The factory system, in its hygienic relations : an address delivered at Boston at the annual meeting of the Massachusetts Medical Society, May 27, 1846 / by John O. Green.

THE FACTORY SYSTEM, IN ITS HYGIENIC RELATIONS.

AN ADDRESS,

DELIVERED AT BOSTON, AT THE ANNUAL MEETING OF THE MASSACHUSETTS MEDICAL SOCIETY, MAY 27, 1846.

BY JOHN O. GREEN, M. D., M. M. S. S.

Published by the Society.

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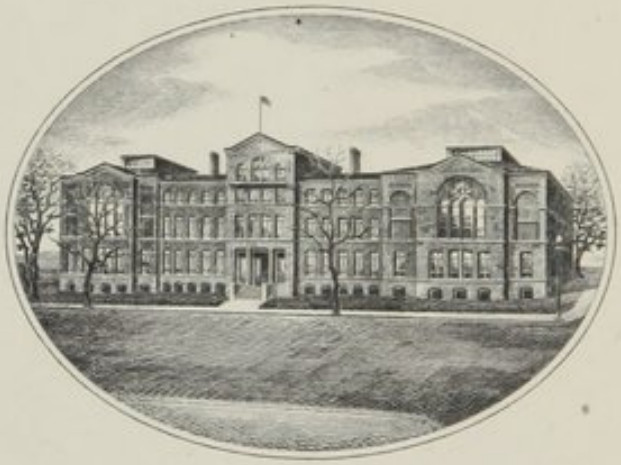

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Mr. President, and Gentlemen of the Society,

The silent lapse of time, wafting us swiftly onward to the ocean of Eternity has again brought us to this Anniversary. We have assembled from all parts of our cherished Commonwealth, to fill the honorable offices of this time-hallowed Society, to interchange our mutual congratulations on its achievements and prospects, and to gather from all the associations which cluster around it, fresh vigor and zeal and ability for the arduous duties, the solemn responsibilities, the unobtrusive, every day engagements of a Physician's life. I see, before me, the youthful student, flushed with college honors, just entering the arena of professional strife, the recent graduate, full of the responsibility of his first patient's fate, the middle-aged,

in the full tide of professional success, scarce able to lay aside his ceaseless toil for this brief hour: the gray-headed veteran, whose half century of honors and usefulness constitutes his smallest claim to rest and retirement where he is best known. Among the Fellows of this Society, I behold, around me, men high in the walks of science, in the offices of our country, in the confidence and respect of the community, the teachers of my youth, the counsellors of my riper years. I need not say, then, that I meet all of you with a distrust of my ability to do justice to this office and occasion, which would well nigh overwhelm me, unless I could rely with confidence on your utmost candor and kindness.

If there be any one entitled to indulge some self-gratulation on the discharge of high duties, or at liberty to express an honest pride in the accomplishment of his youthful hopes, it is the successful Physician. How few have any idea of the toils and privations to which he is subject, his constant witnessing of misery, his daily task, however arduous, yet never known to be finished: his nightly rides exchanged too often for a sleepless, anxious pillow. How few can imagine the amount of work he has to perform, and how extremely small is the number of those, who, during his professional life, are willing to take into consideration the exertions which it cost him to acquire the elements of his science. Among ourselves, then, who have a just appreciation and experience of all this, I appeal to you whether there is not a satisfaction derived from the consciousness that we have thus struggled to secure

knowledge, and expended time and health and money to prepare and afford relief to the sufferings of our fellow-men, which none of us would forego. There is no one who has thus acted and suffered, who does not feel pleasure in appealing to the manner in which he has discharged these high duties, as to an ample earnest of the steadiness and devotion of his future professional exertions, and as an evidence of his continuing stability and faithfulness in the trusts which may be confided to him.

I have alluded to the extent and comprehensiveness of our association, with its representatives in every city, town and village in our Commonwealth, bearing with them, in their daily walks, the sound wisdom, the practical sagacity and strong conservatism which almost insensibly are imbibed from a State institution under such guidance as this has been for many years. Equally co-extensive must be the interests and tastes of its many members. If, then, in the character of these annual effusions have often shone forth, in bright relief, the thoughts and considerations with which the speaker has been most familiar, and if, on the present occasion, you are invited to accompany him to his own immediate home and neighborhood, with the eye of a Physician and Christian philanthropist, there to observe what is most interesting, I cannot feel that I have misunderstood your former sympathy, or miscalculated upon your present attention.

Within the last thirty years a new element has been introduced, engrafted and developed upon the

enterprise and resources of our own and the neighboring States of New England. We allude to the establishment of Cotton Manufactures, with a rapidity and to an extent truly surprising. That I have not misjudged the interest which must attach to all the considerations, social, political or economical, appertaining to this subject, will appear from the single fact that the capital invested in Cotton manufactures in Massachusetts alone amounts to $17,739,000, and the actual number of persons employed in the cotton mills is 20,170.

