within the township, previous to 1844, were used principally for agricultural purposes, and contained, including the Methuen pauper establishment, less than 100 inhabitants. In that year an association was formed, consisting of Messrs. Samuel Lawrence, John Nesmith, Thomas Hopkinson, Josiah G. Abbott, of

Lowell, and Daniel Saunders, of Andover, by the name of the "Water Power Association," for the purpose of purchasing lands and creating a water power on Merrimack River, in Andover and Methuen. They selected the site and projected this as a manufacturing town; and purchased about three-fourths of the land comprised within the present limits of the township.

The same individuals obtained an act of incorporation by the name of the "Essex Company," dated March 20, 1845. The stock of this company was taken up and the company organized in April, 1845, at which time Hon. Abbott Lawrence was chosen President; Messrs. Patrick T. Jackson, William Sturgis, Nathan Appleton, John A. Lowell, and Ignatius Sargent, Directors; and Charles S. Storrow, Esq., Principal Agent and Chief Engineer. To this company all the lands purchased by the "Association" were conveyed.

Before commencing the enterprise, a careful survey was made and a general plan formed, under the direction of the chief engineer, for using the water power, for the location and construction of the dam, for the canal and the mills, and for the streets and public squares of the town. In the spring of 1846, the services of Capt. Charles H. Bigelow, formerly of the U. S. Engineers, were also obtained for the company, and under his immediate direction the works upon the dam and canal were successfully carried forward to their completion, in accordance with the original designs.

The results of the surveys were laid down upon a map, an outline of which is presented, accompanying this sketch. The streets are from 50 to 80 feet in width, and generally 200 feet apart. The building lots are 93 feet deep from the street, leaving a back passage-way of 14 feet in width between the two tiers of lots.

The elevation of the crossing of each street, above a given level, is stated in the plan, showing the grading proposed to be made by the Essex Company, as a guide to builders; and the streets were so drawn as to admit of surface drainage and under-ground sewerage. A large common sewer, the interior of which is $6\frac{1}{2}$ feet high and 3 feet wide, admitting a man to walk erect, was constructed of brick laid in cement and of stone masonry, and passes under and 4 feet below the bed of the canal, near the foot of Lawrence street, into the Merrimack River. It is in a natural ravine, of gradual descent, with a constant stream of water passing through it, keeping it at all times sweet and clean. There are two other great sewers in other parts of the town, built of brick and stone, each 4 feet in diameter, passing under the canal. These sewers lead from Haverhill street, (the one most elevated,) southerly, into the Merrimack. Others lead northerly, into the Spicket, and a very effective drainage and sewerage are by these means afforded. The town has appropriated \$5,000, this year, for the construction of collateral sewers.

The main common or public square, near the centre of the town, comprises 18 acres, and was the gift of the Essex Company. The other lands were divided into lots and numbered, a plan of which was drawn on different sheets, and bound in a volume, on a scale sufficiently large to admit inserting in each lot the name of the original purchaser, and the successive owners to which it may be transferred for several years. A part of the lots designed for private use

were first offered for sale at auction, by the Essex Company, April 28th, 1846. Restrictions were imposed upon the use of some of these lands. On Haverhill street no lot can have upon it more than one house and the necessary out-buildings, for twenty years; and no house can be occupied by more than one family at the same time. On Essex street, brick or stone buildings only, three stories high, with slate or metallic roofs, can be erected. It is to be regretted that restrictions could not have been laid upon all the lands, as they might have prevented some inconveniences and sanitary evils. Many of the streets, public squares, and other inclosures, about the town and near the mills, are planted with ornamental trees and shrubbery. The frame of the first dwelling-house was raised September 12th, 1845; since that time many substantial buildings, brick and wood, and others of less permanent character, have been erected. A part of the town, above the dam, on the south side of the river, known as "Dublin," in a dry and elevated situation, has been discreetly appropriated for "shantees," for the accommodation of Irish laborers and their families. The number of private dwelling-houses, including 90 Irish shantees, and exclusive of the boarding-houses of the Bay State and Atlantic Corporations, was 335, in February, 1847; and 849, in 1849. Of 335 tenements, 12 were at that time occupied partly for stores; 96, including the half of the shantees, contained from 2 to 9 persons each; and the remainder, 227, from 10 to 74 each. In 1850, according to the assessors' return to the State, for the decennial valuation, there were 828 dwelling-houses; and according to the United States census, 1,081 tenements.

Water for domestic use is at present obtained from wells; it is considered good for drinking, though rather hard for many purposes. Cast iron pipes, connected with force-pumps at the mills, and with the water of the canal, for use in case of fire, are laid in part of the streets, and are to be extended to others and to reservoirs upon the top of the adjacent hills. An aqueduct company was incorporated May 10, 1848, to bring water into the town; but no definite measures have as yet been matured under its sanction.

The public buildings erected, prior to January, 1850, were—9 houses, for the accommodation of the primary and mixed schools, 2 for the grammar schools, and 1 for the high school; 6 churches, and a Town Hall. In all the public buildings the most approved modern sanitary plans for warming and ventilating have been adopted.

The High School-house is a substantial brick edifice, situated on Haverhill street, fronting on the northerly side of the common. It is large and elevated, and amply provided with the most approved, convenient interior fixtures and furniture, and with necessary out-buildings; and with room for exercise and recreation. It cost about \$15,000. Land is reserved in the neighborhood for the erection of additional buildings when needed.

The Town Hall is a brick edifice of great architectural beauty, 121 feet 2 inches in length, 64 feet 2 inches in breadth, and 55 feet in height. It fronts on the southerly side of the common, and was erected in 1849, at a cost of about \$40,000. It contains a large hall for the accommodation of the people in general town meeting, rooms for the selectmen, and the various town officers, or for the mayor, aldermen,

and common council, when a city government shall be established, and for the town and county courts.

These two buildings are unnecessarily large for the accommodation of the present inhabitants of the town, but are constructed partly with a view to its prospective growth.

Several different companies have been incorporated in this town, for manufacturing purposes. The four principal ones that have commenced operations, are the "Essex Company," incorporated March 20, 1845, with a capital of \$1,500,000; the "Bay State Mills," incorporated February 2, 1846, with a capital of \$2,000,000; the "Atlantic Cotton Mills," incorporated February 3, 1846, with a capital of \$2,000,000; and the Lawrence Gas Company, with a capital of \$100,000. These companies together had expended, prior to July, 1850, about \$5,000,000. The "Union Mills" and the "Pacific Mills," each with a capital of \$1,000,000; and the "Bleaching and Dyeing Company," with a capital of \$500,000, have been incorporated, but have not yet commenced operations.

The Essex Company,—the owners of the water power and principal owners of the town,—have erected the dam, canal, and machine shop. They dispose of the water power to other companies on certain conditions, which are specified with great care and minuteness in the printed proposals for their sale. They define a "Mill Power" to be "thirty cubic feet of water per second, when the head and fall is twenty-five feet," which is to be graduated to a less or greater quantity as the head and fall shall be greater or less than twenty-five feet. According to this principle, a fall of 20 feet would require $37\frac{1}{2}$ cubic feet, and a fall of 10 feet would require 80 cubic feet, per second. A similar principle has been adopted at Lowell. A mill power is considered equal to about 60 or 70 horse power. Among other conditions of sale, the water power and mill sites are to "be held, used, and improved, for mills or buildings appurtenant thereto, or for such dwelling-houses, boarding-houses, sheds, and other out-houses, as shall be required and actually used for the accommodation of the agents, clerks, overseers, machinists, watchmen, or operatives, employed in such mills, and not appropriated to any other purpose whatever." And "the grantees are not to use any building for, or to set up or continue any laboratory, powder mill, furnace, or forge, nor any chemical, or other works whatever, which may be so noxious or dangerous from fire or otherwise, as to impair, injure or endanger the life, safety or reasonable comfort of any person." And "no grantee shall, without license from the grantors, to be given and revoked at their pleasure, (which license is not to be given but with the consent of the mill owners next on each side adjoining,) keep or permit to be kept, any tavern or public house of entertainment, nor any livery stable, nor sell nor permit to be sold, any spirituous liquors of any kind, in any shop, store or building, upon the granted premises." These excellent stipulations are accompanied with suitable penalties and forfeitures in case of non-fulfilment. They have an important sanitary bearing.

The excavation for the foundation of the dam was commenced August 1, 1845; the first stone was laid September 19, following; and it was completed in 1848. The foundation is embedded in the solid rock, and bolted to it with iron. The structure is of solid masonry

laid in cement, 1,629 feet in length. The overfall is 900 feet; the south wing is 324 feet; and the north wing is 405 feet, constructed to unite with guard locks at the head of the canal. The dam is 35 feet thick at the base, and $12\frac{1}{2}$ feet at the lower end of the coping crest-stone. Its greatest height is $40\frac{1}{2}$ feet, its average height 32 feet. The water falls 25 to 27 feet, giving an effective head and fall of 28 feet for the whole of the river. The rock excavation, in preparing its foundation, was 1,700 cubic yards; the mass of masonry laid in cement is about 29,000 square yards; and the hammered granite surface 148,000 square feet. It cost \$250,000, including coffer-dams and all incidental expenses.

The pond, produced by this dam, flows back to the foot of Hunt's falls, in Lowell, which is nine miles distant. In consequence of the great length of the overfall, the height of the water in the pond varies much less than in other parts of the river, and not sufficiently to overflow the banks and affect the health of the inhabitants.

The water is taken from this pond by an artificial canal, 5,330 feet in length, 100 feet in width at the upper, and 60 feet at the lower end, measuring at the surface of the water; and 12 feet in depth in the middle, and 4 feet at the side walls. At the head of the canal are 6 sluice-ways, 12 feet deep and 9 feet wide; and a lock for navigation, 95 feet long and 21 feet wide, all built of hammered granite, laid in cement. At the lower end of the canal are three locks, of 9 to 10 feet "lift" each, which are 20 feet wide and 90 feet long; and a large waste weir of masonry, 120 feet in length. The earth excavated for this canal was 266,000 square yards. The side walls contain 12,000 square yards. It is about 400 feet from, and nearly parallel to the river; and in this space are the sites for the mills. The water is prevented from oozing into the adjoining sandy soil by sheet or plank piling. The cost of the canal and the structures connected with it, was about \$200,000.

The machine shop is 404 feet in length, 64 in breadth, and 4 stories high, of 13 to 16 feet each, admitting the free ingress and egress of locomotive engines; the forge shop, 232 feet by 53 feet 8 inches, and 17 feet high, to contain 32 forges; and the foundery, 154 by 90 feet, $22\frac{1}{2}$ feet high. The forges are arranged in the middle of the building, and the smoke is conveyed by an underground cylindrical flue of brick, 4 and 5 feet in diameter, to a great chimney in the middle of the yard. This chimney is a circular stone shaft, 142 feet in height, 14 feet exterior diameter at its base, and $8\frac{1}{2}$ feet at its top. The interior flue is of brick, 5 feet in diameter, surrounded by an air chamber nearly to the top, and receives the smoke from the steam-heating apparatus, the annealing furnaces, and the forge-shop. Very little smoke is made at these works, however, the principal part of the fuel used being anthracite coal. The ware-house, store-house, picking-house, annealing-house, and heating-house, will constitute a range of buildings 315 feet in length, by 43 feet 6 inches in width, and mostly 2 stories in height. A pattern-house is to be built, 150 feet in length, $53\frac{1}{2}$ feet in width, and 3 stories in height. All these structures are built of stone, warmed with steam, and are well lighted and ventilated. The motive power is supplied by two Fourneyron iron turbine wheels, improved by Boyden, of 120 to 150 horse power each,