In former times, when disease and death were supposed to be the work of an unchangeable and, perhaps, a capricious Providence, there was little motive to inquire into their causes, for no knowledge could avail to avert or modify them. In later days, however, we believe that there is much to be learned in this matter: that the study of the laws of life has claims upon the attention of Physicians that are neither to be postponed nor resisted. If the higher aim of Surgery be the preservation, rather than the amputation, of the diseased limb, then the efforts of the Physician in the prevention of disease, rather than in its cure, deserve the higher appreciation. The above are some of the considerations which have induced me to propose to you some reflections upon the *Factory system viewed in its hygienic relations.*

A vast deal of misapprehension and distrust has been created and fostered by assuming a similarity between this class of people in England and America. In all their hygienic aspects there could hardly be a

more striking contrast. But to render this intelligible, I must, in some detail, sketch the history of Factory labor on the other side of the Atlantic. While it shows the unrelenting inhumanity of avarice, it displays the difficulties with which philanthropy and benevolence must struggle, before they can effect their noble ends.

The system of employing children as factory laborers was the result of Arkwright's inventions. His looms took manufacturers out of the cottages and farm houses, and assembled them in Derbyshire, Nottinghamshire, and more particularly in Lancashire, where the machinery was used in large factories, built on the sides of streams capable of turning the water wheel. There was an immediate demand for hands, and children were found to be best adapted to the work. The custom instantly sprang up of procuring apprentices from the different parish work-houses of London, Birmingham and elsewhere. Many thousands of children between seven and fourteen were thus carried to the north. The horrors of this apprentice system appear to have been dreadful. It is said in one instance, an agreement was made between a London parish and a Lancashire manufacturer, stipulating that with every twenty sound children, one idiot should be taken!

The violations of nature's laws reached such a height that these outrages were taken in hand by Nature herself, and pestilential fevers became alarmingly destructive. The public was roused, and a board of health was instituted in Manchester, and made its

report in 1796. In 1802, the late Sir Robert Peel introduced and carried his first bill for the relief of the apprentices. It did relieve them, but steam being now applied to manufactures, the site of factories was removed from the sides of streams to towns and populous districts, where labor could be readily obtained and where apprentices were an useless incumbrance. The bill afforded no protection to the children now employed, and in 1815 Sir Robert Peel proposed a second measure which was not carried till 1819.

The actual nature of factory labor was as follows. I quote from the Medico Chirurgical Review.

It was in nearly all the cotton mills of Lancashire and its neighborhood, excepting Saturday, from thirteen to sixteen hours a day, inclusive of one hour or less, *nominally* for dinner. Many of those subjected to such labor were children of nine, eight, seven and six years of age, and some even under six. The children continued constantly at work so long as the machinery was in motion, during which time they were not permitted to sit down, or to leave the factory. They often complained (naturally enough one would think) of fatigue and aching limbs: in this state of exhaustion toward the close of the day, they were beaten by the overlookers, or even by their own parents, that blows might supply the deficiency of strength. In most cotton factories, during the greater part, and often during the whole of the time nominally allotted to dinner, the children were occupied in cleaning the machinery: no time was allowed for the breakfast or afternoon meals, which were snatched in

mouthfuls during the progress of uninterrupted labor. It appears, moreover, that the temperature in many mills was from 75° to 80°, in others from 80° to 85° or even 90°.

Such was the state of things when in 1819, the twelve hours bill was carried. In 1825, Sir John Hobhouse obtained an act which limited the labor of persons under sixteen, to sixty-nine hours in the week, twelve on five days and nine on Saturdays. In 1831, it was somewhat improved by the prohibition of night work for all under twenty-one, and by the advance of the ages entitled to protection from sixteen to eighteen years.

By the modern factory laws of England, no child under nine years of age is permitted to work at all: and before thirteen it can only be employed for nine hours a day. But here again, the necessities or the cupidity of parents, it would appear, are continually inducing them to misrepresent the ages of their children; so that it has therefore become desirable to discover some test by which the capability of the child may be determined without a knowledge of its age. A standard of height has been adopted by the legislature for the purpose, but upon grounds which physiologically considered, are very erroneous, as the tallest children are often the most weakly.

It is not to be concealed that a vast deal of angry discussion has taken place as to the reality of the mischief inflicted by the long hours and unremitting exertion required by the English factories and spinning mills, rendering the ascertainment of the

truth a matter of some difficulty. To enter deeply into this, however, would lead us into too great digression, and we must content ourselves with saying that the importance of this subject upon the other side of the water, and the weight of its accompanying evidence, may be estimated by my naming, as some of the witnesses before the commissions alluded to, Drs. Baillie, Pemberton, Tuthill, Farre, Blundell, Elliotson, Sir Gilbert Blane, Sir Astley Cooper, Sir Anthony Carlisle and others.

It would seem that a very satisfactory if not an unerring test might be found in the Sanitary Reports presented to the British Parliament, and by the inquiries of Messrs. Ure, Villerme, Noble and others. If those who contended that the hours of labor were not too long either for children or adults, could have produced evidence to show that among operatives, the average of life was equally high as among the apparently more favored classes, there would have been an end of all argument. While, had the result proved different, the system of labor might justly have been deemed oppressive in the precise ratio in which the mortality among the operatives exceeded that among the wealthier countrymen. Now in a most valuable contribution to Hygiene, made to both Houses of Parliament by direction of the Queen in 1842, it appears that while in Manchester, the average age of death among professional persons and gentry and their families was 38, that of mechanics, laborers and their families was only 17. A like difference is shown in the country district of Rutlandshire,

and so far as investigations have been made in our own country, the results seem to be analogous. In a very satisfactory Report, presented in 1844 to the Counsellors of the Massachusetts Medical Society, by Drs. Fisher, Jarvis and Holmes, it is stated that the Committee had obtained an analysis of the ages, and also of the domestic and social condition of 1767 persons, who had died in Dorchester, Massachusetts, within the preceding twenty-seven years; by which it appeared that the average duration of life in the families of laborers, journeymen, mechanics and factory operatives was 27 years 5 months, whilst that of the farmers who own and cultivate their lands was 45 years 8 months.