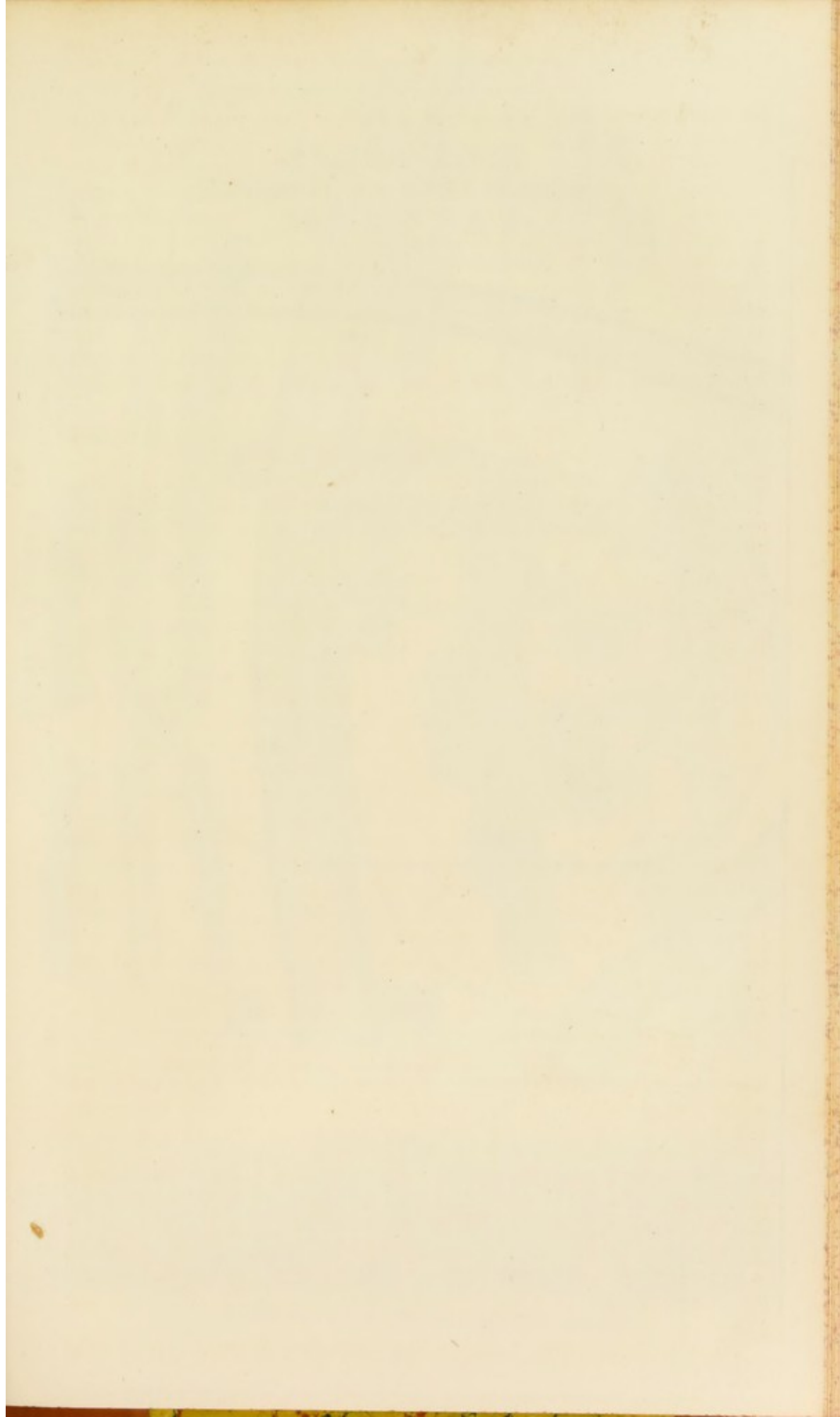
for the machine shop, and one other for the forge shop. The water is conveyed 540 feet from the canal, in underground passages, and is discharged through an underground race-way, 1000 feet in length, consisting of two passages, each 13 feet in width and 15 feet in height, walled and arched with stone. The yard is accessible by a branch of the Boston and Maine Railroad, which completely encircles it and ramifies within it, affording the means of conveniently depositing, in store-houses, the iron, coal, and other heavy materials, so as to require little additional labor in their use. At this establishment machinery of all kinds is made, from a spindle to a locomotive steam-engine. The company will employ in their machine shop and foundery, when in full operation, 800 to 1,000 hands, all males. They now employ about 400.

They have four blocks of dwelling-houses, built of brick, containing 50 good 2-story tenements, with little gardens in front, upon the street, and deep yards leading to passage-ways in the rear, 14 feet in width. They occupy an entire square, have cost \$2,000 each, exclusive of land, and are good and convenient residences. They are intended exclusively for the families of the mechanics employed in the Essex Company's machine shop; 16 rent for \$100 each, and 34 for \$80 each. Another square is reserved for the erection of similar blocks.

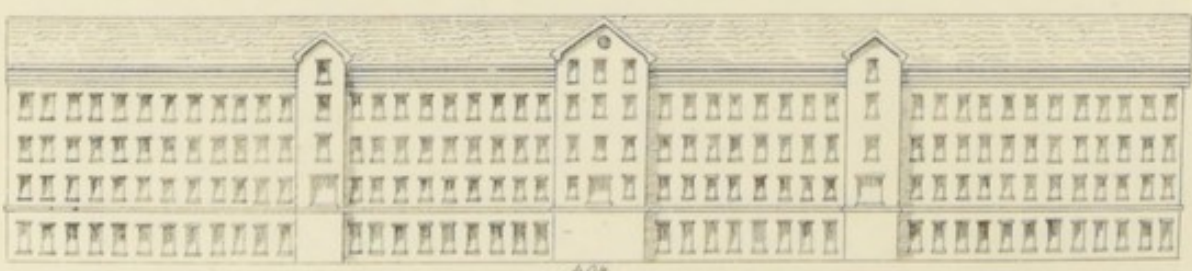
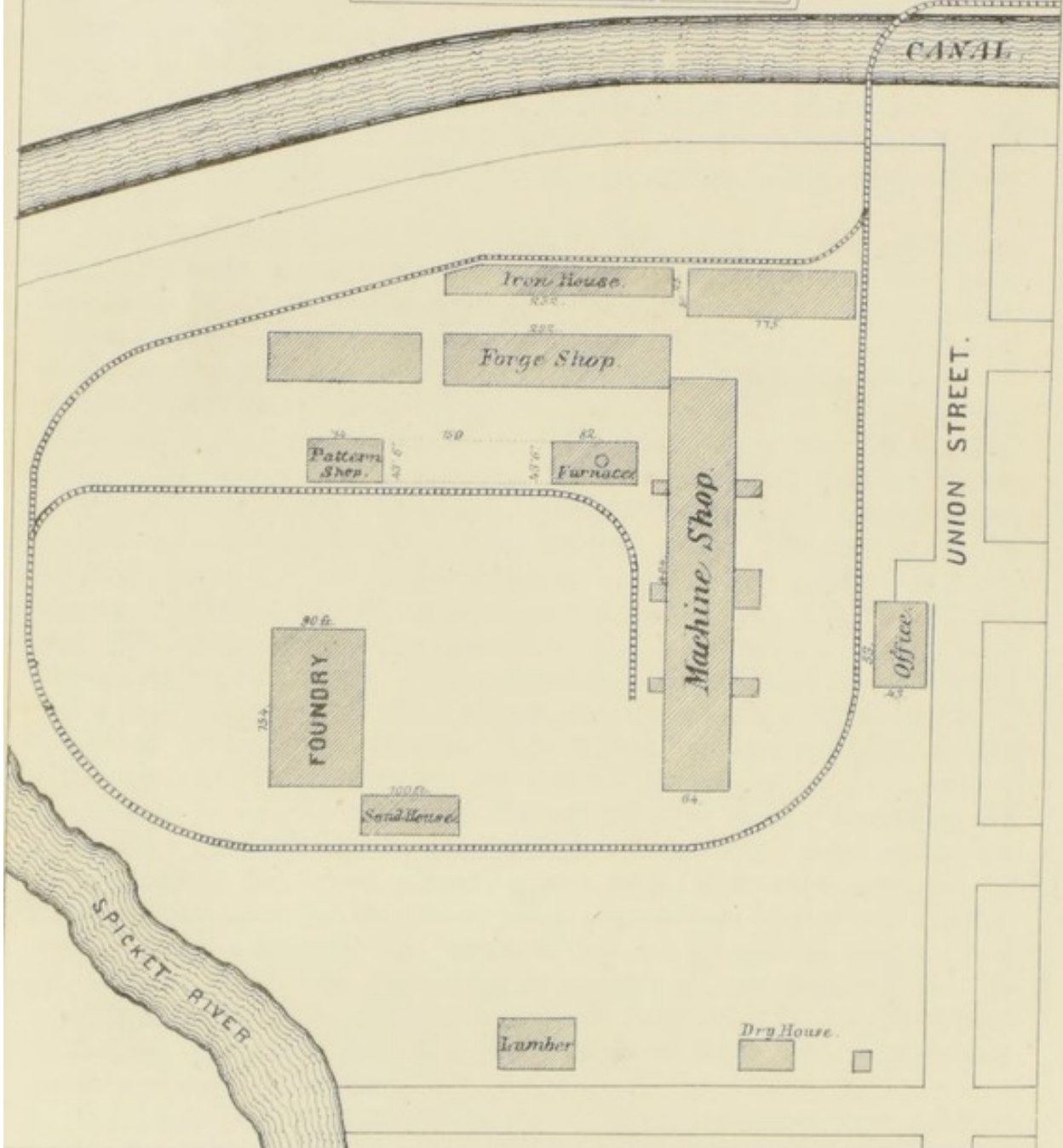
The Atlantic Cotton Mills have erected a building 600 feet in length, 5 and 6 stories in height, partly 64 and partly 106 feet in width, which is devoted to the manufacture of brown cotton goods. It is designed to contain 42,500 spindles and 1,168 looms; 25,088 spindles and 728 looms are now in operation; and 164 male and 619 female operatives are employed. This number will be increased to about 1,200 when in full operation. The motive power is supplied by 3 Boyden's improved iron turbine wheels, each 8 feet in diameter and of 300 horse power,—12 mill powers are devoted to these mills. The boarding-houses belonging to these mills consist of 6 blocks, containing 68 tenements, are built upon a similar plan and have the same admirable arrangements for water, cleansing, sewerage, and other purposes, as those belonging to the Bay State Mills, presently to be noticed. Thirty-two of these tenements are intended for the female operatives; and 36, equally good, but containing fewer rooms, are intended for the overseers in the mills, and for men with families, who may also take boarders. A ground plan and an elevation of these mills is presented in the accompanying plate.

The manufacturing establishments at Lawrence have been erected under favorable circumstances. They were planned and constructed under the guidance of the scientific skill and practical experience which had been acquired by wise and successful men, in a series of years, in other places, aided by an excellent water power, ample capital, and under reasonable national and state legislation. The results have appeared to us so admirable, and so highly worthy of imitation, that we have supposed we could not perform a more useful public service, than to give a more particular description of one of them. It will show, in a favorable light, the intelligence, the enterprise, and the liberality, that has generally presided over all the affairs of this town.

The establishment belonging to the "Bay State Mills," is devoted to



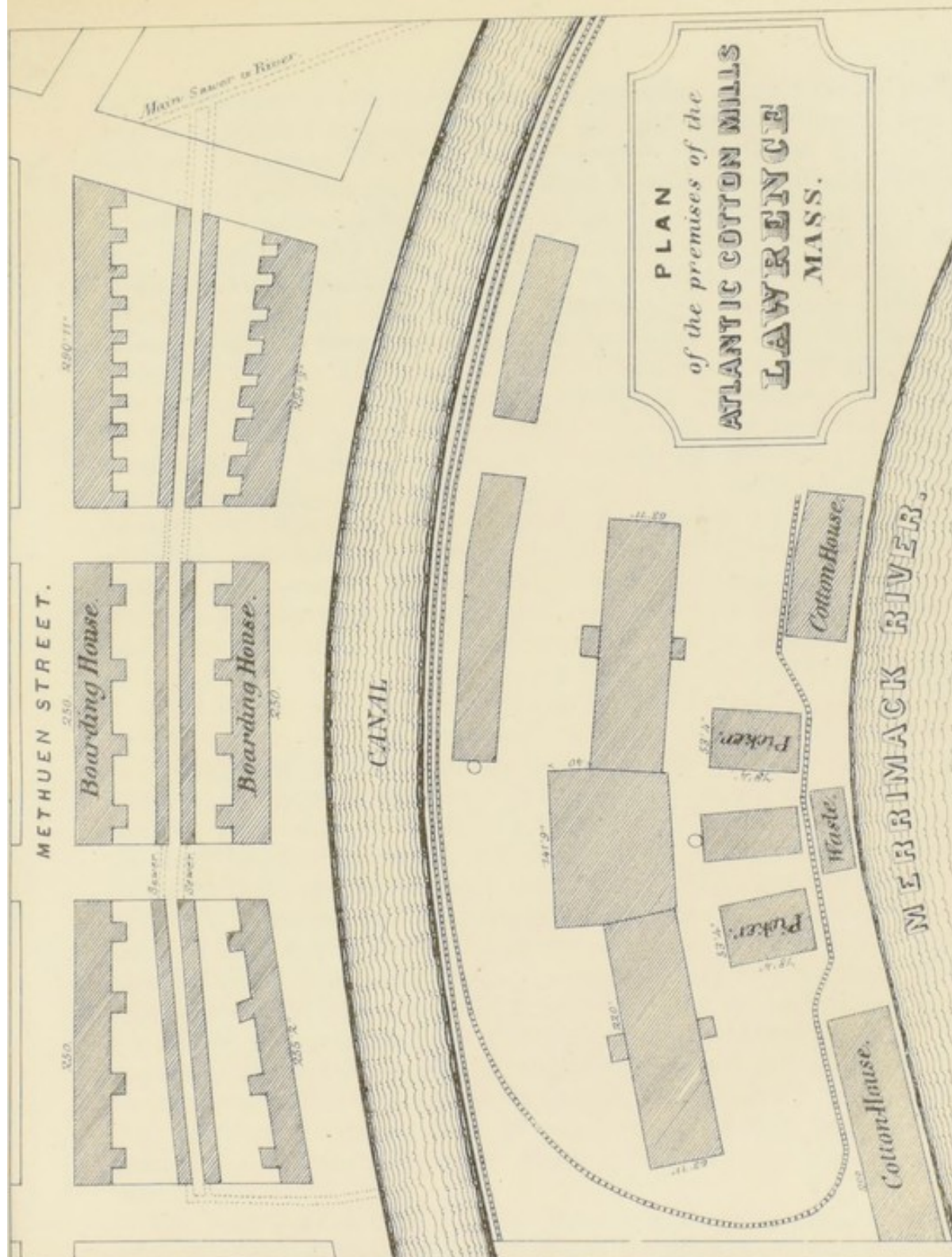
PLAN
of the
ESSEX COMPANY'S
MACHINE SHOP and FOUNDRY
LAWRENCE,
MASS.

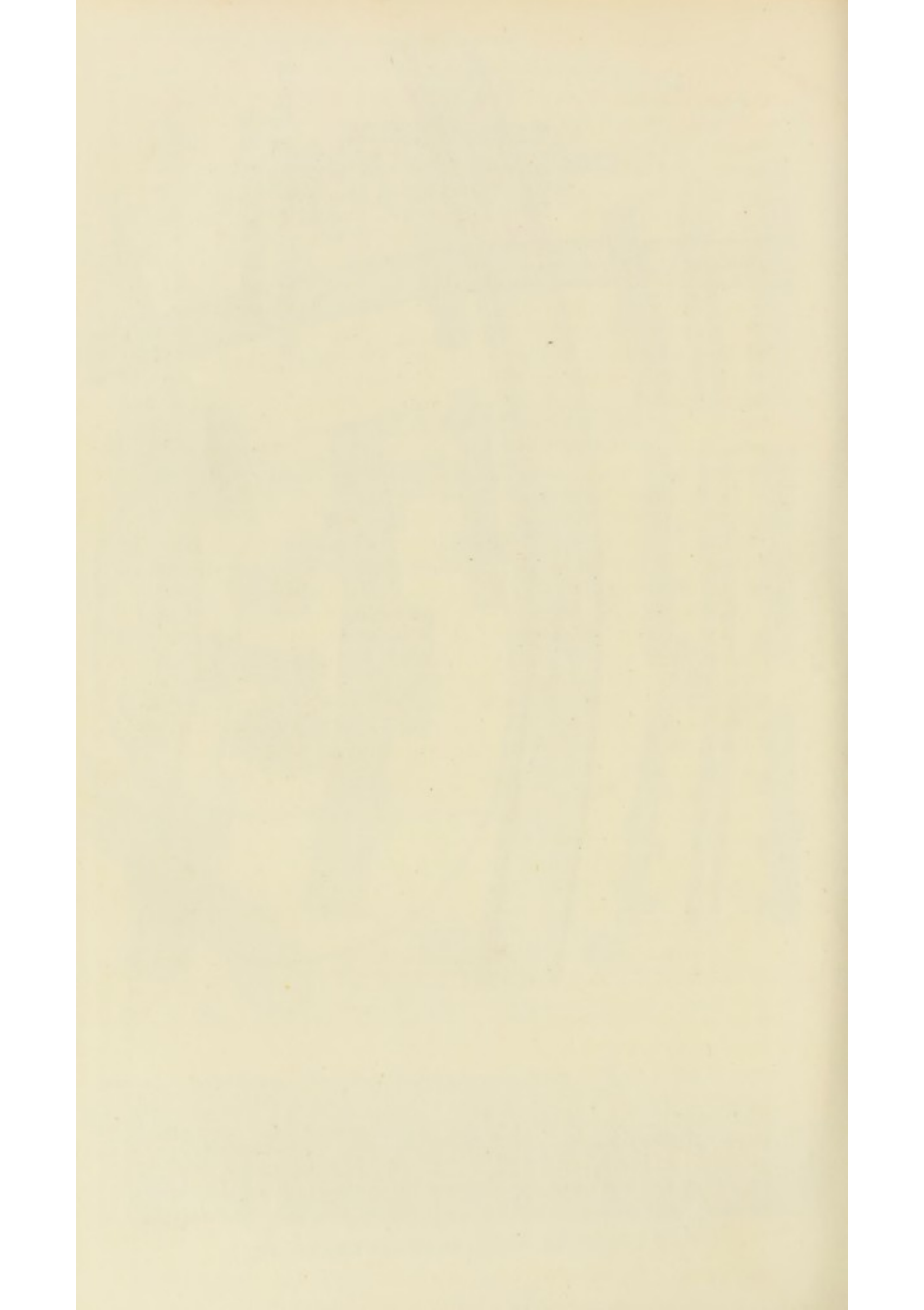


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FRONT ELEVATION OF MACHINE SHOP.



FRONT ELEVATION OF ATLANTIC COTTON MILLS.





the manufacture of cassimeres, shawls, and other fancy woollen goods ; and was planned and erected under the general superintendence of Samuel Lawrence, Esq. It is the largest mill of the kind in the world ; and will consume, when in full operation, more than 2,000,000 pounds of wool annually. The mills occupy a parallelogram of 1,000 feet in length by 400 feet in breadth, between the canal and the Merimack River. Buildings are erected on the outer borders of this site, affording a spacious central area. That on the river side is 1,000 feet in length and 40 feet in breadth, with two wings, at right angles, at the ends, 240 feet by 40 feet, and outer porches for ingress and egress. The whole is three stories in height, excepting the centre,—52 feet by 42 feet,—which is five stories high. On the side next the canal is another line of buildings, 800 feet in length, 38 feet in width, and 2 stories in height, designed for counting-rooms, store-houses, watch-houses, and other purposes. Within the interior the three principal mills are erected, each 200 feet by 48 feet 8 inches, containing, including the basement and the attic, 9 working floors. All these mills are substantially built of brick and covered with slate. The rooms are 11 to 13 feet in height ; and are warmed by steam and lighted with gas. The apparatus for warming consists of wrought iron pipes, 1 or 3-4 inches in diameter, placed in three, four or five parallel lines around the interior of the building, immediately under the windows in each story, maintaining in all the rooms, at all times, a uniform temperature of about 68 degrees. A structure to supply the steam is situated in each wing of the river building, and has twelve boilers and a chimney 135 feet in height. All the rooms are provided with hydrants, to which force pumps and hose are attached, that may be used in case of fire, for washing, and other purposes. A person is employed in each room to keep every part of it and the stairways clean. Each mill is also provided with extra porches,—one in front and the other in the rear,—and with four iron ladders reaching from the bottom to the top, for ascent or descent in case of fire, or for any other purpose. The motive power for these mills is obtained from seven breast-wheels of the first class, 23 feet 4 inches in length, 26 feet in diameter, and of 125 horse-power each ; two of which are placed in each principal mill, and one in the river mill. Eight mill-powers were purchased by this company.

The boarding-houses are on the opposite side of the canal, and consist of four blocks, substantially built of brick and covered with slate, each 250 feet in length, 36 feet in breadth, 3 stories high, of 10, 9 and 8 feet respectively ; with 4 L's in the rear, 1 story high, to each block. Each block contains 8 tenements ; and each tenement, except the end one, is 33 1-3 feet in width and 36 in depth exclusive of the L, and contains 20 rooms, including the attic ; and is designed to accommodate 36 boarders. The location and the size of the rooms will appear from the accompanying plan and illustration. The end houses are 25 feet in width, a little smaller than the others. The houses in each block, excepting the end ones, are like that on the right of the plan here presented. As you enter this tenement on the left, there is a small room appropriated exclusively to the mistress of the house. At the right are two dining-rooms, connected by folding doors, each forming pleasant sitting-rooms at other than meal times. Passing through the entry

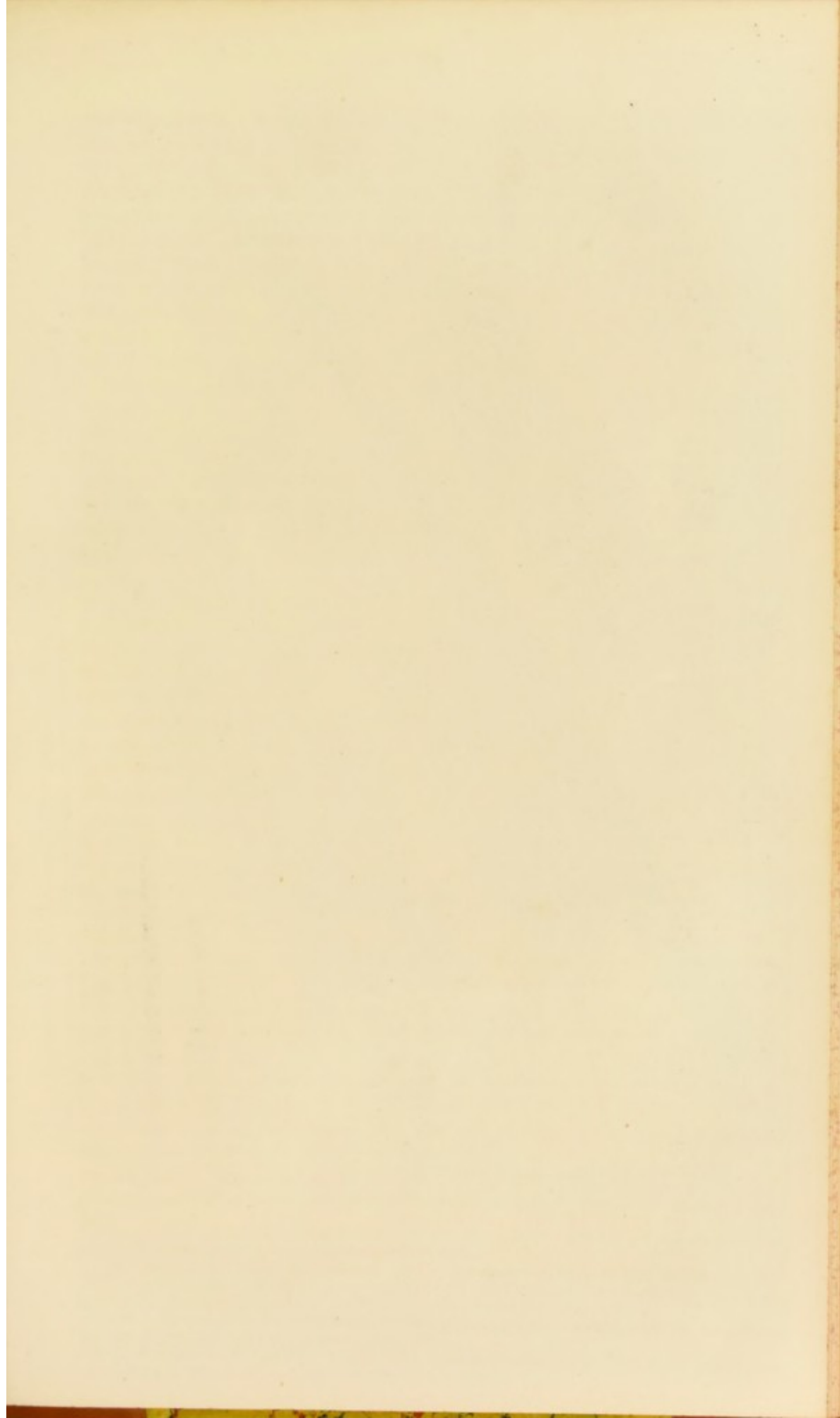
you enter the kitchen, which is furnished with all necessary conveniences. Beyond this is the back kitchen, containing a large boiler and conveniences for various other household purposes. In the rear of this is the wash-room, from which you pass into a large yard, enclosed by a high tight fence, having at the end the wood-shed, 14 feet wide, and the privies; the whole bordering on a common passage way, 14 feet wide. Under each alternate fence is a double cess-pool, serving for two houses, and having an underground passage leading to the common sewer under the sheds. A well of pure water is connected with every four tenements, and all are supplied with soft water, for washing and other purposes, by cast iron pipes, leading from cisterns in the mills to the sinks in the several houses. On the second floor is the parlor, and also a sick room,—a small chamber with a fire-place, designed for an invalid who may need seclusion and extra warmth. Besides these are sleeping apartments for the boarders in the second and third stories, and in the attic, designed to accommodate 2, 4 or 6 persons each, according to the size of the room. Each tenement cost about \$4,000 exclusive of the land; and will compare to advantage with respectable dwelling-houses in Boston, and are much better than the average in country villages.