These truly startling results are, however, greatly modified by carrying our views a little farther. In England, a reference to tables of the mean annual mortality of females in twelve districts of the metropolis will show that the difference in mortality is dependent rather upon the locality, inasmuch as the greatest mortality is at times found to prevail where no factories exist. In Dorchester too, the Committee go on to show that this difference is not chargeable to occupation merely, for it was found most among the little children at their homes, and cannot be caused by the employment of the head of the family.

In the one country, there must be a cause, or causes, connected with the domestic condition or management, to produce this discrepancy:—and in the other, we must be constrained to conclude that the evils which have been presumed to appertain to manufacturing pursuits have been greatly exaggerated;

that no peculiar evils to health and life attach *necessarily* to manufacturing business: and that in so far as factories and other corresponding places of labor interfere with the right conditions of health, they of course lead to the production of disease and the shortening of life: but that these evils appertain rather to their domestic than to their industrial relations. In the prosecution of this subject, these conclusions will, we trust, be abundantly corroborated.

As the type and exemplification of what we mean by the Factory System of New England, we, of course, at once turn to Lowell.——At first view, it will be objected that we have selected by far too favorable a specimen by which to describe a class: that this city has grown up from its very infancy in a few years: that it is rather the result of associated power profiting by all the experience which individual enterprise had hardly and dearly bought in years of unsuccessful effort: with all the modern appliances of machinery and all the modern arts of civilization and comfort.—We grant all this. It is not quite twenty-five years since the first operative was attracted to this place. All the available science and experience of our own and other countries have been concentrated and systematized here under every advantage of combined wealth. But the organic laws of life and health are unchangeable. In this place have been congregated the largest number engaged in the same labor, and it is the only place in our own country where even an approximation can be made to an investigation and analysis of the diseases peculiar to a manufacturing city.

The Lowell system has peculiarities which modify its hygienic character. By far the most striking and conservative that has been superadded to that in other places, is a strict, ever-present, ever-active moral regime. That the strictest observance of the moral laws and the purest elevation of which human nature is capable, are insufficient to secure health to the body, without a simultaneous observance of the organic laws, is too clearly proved by the history of mankind. At the same time, the intimate and inseparable connection between health and morals in all communities calls here certainly for no argument or proof. By a recent writer,* it has been shown with equal clearness and truth, that the "sagacity of self-interest, as well as more disinterested considerations, has led to the adoption and enforcement of a strict moral code. The productiveness of the twelve millions here invested depends," says he, "upon one primary and indispensable condition—the existence of an industrious, sober, orderly and moral class of operatives. Without this, the mills in Lowell would be worthless. Profits would be absorbed by cases of irregularity, carelessness and neglect: while the existence of any great moral exposure would cut off the supply of help from the virtuous homesteads of the country. Public morals and private interests, identical in all places, are here seen to be linked together in indissoluble connection."

Another consideration bearing both upon the character and health of the community of which we are now speaking, is the fact that *we have no permanent factory population.* Careful statistical returns, ob-

* Rev. Henry A. Miles.

tained by the same gentleman, have established that the female operatives in Lowell do not work on an average more than four and a half years in the factories. If the nature of this labor in all countries be the same, and the dangers of moral and physical degradation be inherent in the nature of the employment, which however we deny, we see in the considerations just stated two elements of difference between the condition of the operatives here and abroad which must entirely change its results.

The child, in the one country, inheriting with its birth the constitutional defects developed in its parents, by years of toil and penury and vice, growing up to the age of nine perhaps, upon the scantiest fare, in the squalid cellar in the narrow lane of a crowded city, not only without education, but with scarcely sufficient parental care to attend upon its merely animal wants, then begins its life of constant service, and enters its *permanent dependent factory caste.*

In the other country, the child of parents of robust health and habits of virtuous industry, is trained from its earliest years to healthful exercise, upon abundant substantial food, in a rural home, in a climate perhaps as favorable to longevity as any in the known world, till its mental, moral and physical powers have attained their full development. It then leaves that home, a voluntary exile, with high hopes and bright visions of well requited labor and its sure reward, and spends a limited time, two, four, or six years, and returns again with a consciousness of well discharged duty and the means of promoting its own, and even its parents' future comfort and happiness.

Lest any one should suspect I am indulging in fancy, I must here quote that in 1844, of the 6320 female operatives in Lowell, Massachusetts furnished one eighth, Maine one fourth, New Hampshire one third, Vermont one fifth, Ireland one fourteenth, all other places, principally Canada, one seventeenth. At the same time, the number of operatives in our Cotton mills under fifteen years of age was only twenty-seven.