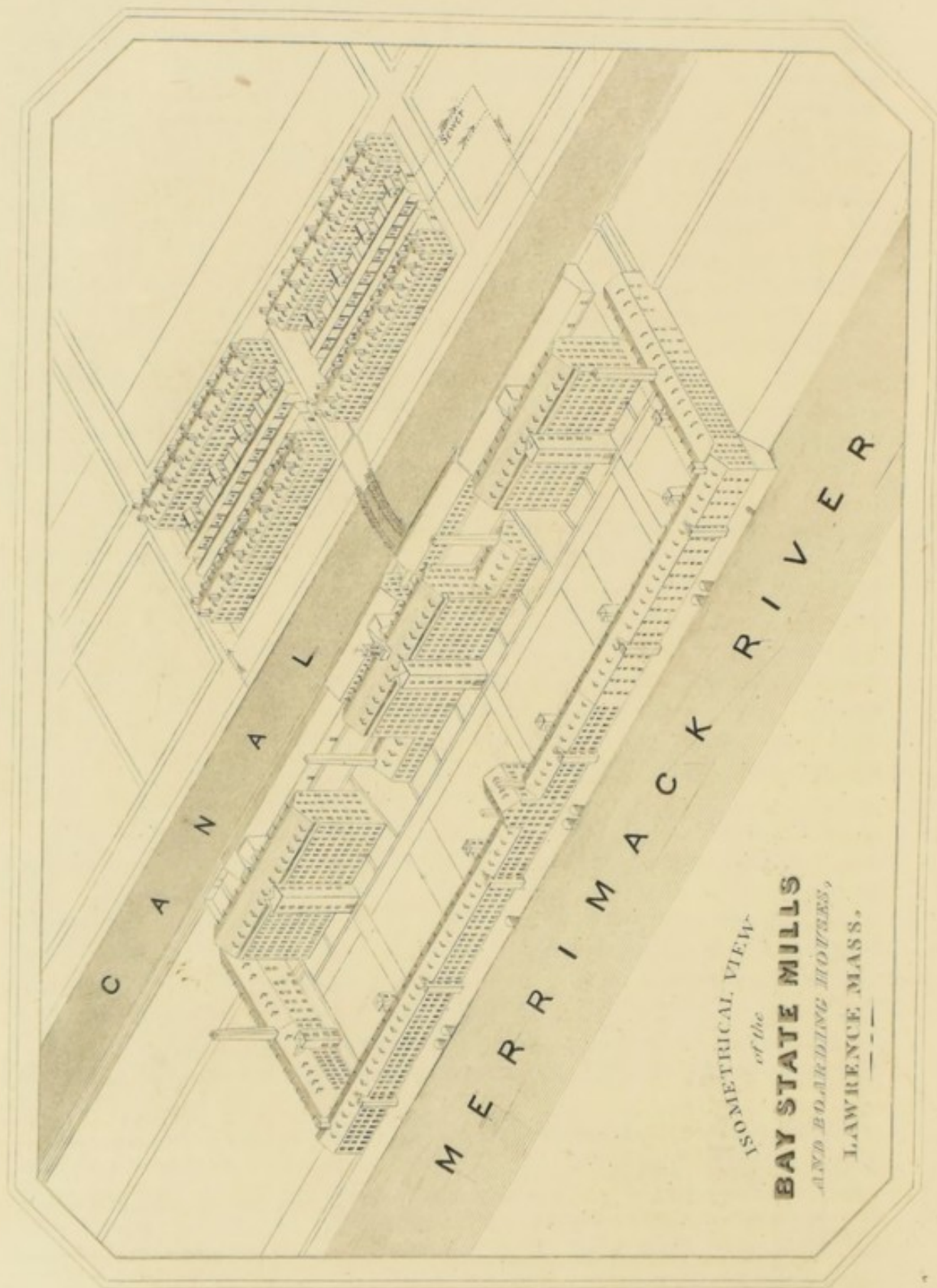
To protect the health of the inmates, underground sewers are constructed, under the sheds, in the rear of each block, through which a current of water, supplied by iron pipes connected with the canal on the left, or above the block, is constantly running, carrying off all the contents of the privies, cess-pools, and other filth; and passing at right angles under the canal, discharging them into the river, preserving the houses perfectly free from offensive smells. A plan of these sewers may be seen in the accompanying illustration. *Thirty thousand dollars* was expended by this company in their construction alone, for the benefit of the health of the operatives!

Labor begins, or the gate closes, at 5 o'clock, A. M., from May 1 to September 1; and at ten minutes before sunrise, the remainder of the year. A first bell is rung about 40 minutes before, to allow time to prepare for work. *Labor ends* at 7½ P. M., from September 20 to March 20; at 7, from May 1 to September 1; and at 15 minutes after sunset, for the remainder of the year. It is intended to secure, on the average, 12 working hours, each day. *Breakfast* is served at 7 A. M., from April 1 to September 20; and at 7½ for the remainder of the year. *Dinner* during the whole year at 12½ M. 45 minutes are allowed for each meal.

The number of operatives at present employed in these mills is 1,867, of whom 956 are males and 911 are females. When entirely completed and in full operation, they will employ about 2,500, and require a town population of 7,500. The principal part of the operatives work by the job; the males earning on the average about \$5 80 per week, and the females about \$2 75 per week, besides board, which is \$1 50 to \$2 00 per week for males, and \$1 25 for females. The females are principally inmates of the boarding-houses. Most of the males, however, at present have houses of their own, or board elsewhere.

The boarding-houses for the accommodation of the operatives in these mills, as in other manufacturing establishments, are owned by





ISOMETRICAL VIEW
of the
BAY STATE MILLS
AND BOARDING HOUSES,
LAWRENCE MASS.

the corporation. They have been erected, not for an investment of capital on which a profitable income is to be anticipated, but as a means of preserving a proper supervision over the operatives employed, and for their benefit. Boarding-houses of this kind generally afford less than 4 per cent. interest on the capital invested. Some afford no income at all, and even become an annual expense to the owners. They are kept in repair and rented to the tenants, subject to such regulations and restrictions as the company see fit to establish. The rent and the price of board are fixed by the company; but both are subject to such alteration as the circumstances of the times, and of all the parties interested, shall render just and proper.

The tenants of the Bay State boarding-houses now pay \$150 each, annually, as rent, which is about *three per cent.* on the cost. The furniture of the houses is obtained and owned by the tenants themselves; and they furnish provisions and other articles of consumption for the inmates. They now receive \$1 25 per week for the board of females, and \$1 75 to \$2 00 for males. The fare provided is of a plain, substantial and wholesome kind, well prepared, neatly served, and in sufficient quantities. Operatives are under no compulsion to board in one tenement rather than in another; it is for the interest of the boarding-house keepers, therefore, that the bill of fare should be attractive and satisfactory. The keepers are sometimes men with wives and families; but they are generally widows, or females who have been accustomed to perform the principal part of the business of providing for their families, and who desire a remunerating means of subsistence. Applications for these situations are generally numerous, but they can be obtained by none but persons of known capacity and respectability. And whenever indications of a different character are manifested, the obnoxious keeper is immediately ejected. Males and females are not allowed to occupy the same house, not even a man with his wife, as boarders.

Several classes of regulations to be observed by the inmates of these houses, are printed and placed conspicuously in each house. One code is as follows:—

I. The tenants must not underlet any part of their tenements, nor board any persons not employed by the company, unless by special permission; and, in no case, are males and females to board in the same house.

II. The tenants must, when required by the agent, give a correct account, in writing, of the number, names, character, habits and employment of their boarders; and whether they are habitual attendants on public worship. They must, also, on the first Monday of every month, send to the counting-room, a list of all the boarders they have taken, and of all who have left their houses, during the preceding month. They must, also, at the same time, render a list of the names of all such boarders as have required the services of a physician, on account of sickness, during the same period.

III. The doors must be closed at 10 o'clock in the evening, and no one admitted after that time, unless some reasonable excuse can be given.

IV. The boarders must not be permitted to have company at unseasonable hours.

V. All improper conduct among the boarders, and all rude and disorderly deportment, must be prevented by the tenants, if possible, and if persisted in, must be reported to the agent.

VI. It is confidently expected, that all children over twelve, and under fourteen years of age, living in the houses, be kept constantly at school.

VII. It is indispensable, that all who live in the houses should be vaccinated, and this will be done, at the expense of the company, by a physician, at the counting-room, for all those employed by the company, and for the families of the tenants.

VIII. The health of the inhabitants requires that particular attention should be paid to the cleanliness and daily ventilation of the rooms.

IX. Neither water, nor filth of any kind, must be thrown out in front of the houses, nor be allowed to remain in the cellars, back-yards or sheds.

X. Ashes must not be kept in wooden vessels, nor will any carelessness be allowed in the use of fire or lights. Neither camphene, nor any other explosive compound used for lights, will be allowed on the premises.

XI. The rooms must not be mutilated, nor defaced; and, in all cases, where the plastering of the walls is broken, either by driving in nails, screws, or pins, or by rubbing with furniture, or by any carelessness, or by any other means beyond ordinary use and wear, the injury will be repaired, and the cost thereof charged to the person leasing the house.


XII. A suitable chamber for the sick, must be reserved in each house, so that they may not be annoyed by others occupying the same room.

XIII. Window glass must not be allowed to remain broken, longer than one day.

XIV. Wood and coal will not be permitted to be taken into the cellars, nor from them, through the front windows.

XV. The closest supervision will be exercised to enforce these rules, and the tenants themselves are particularly required to pay close attention to them, and to insist upon their observance on the part of their boarders.

XVI. No tenement will be leased to persons of immoral or intemperate habits, and any tenant, who, after occupancy, shall be found to be of such habits, or to receive boarders of such habits, will be notified to vacate the premises.

 *The tenants are particularly desired to lend their aid in the preservation of the trees in front of the houses, and to give immediate information to the agent, if any injury be done them.*

Similar regulations are issued by the Atlantic Cotton Mills, besides an additional code, one section of which is the following:—

A proper observance of the Sabbath being necessary for the maintenance of good order, all persons in the employ of this company *are expected to be constant in attendance at public worship*, and those who habitually neglect this regulation, or whose habits shall be found to be intemperate, or otherwise irregular or incorrect, or who are known to attend improper places of amusement, will be discharged.

The execution of these and other police regulations of the whole establishment, is entrusted to the general agent and a sufficient number of subordinate overseers, who are daily present at the mills. The agent is required to be a man who, by his known capacity, his experience, and his character, is fitted for the station. Under his wise and systematic supervision, the boarding-houses, and all the departments of these extensive mills, are managed with the same care as a small, well-regulated family.

The influence of the system by which the boarding-houses are regulated, is immensely beneficial, whether we consider it in a social, moral, or sanitary point of view. It is an influence which is felt by all the operatives, at all times, while they are out of the mills as well as in them. In the boarding-houses too, a care, attention and oversight, is frequently exerted by the landlady over her boarders, which is nearly allied to that which a kind parent exerts over her children, and which produces almost as strong a mutual attachment in the one case as in the other.

The Lawrence Gas Company commenced operations January 1st, 1849. The mills, streets and public buildings are now lighted with gas, and it is to be extended as needed. The gas establishment is on the banks of the Merrimack, below the populous part of the town and the entrance of the Spicket, that no inconvenience may be experienced from its drainage or otherwise. Besides the establishments already noticed, there are several others of minor importance,—among which may be mentioned, a card clothing manufactory, a large piano manufactory in the northwest part of the town, and works for the manufacture of paper hangings. No slaughter-house, nor any manufactory unfavorable to the health of the inhabitants, is permitted near the centre of the town.

The return of the assessors, for the State Valuation in 1850, di-

vides the lands of the town into 60 acres of tillage land; 214 of English and upland mowing; 33 of fresh meadow; 202 of pasturage; 408 of woodland; 2,702 of unimproved land; 62 of unimprovable; 300 used for roads; and 374 covered with water. This gives a total of 4,355 acres, or 19 less than the survey as stated, page 437.

The annual agricultural produce of these lands is stated at 20 bushels of wheat; 32 of rye; 350 of oats; 350 of Indian corn; 159 tons of English hay, and 17 tons of meadow hay; and there were in the town 185 horses, 37 oxen, 107 cows, and 58 swine.

3. *Number and Condition of the Inhabitants.*

At the first enumeration of the inhabitants, made February, 1847, Lawrence contained 3,577; of whom 2,289 were males, and 1,118 females; 1,271 lived in Irish dwellings. At the second enumeration, made January, 1848, it contained 5,949, of whom 3,750 were Americans, 2,130 Irish, 28 English, 16 other foreigners, and 16 colored persons. At the third enumeration, September, 1849, it contained 7,225. The State Census, May, 1850, gave 8,358, living in 1,416 families, or an average of 6 to a family; of whom 7,620 were on the north and 738 on the southern side of the Merrimack. Legal voters, March, 1850,—south side of the river, 84, north side, 993, total, 1,077. Militia enrolled, 1,031. An abstract of the United States Census, just completed, gives 8,500 inhabitants, living in 1,415 families, and 1,061 tenements; averaging 6 to a family and 8 to a tenement. The following is an abstract of this census, furnished us by the assistant marshal:—

Ages.	Males.	Females.	Both.	Place of Birth.	Number.
Under 5,	467	437	904	Massachusetts, . . .	2,266
5 to 10,	346	345	691	Maine,	919
10 to 15,	278	339	617	New Hampshire, . . .	1,486
15 to 20,	378	609	987	Vermont,	350
20 to 30,	1,007	1,487	2,494	Rhode Island,	18
30 to 40,	595	572	1,167	Connecticut,	37
40 to 50,	298	272	570	New York,	75
50 to 60,	122	109	231	New Jersey,	4
60 to 70,	41	44	85	Pennsylvania,	12
70 to 80,	14	16	30	Other States,	18
80 to 90,	3	0	3	Foreigners,	2,554
				Unknown,	761
Total,	3,549	4,230	7,779		
				Total,	8,500
Under 15,	1,091	1,121	2,212		
15 to 60,	2,400	3,049	5,449	Colored persons, . . .	14
Over 60,	58	60	118	Insane,	3
				Deaf and dumb, . . .	5
Total,	3,549	4,230	7,779	Number between 5 and	
Persons whose ages are } not specified, . . . }			721	15, is here stated at	
Total population, . . .			8,500	1,308; number return-	
				ed by school commit-	
				tee, in May,	1,180

The whole population in the manufacturing towns, averages about three times the number of the operatives employed. According to this

rule, when the mills now existing or are in the process of erection are in full operation, Lawrence will require about 5,000 operatives, and a town population of 15,000; and those that are projected, but not yet commenced, will require about as many more.

The names, dates of commencing business in the place, and other interesting particulars concerning professional and other occupations, are presented in "The Lawrence Courier," the oldest weekly newspaper of the town, for February, 1847, January 8, 1848, and April 4, 1849. It appears that the first mechanic came into town, May 15, 1845; the frame of the first dwelling-house was raised September 12, 1845; the first attorney came March 10, 1846; the first physician, October, 1845; the first apothecary, June 24, 1846; the first printing was done September 26, 1846; and the first newspaper was issued October 9, 1846. The "Essex County Sentinel" was first issued September 2, 1848. The Post Office was established August, 1846.

The first public tax in Lawrence was assessed in 1847. The aggregate valuation of the real and personal property, estimated at its market cash value; the number of ratable polls; the amount of the taxes assessed; the rate per cent., or the number of cents on \$100 of the valuation; and the average amount on each poll, and on each inhabitant, in different years, have since been as follows:—

Year.	Aggregate Valuation of the Property.			Number of Ratable Polls.	Amount of Taxes assessed	Proportion on each.		
	Real.	Personal.	Total.			\$100	Poll	Inhabitant.
1847	\$1,563,045	\$156,159	\$1,719,204	1,679	\$7,871 75	\$0.39	\$4 62	\$2 20
1848	3,466,586	347,840	3,814,426	1,730	18,610 39	0.42	10 75	3 12
1849	4,781,950	948,760	5,730,710	2,262	25,790 94	0.39	11 40	3 17
1850	4,890,264	1,012,477	5,902,741	2,249	32,243 41	0.49	14 31	3 85

It appears from this statement, that each \$100 value of the property paid 39 cents, in 1847, and 49, in 1850; that for each ratable poll was paid on the average \$4.62, in 1847, and \$14.31, in 1850; and that for each inhabitant of the whole town was paid, on the average, \$2.20, in 1847, and \$3.85, in 1850. The greatest proportion of the taxes is paid by the manufacturing property.

The taxes paid by the incorporated companies within the town, for the last three years, are as follows:—

Companies.	In 1848.	In 1849.	In 1850.
Essex Company, . . .	\$4,950 96	\$7,400 25	\$8,590 85
Bay State Mills, . . .	3,028 20	3,637 34	6,614 99
Atlantic Cotton Mills, . .	2,100 00	4,291 17	5,031 56
Bay State Bank, . . .	54 60	50 70	78 40
Boston and Maine Railroad, .	21 00	276 90	296 74
Essex Railroad, . . .	.	35 10	24 50
Gas Company, . . .	.	.	245 00
	<hr/>	<hr/>	<hr/>
	\$10,154 76	\$15,691 46	\$20,882 04
Proportion per cent. of } whole tax, . . . }	54.56	60.84	64.76

If any argument were necessary, at this day, to show that corporations are in many respects beneficial to the people, these facts furnish a conclusive one. Here is an instance where more than one half, (and for this year, \$20,882 04 of the \$32,243 41, or 64.76 per cent.—nearly *two-thirds*,)—of all the public taxes raised by the town, for the social, pecuniary, educational, moral, and sanitary welfare of the whole people, is paid by the corporations established within it. These corporations give employment and means of subsistence to a large portion of the population of the town, and create a market for the agricultural products of the neighborhood, and thus diffuse their beneficial influence among all classes. This is a direct, positive good, obvious to every one. They also deposit in the town foreign capital, or capital not previously existing there, to be publicly taxed for the general good. This, though a less obvious, is none the less a great public blessing; and contributes to the general welfare and sanitary improvement of the people.

The following statement exhibits an abstract of the income and expenditures of the town, for the last two years, ending the first of March; and specifies the sources from which the income was derived, and the purposes for which the expenditures were made:—

INCOME.

	March 1, 1849.	March 1, 1850.
From Taxes,	\$18,011 89	\$24,329 97
Rents, . . . . .	.	472 64
Fees and licenses,	79 00	12 00
State School Fund,	99 82	174 24
State paupers,	516 82	2,833 88
Loans,	24,892 55	35,662 60
Balance of last account, . . . . .	.	81 45
	<hr/>	<hr/>
	\$43,600 08	\$63,566 68
	<hr/>	<hr/>

EXPENDITURES.

For Public buildings,	\$8,000 00	\$27,174 09
Schoolhouses,	13,370 16	10,129 24
Schools,	4,061 81	5,895 79
Roads and bridges,	2,711 03	3,552 98
Health,	553 31	335 75
Fire department,	3,480 84	4,852 19
Pauperism,	3,522 16	3,622 14
Police,	631 24	437 55
Militia, . . . . .	.	723 00
County tax,	614 90	614 90
Interest,	975 01	2,597 56
Contingent,	5,598 17	2,504 07
Balance on hand,	81 45	1,127 42
	<hr/>	<hr/>
	\$43,600 08	\$63,566 68
	<hr/>	<hr/>

This statement shows that appropriations and expenditures have been made in this town, for various public purposes, with great liber-

ality. It has been considered wise policy and good economy, in making these expenditures, even at the risk of creating a public debt, to keep in view, not merely the wants of the present inhabitants, but of those who may, according to reasonable anticipations, hereafter, within a few years, become inhabitants. In establishing a new town like this, accommodations must be provided for transacting the public business, for public schools, and for various other purposes. Such buildings have now been constructed; and no considerable expenditure will be needed on that account for years to come. It is intended that all current expenses shall hereafter be paid by current income; and that the town debt shall be cancelled by annual instalments and by a sinking fund.

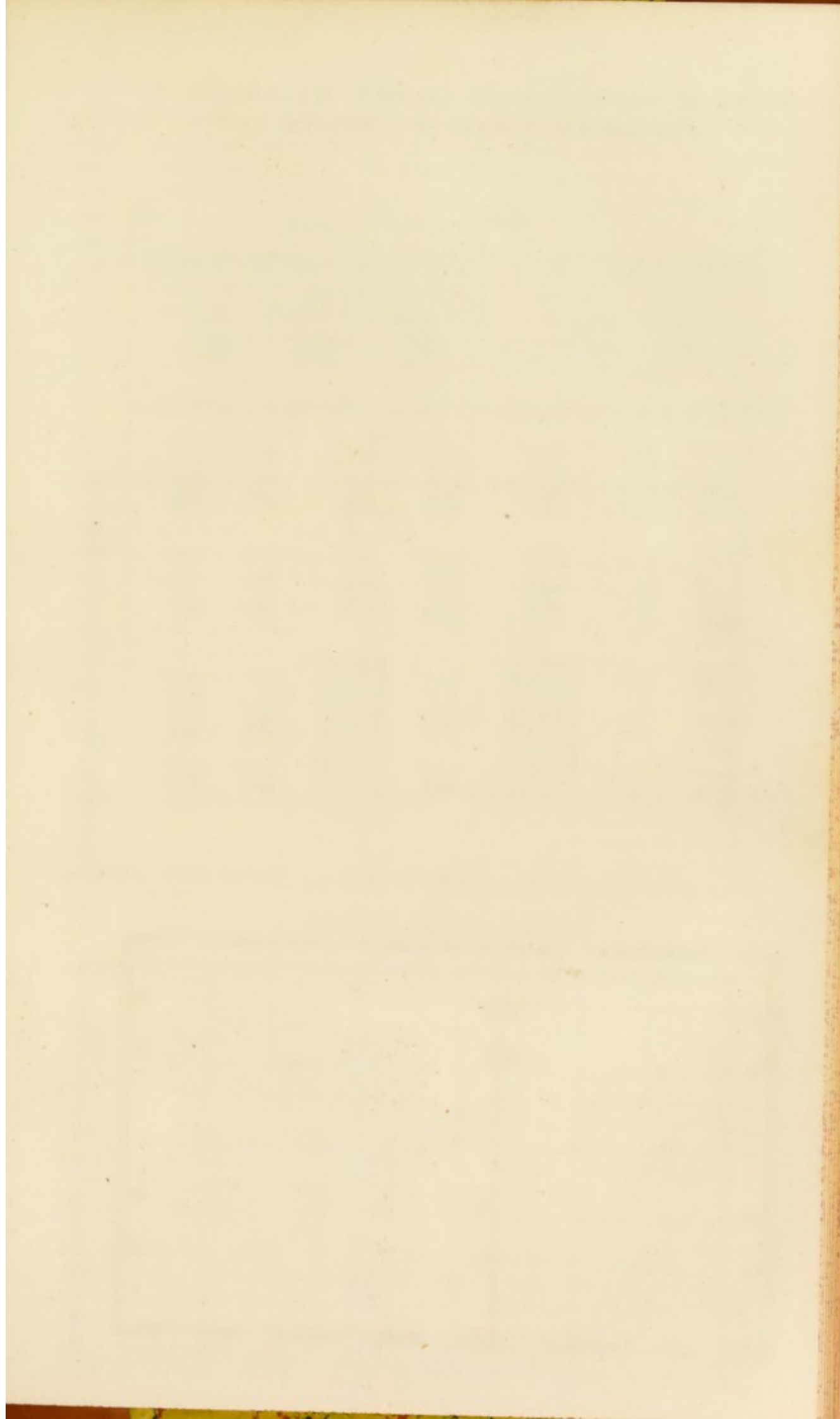
The Public Schools of Lawrence are—1. Primary Schools, for the education of children under 7 years of age; 2. Middle Schools, for those between 7 and 10; 3. Grammar Schools, for those between 10 and 12; and, 4. a High School, for those over 12. The classification of the scholars depends, however, upon their qualifications to be transferred from a lower to a higher grade of schools. Where it is impracticable, on account of locality or other causes, to divide the children under 10, into middle and primary schools, they are associated in what are termed mixed schools. We gather the following facts regarding the schools, from the returns of the school committee to the Board of Education, on the first of May, in each year specified:—

	In 1848.	In 1849.	In 1850.
Children in town, between the ages of 5 and 15,	620	1,089	1,180
Number of public schools,	8	11	15
Number of scholars at the schools,	825	1,050	1,006
Average attendance,	615	651	939
Number of teachers,	7	13	16
Money raised for the support of schools,	\$2,000	\$3,750	\$6,602
Average for each child between 5 and 15,	\$3 23	\$3 44.4	\$5 59.5
School rank of the town in the county,	4th.	4th.	1st.
School rank of the town in the State,	55th.	55th.	19th.