But we come now to another hygienic agent, in the fact that no persons are employed in these mills who are addicted to intemperance. "Absolute freedom from intoxicating liquors is understood throughout the city to be a pre-requisite to obtaining employment in the mills, and any person known to be addicted to their use is at once dismissed."

In whatever light we may be disposed to view the present state of public opinion upon the subject of temperance, the existence of such a regulation cannot but be regarded as conducing essentially to the public health. Too often, however, in their laudable enthusiasm, the writers on this subject have quitted the strong moral basis on which the abuse of ardent spirits rests. On the precise amount of deaths, produced by their indirect action, our data are especially defective. There is not a disease, so induced, but admits of other causes: and here is an insurmountable source of perplexity in forming any estimate other than mere guess work. The evil, says Dunglison, "resulting from the abuse of ardent spirit, and indeed of some of the simple fermented liquors, in which the spirit is in a state of combination with other substances, is of sufficient magnitude. It requires no amplification.

"To any point that demands correction or modification, the estimate or the language of hyperbole is injurious, inasmuch as it does not induce unhesitating assent. The temperance societies, throughout our land, have rendered important service. *Moderation*, —the never-failing attendant on good sense, has already modified, and will continue to modify, some of the asperities and impracticable parts of their original constitution: unnecessary self-privation and rigor will gain few proselytes, and so far defeat the praiseworthy intentions of many of their founders." But especially is it to be regretted that it should ever assume a party character, than which no garb can worse become so heavenly a virtue. Already have we seen, in the violence of partizan warfare, the fair name of the most moral men and the best citizens wantonly assailed, because they had never seen fit to join in the unholy strife, which has disdained and rejected even the sanction of religion.

It is enough for our present purpose, that a more strictly and universally temperate class of persons cannot be found than the nine thousand operatives in the city of Lowell. No physician, however, in estimating the influence of intemperance from the bills of mortality, has a fair criterion of its real state. In the various forms of fevers, the inflammations and diseases of various organs, in convulsions, apoplexy, palsy, suicide, epilepsy, and even pulmonary consumption, he must often see its effects, if not in their production, certainly in their aggravation.

Much has been said with regard to the proper number of meals, and the interval that ought to elapse

between them. Regularity in their periods ought to be observed. They should be as nearly equi-distant as practicable, and at such intervals that one digestion may be completed before the materials are furnished for another. "Early breakfast," says Doctor Johnson, "dinner as near the middle of the day as fashion, folly, or pride will permit, a pretty hearty tea in the evening, about six o'clock, and no supper, will be found the most salutary code which a physician can lay down." Nothing in factory life could be more closely followed. So also of their plain, substantial and wholesome food. These epithets must of course demand some modification. All we mean to affirm would be, that the dietetic errors of these persons have been brought with them from their country homes. They are here perpetuated, and under their new habits of labor, are more or less prejudicial. Throughout the towns of New England, few physicians could be found ready to defend the disproportionate amount of fat, the bad cookery, and the many indigestible compounds which form the daily routine of common meals.

It has formed no part of my design to go into any minute examination of the various processes of the Cotton manufacture, involving every variety of muscular effort and posture, and every degree of intensity of muscular exertion. The female operatives are engaged universally in a kind of labor which demands a succession of light muscular movements, and are not called on to perform acts requiring undue exertion of particular parts or organs.

They are but little exposed to sudden vicissitudes of temperature, those most prolific causes of disease,

particularly of females in our own climate, owing perhaps to their in-door life and insufficient clothing. The rooms in which they work, are kept of a uniform temperature, and are lofty and well ventilated.

Lastly, their places of abode deserve a passing notice. The houses in which, with very few exceptions, these people live, belong to the capitalists who own the mills, many of whom have displayed a desire to ensure, as far as the state of the private residences can ensure, the comfort of those whom they employ, and they have accordingly built for them a superior description of tenements.

Very many, then, of the circumstances which surround and act upon our factory operatives, are of the most favorable character. They are the most obvious and simple considèrations, but nevertheless, the most important, because always at work, and are precisely those common and universal influences which, after all, go to swell the grand aggregate of health or disease in communities.

I have cursorily glanced at the birth and parentage of these persons, their early education and habits, their temperance, their regular hours of rest and of taking meals, their plain, substantial food, their labor, neither too active nor too light, their little exposure to sudden vicissitudes of temperature, their well ventilated workrooms and their comfortable abodes. These circumstances are by no means peculiar to Lowell. Throughout New England they constitute the influences which are to leave their impression, either for weal or wo: and if a long course of years be essential to the development of their effects, it is no part of a true philoso-

phy to overlook or underrate them. We repeat that we consider them as most important elements in the solution of this problem in our own country.

Like every other subject, identified or intimately mixed up with human interests and feelings, this one has proved itself the fertile occasion of very contradictory statements and opinions. One class of inquirers, guided more by overwrought sentiments of humanity, than by unbiassed judgment, have looked upon the introduction of extensive manufacturing establishments as little less than an unmitigated injury done to the bulk of society, "accumulating the fruits of labor within the possession of a comparatively small number of capitalists, to the utter destruction of all health and comfort, on the part of the actual producers of wealth:" whilst another class, regarding the matter under another point of view, and more under the influence of a cool, calculating and selfish political economy, maintain that the extension of manufactures in our country will carry with it the least possible amount of disadvantage to the masses engaged in them. Others, again, more in the desire and spirit of unprejudiced inquiry, have come to intermediate conclusions, believing that, like all other human institutions, more or less of evil may be discovered and foreseen in this, coincidently with very great advantages to mankind as a whole. To one of these classes we trace the assertion that the health of multitudes of these operatives is broken down by long confinement and excessive toil, who, finding their strength failing, return to their homes, leaving behind them no memorials of their sickness and death. To another class

we should attribute the attempt to show that their health is essentially and permanently improved by working in the mills.