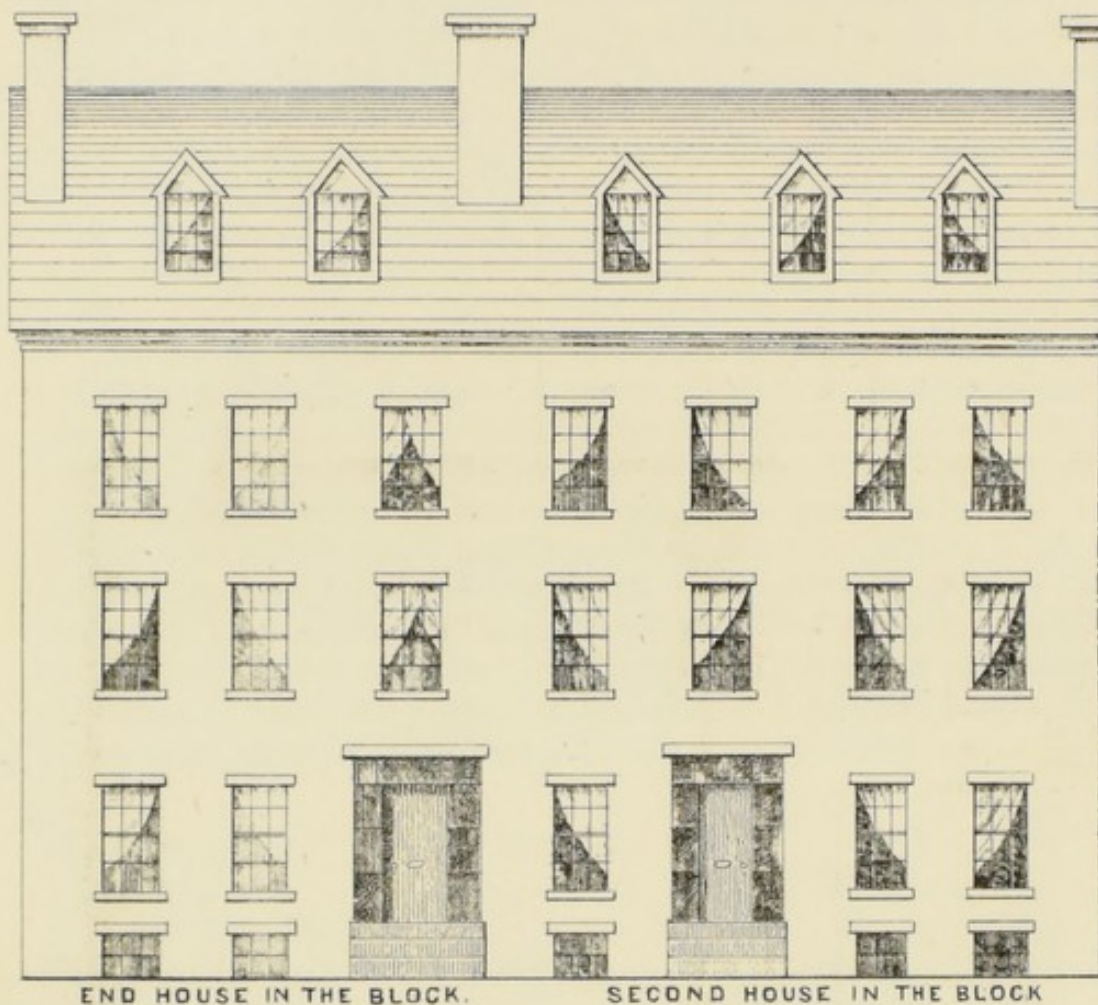
The following statement, furnished us by the secretary of the school committee, shows the state of the schools October 1, 1850:—

Number of Schools.	Male Teachers.	Female Teachers.	Scholars.	Annual Expense.	For each Scholar.
7 Primary schools,	0	9	599	\$2,375	\$3 96
2 Mixed schools,	0	2	95	570	6 00
5 Middle schools,	0	5	250	710	2 84
2 Grammar schools,	2	5	330	3,075	9 31
1 High school,	1	1	53	1,300	24 52
Total and average,	3	22	1,327	\$8,030	\$6 05

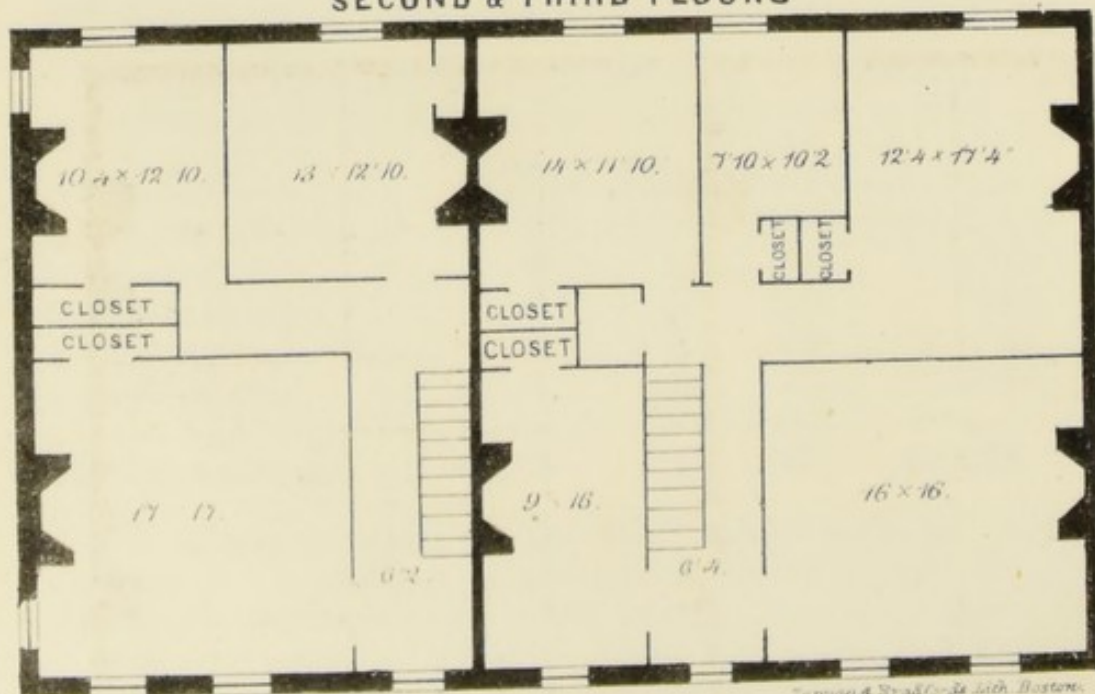
The female teachers receive \$225 salary each, per annum; the teachers of the grammar schools, \$700, and of the high school, \$800. All the schools are kept the whole year, except two weeks of vacation in winter, and four in summer. It appears by this statement, that the annual expense of educating each scholar, on the average for all the schools, is about \$6; in the primary schools, \$3.96; and in the high

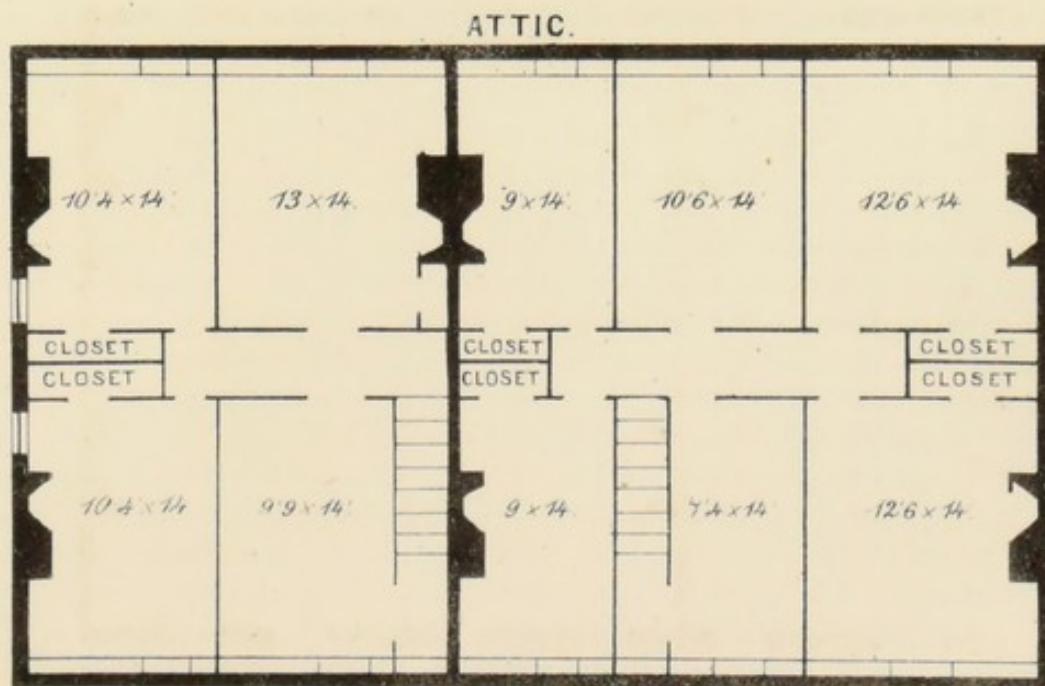
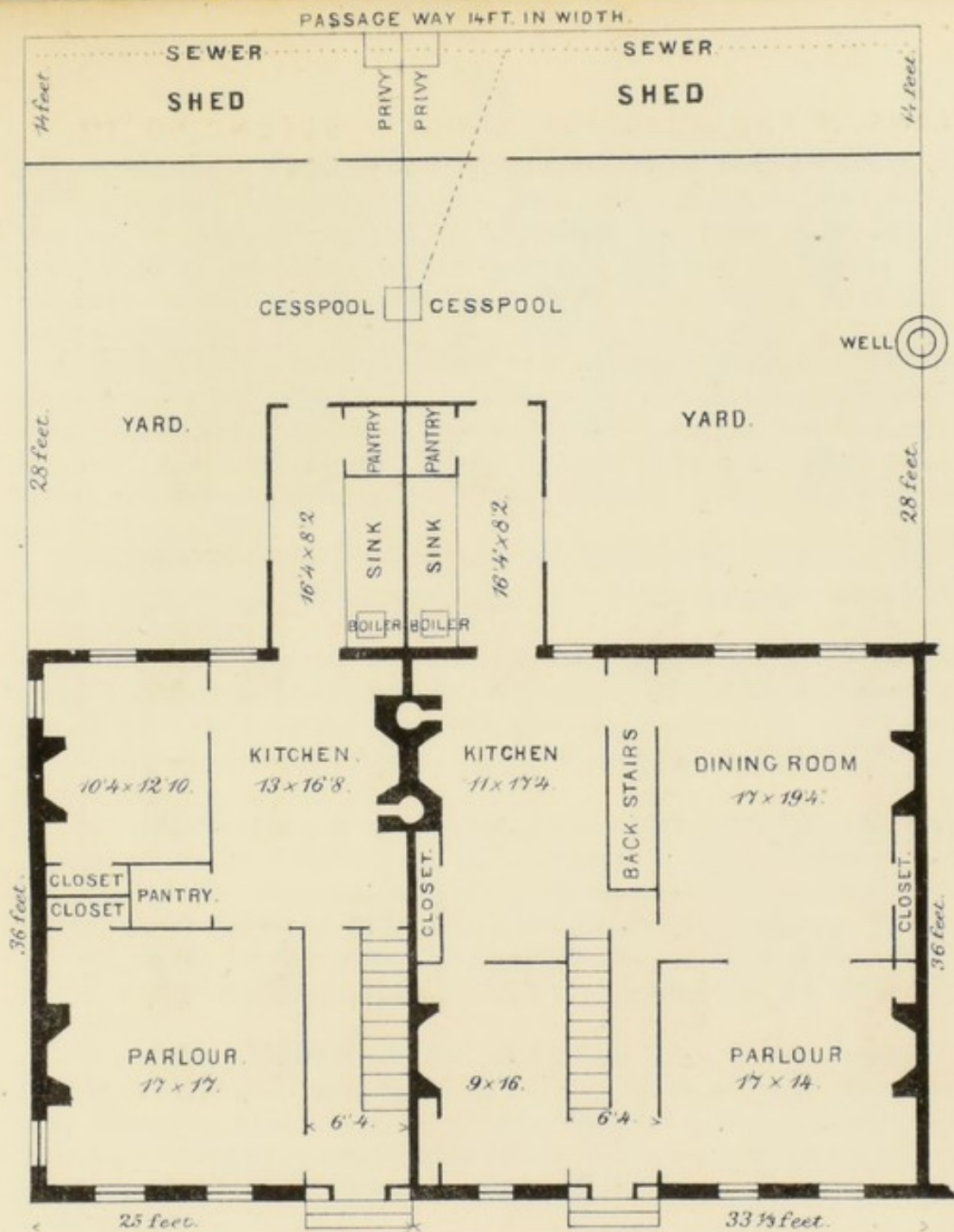


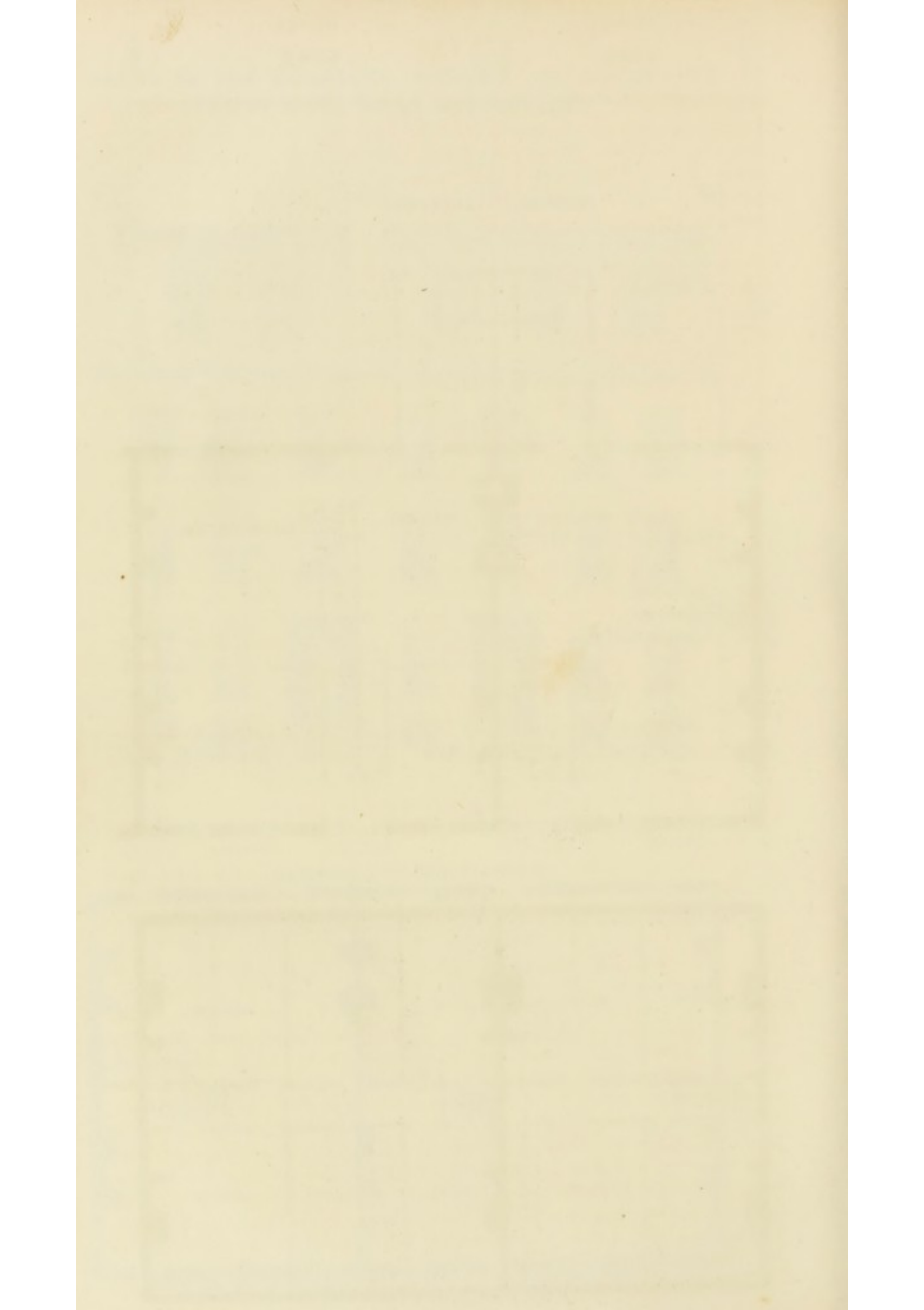
PLANS OF THE BOARDING HOUSES BELONGING TO THE BAY STATE MILLS IN LAWRENCE.



SECOND & THIRD FLOORS







school, \$24.52. This town was fourth in rank in the county, in 1849,—Salem, Newburyport, and Essex, only, being higher; and it was *first* in 1850, having paid for education, at the rate of \$5.59½ for every child in the town, between the ages of 5 and 15 years. The admirable school system and the schools of Lawrence, have been justly commended for their elevated character and rank.

A bank, with a capital of \$300,000; a savings bank, in which the deposits are rapidly increasing; and a mutual fire insurance company, exist in this town. Railroads intersect at this place, which form a direct connection with Boston, Salem, Lowell, and various other places in this and the neighboring states, and afford all needful means of intercommunication.

Two military companies, the Lawrence Light Infantry and the Lawrence Mechanic Rifle Company, have been organized, each containing about 50 members.

The Franklin Library received from Hon. Abbott Lawrence \$1,000, which has been increased by other donations. It has already a collection of valuable scientific and miscellaneous works. An able course of scientific and literary lectures is given annually, before the lyceum of the town.

The inhabitants enjoy comfortable means of subsistence, and their general character is industrious and temperate. The greatest proportion of the intemperance, pauperism, crime, and disease, which has existed in the town, has been among the transient population. There are six public houses, either hotels or taverns, at all of which intoxicating liquors *may* be obtained. No licenses, however, for their sale, are granted.

The average compensation for mechanical labor is, for carpenters, \$1.37½ per day; for masons, \$1.75 per day, without board. For common American laborers, \$1.00; Irish, 70 to 80 cents. Building materials are abundant, at reasonable prices. The prices of provisions are about the same as in Boston. Coal is \$7.00 per ton—firewood \$3½ to \$6 per cord.

In the year ending March 1, 1849, the overseers of the poor paid for the partial or entire support of 243 persons, expending \$3,771 56. This is nearly 1 pauper to 27 inhabitants; and 50 cents for each inhabitant. The number returned to the State, November 1, 1849, was 455. For the year ending March 1, 1850, the town paid for 3,792 days of pauper support, which is equal to the support of a little more than 10 persons during the whole year. The number actually in the poor-house, July, 1850, was 14; of whom 8 were foreigners—3 adults and 5 children; and 6 were Americans—3 adults, and 3 children.

For the year ending October, 1850, the number of persons convicted before the police court of Lawrence, was 270; of this number, 127 were convicted for drunkenness, 43 for assault and battery, 21 for simple larceny, 19 for disturbing the peace, 18 for selling spirituous liquors, 9 for violating the Sabbath, 7 for assaults on officers, 7 for assaults on females, 5 for obtaining goods on false pretences, 2 for lewd and lascivious behavior, 2 for wilful trespass, 2 for larcenies in dwelling-houses, and 1 each for receiving stolen goods, for store-breaking, for arson, for rape, for bigamy, for adultery, and for conspiracy.

A very large proportion of these criminals were transient persons,

who had arrived but a short time before their arrest. All but 12 of those convicted for drunkenness and for disturbing the peace, were of this character. A marked improvement is said to have taken place among the Irish population, during the past year; and very few of this class have been arrested for crime.

The following statement will exhibit the religious opinions and institutions of the people of Lawrence :—

Denominations.	When Organized.	Cost of Churches.	Sittings.	Annual Exp. of Pub. Wor.
First Orthodox Congregational,	Aug. 8, 1846,	\$12,000	1,200	\$1,200
Second " "	Dec. 19, 1849,		Worship in Hall,	1,450
Episcopalian,	April 29, 1847,		Worship in Vestry,	1,000
Unitarian,	Aug. 30, 1847,	\$3,000	900	1,500
Baptist,	Aug. 17, 1847,	9,000	800	1,000
Methodist,	June 1846,	6,000	800	800
Universalist,	Nov. 15, 1847,		Worship in Hall,	600
Freewill Baptist,	April 1846,	\$3,000	500	600
First Roman Catholic,	April 1846,	1,500	200	600
Second " "	Dec. 1848,	4,000	1,200	1,000

It appears by this statement, that about \$10,000 is annually contributed by voluntary donation for religious instruction. Flourishing Sabbath schools exist in all the churches. The Roman Catholics are building a stone church to cost over \$30,000.

4. *Municipal Regulations and Sanitary Police.*

The municipal government of the town consists of 3 selectmen, a town clerk, a treasurer, 3 assessors, 5 school committee-men, and several other subordinate officers, all chosen in March, annually. The selectmen act as a board of health, and as overseers of the poor. The police is composed of 1 deputy sheriff, 5 constables, 1 coroner, and 24 night and day watch and police. The watchmen are paid 20 cents per hour, while on duty. A special act establishing a police court was passed May 5, 1848. A fire department was also incorporated May 10, 1848, the members of which receive 25 cents per hour, while on duty. The selectmen, as a board of health, have issued the following code of rules and regulations :—

In accordance with the 21st chapter of the Revised Statutes of the Commonwealth of Massachusetts, the following regulations were established at a meeting of the board, for the health and safety of the inhabitants of Lawrence :—

ART. I. Every tenement in the town, used as a dwelling-house, shall be furnished with a suitable receptacle under ground to carry off the waste water—and also with a privy, the vault of which shall be under ground—to be built in the manner prescribed in the fourth article of this chapter, and of sufficient capacity in proportion to the number of inhabitants of such tenement.

ART. II. When the board of health shall be satisfied that any tenement, used as a dwelling-house, is not furnished with a sufficient receptacle, privy or vault, or either of them, they shall give notice, in writing, to the occupant, owner or his agent, requiring that a suitable receptacle, privy or vault, or either of them, be constructed within such time as they shall appoint, for the use of such tenement; and in case such requisition be not complied with, the board shall cause such receptacle, privy or vault, or either of them, to be constructed, the expense of which shall be charged to such occupant, owner or agent.

ART. III. Whenever the board of health shall find that the number of persons occupying any tenement is so great as to be the cause of nuisance or sickness, or a source of filth; or whenever any tenement is not furnished with a suitable privy, vault and receptacle under ground, according to the provisions of this chapter, the board may cause all or any persons occupying such tenement to be removed therefrom—first giving them notice, in writing, to remove, and allowing them the space of at least forty-eight hours, in which to comply with said notice.

ART. IV. All vaults and privies hereafter built, shall be so constructed that the inside of the same shall be at least two feet distant from the line of every adjoining lot, unless the board of health, or the owner of said adjoining lot shall otherwise agree and consent, and also from every street, lane, alley, court, square, or place, or public or private passageway; there shall be no communication between any vault or privy, and any common sewer

or drain, and every vault shall be at least five feet deep from the surface or grade of the surrounding land, and shall be constructed of brick or stone, laid in cement, or of good plank, at least two inches thick, and to be made water tight—and all vaults or privies already constructed, not conforming to the foregoing, shall, within thirty days from the date hereof, be so altered, repaired, or rebuilt, as to conform to the above requirements; and whenever any vault or privy shall become offensive, the same shall be cleansed, and the owner or his agent, or the occupant of the land in which any vault or privy may be situated, the state and condition of which shall be in violation of the provisions of this article, shall cause the same to be removed, cleansed, altered, amended, or repaired, within a reasonable time after notice, in writing, to that effect, given by the board of health; and in case of neglect or refusal, the same shall be performed under the direction of the board of health, at the expense of the owner, agent, or occupant aforesaid.