While we maintain that many of the conditions of health are as little violated by manufacturing industry, as by an immense proportion of other pursuits, we still believe that factory labor is, on some accounts, injurious. How, indeed, can it be otherwise, when regarded as a whole? Individuals thus employed, do not spend in the open air, on an average, more than an hour or an hour and a half in the twenty-four: and work is resumed almost the moment the meal is swallowed, allowing scarcely any rest for the commencement of a healthy digestion. Causes like these must and do depress, more or less, the vital powers, and induce certainly, perhaps slowly, a lower state of the general health than would exist with the opposite state of things. In all this, however, we have nothing peculiar to the factory system. With the great majority of the working classes, these causes have a general operation. In the case of hundreds of females employed in various occupations with their needles, the same conditions of labor are applicable, and present almost the same exceptionable points as those of our manufactories.

Among the most prominent perhaps of the adverse influences, as must occur to every one, is the too long confinement by the protracted hours of labor, amounting in the case of the mills at Lowell, to an average per day, throughout the year, of twelve hours and eighteen minutes. It is in no spirit of sympathy with a certain class who are seeking to turn the public attention to this matter, that we

would declare ourselves in favor of abridging these hours. On the contrary, nothing can be more ill-judged than these attempts to create distrust and ill-will between the employers and employed, between whom, every thing should be designed to cherish the utmost kindness and consideration. It is an amount of undivided attention, however, which cannot be sustained, week after week, and month after month, without manifest and serious derangement of the general health, whether it be in the study of the clergyman, the counting-house, the court of justice, the halls of legislation, in the cotton mill, or any other work-shop. Sooner or later, in proportion to the powers of resistance, and adaptation of the individual, the citadel must yield and the enemy triumph. How shall we determine the precise amount of labor and exertion, which will prove safe and expedient in each? I apprehend the data which are advanced to establish ten hours are as defective as any. But of one point we may be certain, that as there can be shown to be no occupation which is so purely mechanical, such a complete repetition of the same minute procedures over and over again, with hardly the change of a thought in the mind, yet demanding close and steady attention, this may unravel the great secret of the wear and tear of factory life.

There is, in this business, too, such a nice sub-division of labor, and delicate adjustment of responsibility, from the superintendent in his counting-room, to the lowest laborer in his employ, all admitting of almost mathematical precision in the results of their work, and all under the stimulus of the rivalry of sim-

ilar establishments, and at the foundation of all, such a mighty spirit of commercial enterprise, that the limit of human powers is scarcely suffered to enter into the account. The acquisition of wealth becomes the universal, the all-absorbing concern, and taxes the powers of all to the utmost. No one pauses, or even seems disposed to pause, to ask by what means, or at what cost, are these results obtained? The consideration of the long hours of labor is by no means confined to our factory system. It is no local or peculiar incident, but an evil of great magnitude, if not a national sin.

The over-strenuous exertion of the faculties, mental and corporeal, must inevitably lead to the deterioration and destruction of the living machine. The same cause, to wit, hard work, or rather over-exertion, it is, which makes our fields better cultivated, our houses better furnished, our cottons better manufactured, our machinery more effective, our merchants more rich. Does not all this tell at last upon the constitution, intellectual and corporeal? Have not those of us who live in the midst of this excitement, seen striking proofs of it? I do not speak of mere labor of the body. The fatigue induced by the hardest day's toil may be dissipated by "tired nature's sweet restorer," but not so the fatigue of the mind. Thought and care cannot be discontinued or cast off, whenever we please, like exercise. The head may be laid upon the pillow, but a chaos of ideas will infest the anxious brain, and either prevent our slumbers, or render them a series of feverish, tumultuous or distressing dreams, from which we rise, more languid than when we laid down.

Just in proportion, too, as the operative classes are raised by general intelligence and education, in the same ratio grows the natural and almost universal aim of bettering their condition, that is, of rising a step above their present station, till it becomes an ever-active impulse. It prompts to the highest, yet perfectly voluntary, exertions: it operates insensibly. All the little discomforts of situation, the minor ails of life, and even the premonitory symptoms of the graver maladies, are unheeded: a series of carefully arranged queries (ay, and answered with all candor, too), may only elicit that their general health is improving. But granting that this super-excitement makes no appreciable difference in the bills of mortality, will it be inferred from thence that health and happiness are not sufferers by the collision? Are not whole tribes of maladies thus engendered, which may not materially shorten life, but must render it a burden? Most assuredly. The devastation which is worked in this way exceeds, far exceeds calculation or belief. It is true that overseers and others may be found that have spent their ten, fifteen or twenty years in this employment. May it not be found that toil and care of body and mind have forwarded each of them a step or two, *in advance*, on the path of human existence?