ART. V. No vault shall be opened between the 15th day of May and the 14th day of October, in each year, unless on inspection caused to be made, the board of health shall be satisfied that the same is absolutely necessary for the health or comfort of the inhabitants; in which case they may grant special permission, under such restrictions as they may deem expedient; and no vault shall be opened at any time during the year, until 10 o'clock, P. M.

ART. VI. Whenever it shall appear to the board of health that any cellar, lot or vacant land is in a state of nuisance, or so situated that it may become dangerous to the public health, they may cause the same to be drained, filled up, or otherwise prevented from becoming or remaining a cause of nuisance or sickness, and shall charge all reasonable expenses incurred in so doing, to the several owners, or parties occupying such cellar, lot, or vacant land: *provided*, notice shall have been first given, and the space of forty-eight hours thereafter allowed, as provided in the second article of this chapter: *provided*, that if no owner or occupant is known to the board of health to be a resident in the town of Lawrence, notice shall be given at least two weeks, in one or more of the newspapers of said town of Lawrence.

ART. VII. No person or persons shall throw or deposit, or cause to be thrown or deposited, in any street, court, square, lane, alley, public square, or vacant lot, or into any water, any dirt, sawdust, soot, ashes, cinders, shavings, hair, shreds, manure, oyster or lobster shells, waste water, rubbish, or filth of any kind, or any animal or vegetable matter or substance whatever.

ART. VIII. No person shall bring into the town for sale, nor offer for sale, any diseased, unwholesome, stale or putrid meat, fish, or other articles of provisions, nor any fish, except salmon and shad, and except smelts and other small fish, that shall not first have been cleansed of their entrails and refuse parts.

REVISED STATUTES—[Chap. 21. sec. 5:]—"The board of health shall make such regulations respecting nuisance, sources of filth, and causes of sickness, within their respective towns, as they shall judge necessary for the public health and safety.

And if any person shall violate any such regulations, he shall forfeit a sum not exceeding one hundred dollars.

All persons will hereby take notice that the above rules and regulations must be strictly complied with.

Whenever a complaint is made against any person for a violation of these regulations, a notice, containing a copy, is served upon such violator, and he is required to remove the nuisance in 48 hours.

Lawrence has two places for the interment of the dead. One, containing five acres, lies in a pine grove, about a mile from the town-house, and was bought by the town of the Essex Company, for \$1,000. It is beautifully laid out, intersected by avenues and paths, and divided into family lots, 10 by 14 feet, and into single graves; the whole designed to furnish burial accommodations for about 5,000 bodies. Each family lot, and each single grave, is numbered and marked, and a record is made of the persons interred therein. The right of burial for a single grave is free. A family right, 10 by 14 feet, for 8 graves, is sold for \$3.00. The ordinary expenses for interment are,—for a good pine coffin, \$4.00; digging the grave and the undertaker's fees, \$3; total, \$7, besides carriages. A greater amount, of course, is sometimes expended. The other is a *Catholic ground*, and contains 3 acres. It is the private property of Rev. Charles D. French, the eldest Catholic priest in the town. Rights for burial for single graves in this ground, are sold at \$5.00 for adults, and at \$3.00 for children. A "family right," or a right to dig any depth and deposit as many bodies as one pleases,

one upon the top of another, is sold for \$9.00 ! Charity graves are sometimes granted.

5. *Health, Sickness, and Mortality of the Inhabitants.*

The records of births, marriages, and deaths, were commenced May 1, 1847, and have since been continued. For the last eight months of 1847, and the two subsequent years, we obtain the following abstract of these records :—

	May to Dec. 31, 1847.	In 1848.	In 1849.	Total.
Births,	139	185	61	325
Marriages,	19	81	40	130
Deaths,	84	83	162	329

The records of births and marriages are imperfect. Of the births recorded, 193, or more than 50 per cent., were of children of foreign parents. Some of the deaths are supposed not to have been recorded, in 1847 and 1848 ; but for 1849, all are supposed to have been entered. In 1848 there was one recorded death to 71 inhabitants ; and in 1849 there was one to 44. Assuming this as a means of comparison, it will show, in the last year, an excess of about 50 deaths above a healthy standard.

The aggregate and average ages of all whose ages are specified in the records, was as follows :—

Deaths of Persons Date. whose Ages are known.		Aggregate Ages.	Average Ages.
1847,	79	1,819 yrs. 6 ms. 14 ds.	23 yrs. 0 ms. 11 ds.
1848,	79	1,317 " 0 " 23 "	16 " 8 " 2 "
1849,	156	2,082 " 6 " 7 "	13 " 4 " 4 "

The specific divisions of ages exhibit the following results :—

Ages.	Males.	Females.	Total.	Proportion.
Under 15,	63	65	128	40.8
15 to 60,	71	73	144	45.8
Over 60,	21	21	42	13.4
Total,	155	159	314	100

And in the different seasons of the year they were, as far as specified, as follows :—

Quarter.	Under 15.	15 to 60.	Over 60.	Total.	Proportion.
Winter quarter,	25	25	2	52	17.5
Spring quarter,	34	22	1	57	19.2
Summer quarter,	79	48	5	132	44.4
Autumn quarter,	26	28	2	56	18.9
Total,	164	123	10	297	100

The causes of death, as far as specified on the records, are exhibited in the following statement :—

Causes of Death.	Males.			Females.			Total.
	Under 15.	15 to 60.	Over 60.	Under 15.	15 to 60.	Over 60.	
SPECIFIED CAUSES.	55	67	18	57	67	18	282
1. Zymotic Diseases, . . .	26	36	5	35	16	6	124
2. Of uncertain seat, . . .	1	.	3	1	4	.	9
3. Of the Nervous Organs, . .	4	2	.	9	3	1	19
4. Of the Respiratory Organs,	10	13	1	8	30	4	66
5. Of the Circulative Organs,	.	1	.	.	.	.	1
6. Of the Digestive Organs, .	9	3	5	2	4	6	29
7. Of the Generative Organs,	.	.	.	.	9	.	9
8. Of Old Age, . . .	.	.	3	.	.	1	4
9. Accidental Deaths, . . .	5	12	1	2	1	.	21
Total specified, . . .	55	67	18	55	67	18	282
Causes not specified, . . .	8	4	3	8	6	3	32
Total, . . .	63	71	21	65	73	21	314

The specific diseases and causes of death, as stated in this table, are as follows :—

1.	3.	Disease of Bowels, 13
Cholera Morbus, . . 5	Apoplexy, . . . 2	Jaundice, . . . 1
Cholera Infantum, 4	Convulsions, . . 7	Teething, . . . 7
Croup, 4	Disease of Brain, . 10	
Dysentery, . . . 26		Total, . . . 29
Typhus Fever, . . 52	Total, . . . 19	7.
Hooping Cough, . 2	4.	Child-birth, . . 9
Influenza, . . . 2	Consumption, . . 58	8.
Measles, 11	Pneumonia, . . . 7	Old Age, . . . 4
Scarlatina, . . . 18	Pleurisy, 1	9.
		Accidents, . . . 15
Total, 124	Total, 66	Intemperance, . . 3
2.	5.	Want, 3
Dropsy, 6	Disease of Heart, . 1	
Hæmorrhage, . . 1		Total, 21
Scrofula, 2	6.	
	Gastritis, 2	Not specified, . . 32
Total, 9	Canker, 6	Still-born, . . . 8

It will be seen by this statement, that typhus fever, dysentery, scarlatina, and measles, among the greatest epidemics of the State, and consumption, the most to be dreaded of all diseases, have prevailed here to a large extent, producing, respectively, 52, 26, 18, 11, and 58, of the total mortality of 282 cases in which causes are specified. Of the fever victims the greatest proportion have been males in the productive periods of life, some of whom were laborers on the public improvements. A majority of the deaths by consumption, were those of

females in the same period. No case of Asiatic cholera has occurred in the town.

Since the foregoing abstract was prepared, a record of the deaths during the 6 months, ending July 1, 1850, has been obtained, from which it appears that 59 deaths took place during that period,—31 males and 28 females. Their aggregate ages were 1381 years, 5 months, 10 days, and their average age 23 years, 5 months. Of these, 14 died of consumption—7 males and 7 females,—7 were Americans and 7 foreigners; 9 died of typhus fever—5 males and 4 females, all Americans but 2; and 7 died of *small-pox*—4 males and 3 females—all Americans but one, and whose deaths were traceable to a neglect of vaccination. These three diseases were the causes of more than half the deaths.

6. *Conclusions and Recommendations.*

The *conclusions* to which the foregoing facts lead are :—

1. That the natural situation of Lawrence, its dry soil, its waters, and its general features, seem to be favorable to the promotion of health. The town is, however, as yet, too young, and observations have been too limited, to determine its true sanitary character.

2. That in the artificial and local arrangements for the manufacturing establishments and their accompanying structures, in the plan and location of the streets of the town, in the dwelling-houses, and in the public squares and public buildings, many of the most approved principles of sanitary science have been introduced.

3. That the pecuniary, social, and moral welfare of the operatives in the mills, is as well cared for here as in any place within our knowledge. Their house accommodations, means of subsistence, and the moral and sanitary supervision under which they act, cannot be too highly commended.

4. That the public educational, and other institutions of the town, and the social condition of the inhabitants, are such as must contribute to their general welfare and improvement, physical, intellectual and moral.

5. That the facts regarding the mortality of the town, especially for the last year, exhibit a remarkably low average age at death. This is not to be taken, however, (for the reasons we have already given in this Report, pp. 139, 140) as an exact test of the sanitary character of the inhabitants. The population is necessarily young, the births are numerous; and the deaths among the children will consequently be proportionably numerous. Comparatively few old people exist in the town to die. This must depress the average age at death.

6. That temporary causes have operated in Lawrence, as in other new places, to depress the public health, and to produce an unnatural increase in the number of deaths. Among these causes may be mentioned ;—1. The transition from one place and from one mode of living to others ;—2. The bringing together of persons and adventurers of different characters and habits, sometimes with broken fortunes or debilitated constitutions ;—3. The digging up and removal of the soil and earth, sometimes producing unwholesome exhalations ;—4. Exposure in working in mud and water, in constructing the dam, canal, and other works ;—5. The insufficiency of proper house accommodations ;—And 6. The habitations, habits, and peculiar modes of

living of the Irish laborers. These and other causes have produced fevers, dysentery, scarlatina, consumption, and the other fatal diseases which have prevailed here; and have operated to produce an excess of deaths above a healthy standard. These causes will operate less extensively, however, as the population becomes more settled and stationary.

7. That there is reason to believe that the natural position of the town, its artificial and local arrangements, the social and pecuniary condition of the inhabitants, and the means provided for their welfare and improvement, will render Lawrence one of the most healthy manufacturing towns in the State, especially if all its affairs continue to be wisely and properly regulated and conducted.

And it is *recommended*—

1. That such wise and practical sanitary rules and regulations be made by the board of health, and always kept in force, as will prevent nuisances and secure cleanliness in every street and avenue, and around, near, and in every dwelling-house.

2. That every practical effort be made to prevent crowding too many houses upon one lot, and too many families or persons into one house; and whenever such a sanitary evil may be found, that it be immediately corrected.

3. That as soon as practicable, means should be provided for introducing into every dwelling-house an abundant supply of pure, soft water for domestic use.

4. That water should not be permitted to stagnate in any street or low grounds, within the populous parts of the town; and wherever such cases exist, that the locality be drained or filled up as speedily as possible.

5. That the Catholic burial grounds and other places for the interment of the dead, be placed under the control of the board of health of the town, and be subject to such regulations as they shall see fit to establish.

6. That a thorough sanitary supervision be exercised by the police or other authority over every department of the town, and, as far as practicable, that every avenue to intemperance and other vice be closed; that every violation of every sanitary regulation be immediately detected, and that nothing unfavorable to the public health be suffered to exist.

7. That exact observations be made by the manufacturing companies and in the public schools, concerning the sickness that occurs, as recommended in this Report, (pp. 171, 178, and pp. 404–407,) that the true sanitary character of the locality and of the various occupations may be fully ascertained.

8. That such of the measures suggested in this Report, as are applicable to this town, be adopted and carried into effect by the board of health and by the inhabitants.

9. That a general report be made annually, by the board of health, or by the selectmen, which shall embrace a concise abstract of the facts concerning the several public departments and offices of the town, gathered during the preceding year, exhibiting its sanitary progress and its condition; and which shall recommend such measures as may lead to improvement; and that the same be printed and distributed among the inhabitants.