I have deferred, until now, any reference to individual diseases which have been charged to the effects of the cotton manufacture. To this I have been led by two considerations. Although now for many years intimately conversant with a large population of this character, I have left upon my mind only those general impressions which will be scarcely at all satisfactory to a phi-

losophical inquirer after the truth; and in the next place, my whole professional life has been confined to one residence, thus precluding any thing like a comparison of the pathology or mortality of my own city with those of others.

If we look back upon the testimony afforded by the medical witnesses in England upon this subject, we might quote a formidable catalogue. Diseases of the character and class ordinarily comprehended under the term scrofula, seem to constitute the sum of alleged consequences. Dyspeptic symptoms, nervous diseases, stunted growth, languors, lassitude, general debility, prompting to recourse to sensual stimulants, osseous deformities, glandular disease, asthma, consumption. Varicose veins and breaking down the plantar arch are charged to the long standing. The French physicians describe one class of their work people worse situated in a sanatory point of view than the rest, the batters of cotton in the fine mills, whose occupation obliges them to inhale much dust and *flue*. Whether it be the dust contained in the raw cotton, apart from the cotton flue, or this latter itself, which ruins the health of those engaged in the process, the decay of their health is ever certain and an established fact. They complain of dryness in the mouth and throat, and are seized sooner or later, with a cough gradually increasing in severity. The cough is the first symptom of a slow and formidable disease of the chest, which is always relieved on abandoning the work, and altogether cured at its commencement, if the employment be not resumed. The disease, in the progress of its development, assumes all the char-

acteristics of Phthisis, and the medical men in the manufacturing districts call it Cotton Phthisis, and some Cotton Pneumonia.

In contrast to this, I am enabled to append to these remarks a series of tables, deduced from the bills of mortality, for sixteen successive years, which have been kept with a very commendable degree of care. Any inferences from them, however, on many accounts, must be cautiously received, and any satisfactory comparison of the individual diseases is impossible, except with Boston, owing to defects in the registration. In a course of years, however, it is very easy to foresee that such a record will possess interest. The great experiment, which is on trial in Lowell, is to be repeated and extended throughout our country. The evils which will result (and everything human has its evils) are to be met and overcome by the sagacity and perseverance which characterize our countrymen.

It has been most truly said, "Man is not a mere producer; a mere machine. His life or death, his happiness or misery, is much too high an object upon which to place a pecuniary value. He is more nicely made, more wonderfully organized, requires to be guarded with more care from any influence that may surround him to produce disorganization and unfit him for use, is capable of higher and nobler purposes, and has a higher and nobler destiny, and in proportion as in each of these, he exceeds a mere machine, in such proportion ought we to regard his intellectual and moral nature, and the means used to preserve and develop his physical powers, to enable him best to accomplish the great purposes of his existence."

If improvements and changes are ever to be desired in our large manufacturing cities, let them be based, not upon the necessity of such municipal innovations to avert a pestilential havoc of human life, but upon the true merits of the question, the comforts, conveniences and elevation of taste and moral purity thence arising.

But amidst all the responsibilities and pressing duties, Gentlemen, of the profession which we have chosen, the revolution of each year brings with it solemn reflections in the death of our fellows and associates. Since our last anniversary, eight of our number have gone to their reward. To one of them, at the advanced age of ninety-nine, the summons must have been the welcome release, while all the others, save one, have been overtaken in the midst of years of activity and usefulness. With the circle of surviving friends, be it more or less extended, we would drop the tear of sympathy.

Our vocation, by the constant exhibition of human pain and weakness, tends to awaken the best emotions of our nature, to foster the benevolent affections, and to promote all the charities of social life. It affords us continued opportunities of showing kindness to our afflicted fellow-creatures, of manifesting love towards our neighbor. The high and the low, the rich and the poor, are embraced in its ministrations. Hallowed, as it ought to be, by religious motives, it holds out its unspeakable comforts and peculiar benefits, without stint or scruple, to all. "Suffering and danger are the only necessary passports to its kind offices."

Nor should the salutary lessons of its teachings be

lost upon ourselves. We, of all men, should learn how vast a proportion of all bodily pains and infirmities, directly or indirectly, spring from evil courses, the sins of our fathers, or our own unbridled passions. We, of all men, should learn the uses of such sufferings, mercifully designed to recall us from our sense of self-security, and the treacherous slumber of temporal prosperity. Above all, our daily walk, in the constant view of the sickness and deaths of our fellow-men, should remind us that our time is short and uncertain. Happy will be for us, when we are summoned to our last account, the consciousness that our high profession has been practised under the solemn sanctions of Christianity, and its last exercise closed with a reasonable, religious and holy hope.

OBITUARY.

The following members of this Society have died since the last Annual Meeting.

1845.		*Entered the Society.*	*Age.*
June 24,	Henry Tuck, Barnstable, -	1837 - -	40
" 9,	Lemuel W. Washburn, White Oak Springs, Wisc., removed from New Bedford in 1842, - - -	1840, - -	33
Aug. 9,	Paul O. Kittredge, Chelmsford,	1824, - -	65
" 10,	Joseph O. Osgood, Kensington, N. H., removed from Amesbury in 1818, - - - - -	1813, - -	63
Oct.	Josiah Kittredge, Nashua, N. H., removed from Boston in 1837,	1833, - -	60
Oct. 19,	†Timothy L. Jennison, Cambridge,	1803, - -	84
1846.			
Jan. 15,	Jason C. Ayer, Boston, - -	1836, - -	34
Feb. 18,	George Esterbrook, Rutland,	1822, - -	51
May,	†John Williams, Concord, N.H.,	1827, - -	99

† Retired Members.

TABLE I.

Statement of Deaths in Lowell, Mass., for a series of sixteen years, viz. : from January 1, 1830 *to January* 1, 1846 ; *containing the amount for each year and number which has occurred from the most prevailing diseases.*

	DISEASES OF LUNGS.				FEVERS.							INFLAMMATIONS.								DROPSY.				BOWEL COMP.				
Year.	Whole No of Deaths.	Consumption.	Acute Affection.	Total.	Typhoid	Puerperal	Scarlet.	Bilious.	Infam'y.	Type not defined.	Total.	Lungs and Chest	Brain.	Heart.	Stomach & Bowels	Bladder & Kidneys.	Liver.	No organ or type named.	Total.	Brain.	Chest.	Organ not named.	Total.	Cholera Inf.	Dysent'y.	Diarrhœa	Colic.	Total.
1830	114	13	4	17	5		14			3	22	5	4	2	5		1		17	5	2		7	3	6	6	1	16
1831	124	16	6	22	5		13			2	20	9	5		5			4	21					8	3			11
1832	184	15	28	43	21	10	7	1	1	4	44	21	7	1	5			2	36	2	1	1	4			8		8
1833	223	18	22	40	34	7	17			2	60	15	5	8	13	1	3	1	46	4	2	1	7	24	8	6		38
1834	225	20	27	47	30	4	12		1	7	54	18	3	1	8	1	1		32	7	3	4	14	18	12	4		34
1835	236	23	22	45	22	2	16	1	1	4	46	14	4		7			7	32	4	5	1	10	12	8	3	1	24
1836	293	22	26	48	27	3	8	1		3	42	12	3	1	4			4	24	5	1	2	8	8	12	6		26
1837	329	45	11	56	26	4	38				68	19	1	5	10	1			36	4		3	7	16	3	4		23
1838	438	65	37	102	32	3	31				86	37	9	2	9	1	3	5	66	10	2	3	15	34	2	12	1	49
1839	362	62	29	91	44		12				56	29	11		12	2			54	8		5	13	15	3	11	1	30
1840	426	40	32	72	26	5	7		1	2	41	29	35	3	8				75		3	3	6	12	47	7		66
1841	456	54	35	89	16	1	43		1	7	68	35	11	1	7		1		55	15		3	18	34	18	8		60
1842	473	70	43	113	43	3	32			5	83	43	8	8	18	1		4	82	23	1	1	25	37	17	29		83
1843	398	73	34	107	38	2	6				50	34	8	5	17	1			65	20			20	35	11	5		51
1844	362	77	43	120	26	3	3				31	42	4	6	9				61	31	3	1	35	28	2	5		35
1845	363	71	33	104	40	6	12				57	33	6	2	7	1				21	2	7	30	28				28
Tot.	5006	684	432	1116	435	55	271	3	5	39	828	398	124	45	144	9	9	27	702	159	25	35	219	312	152	114	4	602

TABLE I.—CONTINUED.

Year.	Jaundice.	Anæmia.	Strang'd Hernia.	Ovarean Disease.	Caries of Spine.	Convul-sions.	Croup.	Hooping Cough.	Measles.	Small Pox	Asthma.	Apoplexy	Palsy.	Del. Tre-mens.	Suicide.	Cancer.	Part. and Childbed.	Epilepsy.	Rupture of Uterus.	Old age.	Diabetes.	Abscess.	Scrofula.	Erysipels	Casual-ties.	Still Born
1830						3	1	2	2			2		1									1	1	9	11
1831		1				2	3	1				1		2						1				1	8	7
1832		1				1	6		12			1												2	12	6
1833		1				2	5	3	2			3			3										10	12
1834		2	1	1	1	4	2	1	4		1	3		2	2	1			1	2			2	4	17	4
1835	1	2				6	5	4	3			4	1	1	1	1	1			3				1	9	7
1836	1		1	1		8	4	5	2			1		1				1		2				1	8	10
1837	2		1		1	5	4		7			5		1	2	1			1					1	7	28
1838		1				7	14	11	13	1		3		5	4	1	1	1		4		1		1	19	29
1839	1					10	5	3				2	1	2	4	1		3		2					27	22
1840	2	3	1			5	6	6		1	1	4		3	2			1		3					12	19
1841	1				1	10	4	3	4	2		2		2	1									1	12	22
1842	1					15	4	5	12			6		7	2	2			1	2		1		3	8	23
1843			1	1	1	9	3	11				3	2	4	1	2	2	1	1	4		2	5	2	14	34
1844		3				10	6	4	10			2		2	2	2	2		1	1			1	5	16	28
1845	1	1			1	11	2	13	4			8	1	2	4	1	1			2			3	3	19	31
Tot.	10	15	5	3	5	108	74	72	75	11	2	50	5	35	24	11	8	8	5	26		4	16	34	207	293

TABLE II.

This is designed to show the ages at which the Deaths in Lowell have occurred in each year of a series of sixteen years, viz.: from January 1, 1830, to January 1, 1846; commencing with the deaths which have taken place during the first year of life and ending with those between 90 and 100. The whole time is divided into thirteen periods—the mortality at each of which, in proportion to the whole amount, is as follows:

Under	1 year,	as	1 in	4.9
Between 1	and 2,	"	1 "	7.38
2 "	5,	"	1 "	10.01
5 "	10,	"	1 "	21.
10 "	20,	"	1 "	21.67
20 "	30,	"	1 "	9.91
30 "	40,	"	1 "	7.17
40 "	50,	"	1 "	13.3
50 "	60,	"	1 "	24.3
60 "	70,	"	1 "	45.8
70 "	80,	"	1 "	65.86
80 "	90,	"	1 "	139.1
90 "	100,	"	1 "	500.

Dividing the sum of the ages at which the deaths occurred, by the whole number of the deceased, we have 20.65 years as the mean duration.

TABLE III.

Showing the proportion of deaths in Lowell, by each of the most frequent diseases, to the whole number of deaths, in a series of sixteen years, forming a scale of mortality.

Order of Mortality.	DISEASES.	Whole number of Deaths.	Being to the whole amount of deaths as one in	Whole No of deaths from diseases of a similar class.	Prop'rtion of deaths from diseases of a similar class to the whole No. of deaths as one in
1st.	Consumption,	684	7.30		
	Fevers, viz:				
	Typhoid,	435	11.4		
	Scarlet,	271	18.1		
2nd.	Puerperal,	55	90.1	828.	6.04
	Inflammatory,	5	1001.		
	Bilious,	3	1668.		
	Type not defined,	39	128.3		
	Inflammations, viz.:				
	Lungs and Chest,	398	12.5		
	Stomach and Bowels,	144	34.7		
	Brain,	124	40.5		
3rd.	Heart,	45	111.2	702.	71.1
	Liver,	9	556.2		
	Bladder and Kidneys,	9	556.2		
	Neither organ nor type named,	27	226.		
	Bowel Complaints:				
	Cholera Infantum,	312	16.0		
4th.	Dysentery,	152	32.9	602.	83.1
	Diarrhœa,	114	43.9		
	Colic,	4	1251.5		
	Dropsies:				
	Brain,	159	31.4		
5th.	Chest,	25	200.2	219.	22.8
	Organ not named,	35	143.		
6th.	Casualties,	207	24.1		
7th.	Convulsions,	108	46.3		
8th.	Measles,	75	66.7		
9th.	Croup,	74	67.6		
10th.	Hooping Cough,	72	69.5		
11th.	Apoplexy,	50	100.1		
12th.	Delirium tremens,	35	143.		
13th.	Erysipelas,	34	147.		
14th.	Old age,	26	192.5		
15th.	Suicide,	24	208.8		
16th.	Scrofula,	16	312.2		
17th.	Anæmia,	15	333.		
18th.	Small Pox,	11	455.		

TABLE III.—CONTINUED.

Order of Mortality.	DISEASES.	Whole number of Deaths.	Being to the whole amount of deaths as one in	Whole No of deaths from diseases of a similar class.	Prop'rtion of deaths from diseases of a similar class to the whole No. of deaths as one in
19th.	Cancer,	11	455.		
20th.	Jaundice,	10	500.		
21st.	Parturition and Childbed,	8	625.		
22d.	Epilepsy,	8	625.		
23d.	Palsy,	5	1001.		
24th.	Rupture of Uterus,	5	1001.		
25th.	Strangulated Hernia,	5	1001.		
26th.	Ovareain Disease,	3	1668.		
[illegible]	Abscess,	3	1668.		
28th.	Caries of Spine,	3	1668.		
29th.	Asthma,	2	2503.		

TABLE IV.

The ages at which deaths in Lowell have occurred in each year of a series of sixteen years, viz. : from the 1st of January, 1830, to the 1st of January, 1846—still born excluded.

	Und 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Age unk.	Wh. No. of deaths.	Aver. of life for each year.
1830	29	18	9	3	10	16	13	6	2	2	1	1		6	114	18.21
1831	26	18	10	4	7	21	17	12	2	2				5	124	19.89
1832	41	28	23	27	29	17	3	4	4	2	1			5	184	13.35
1833	21	30	24	16	16	36	43	13	2	3	2				223	17.80
1834	21	31	36	11	8	26	23	23	8	5	2	2			225	20.23
1835	31	31	25	13	15	20	35	27	15	8	5	1			236	20.91
1836	72	57	32	9	12	12	50	30	10	9	3	4	1		329	16.61
1837	70	59	30	7	18	11	47	35	7	4	2	1	1		331	17.45
1838	78	77	47	33	14	32	39	33	26	16	7	3	2		436	20.31
1839	73	32	30	9	3	50	65	33	18	15	6	3			362	25.04
1840	64	37	18	14	24	59	37	19	12	12	7	1			426	17.03
1841	99	67	69	22	5	29	49	27	25	14	8	5	3		456	19.62
1842	112	73	42	23	13	41	69	39	23	14	12	7	2	1	473	23.38
1843	92	29	26	19	15	27	59	41	25	10	5	5	1		364	25.10
1844	98	49	37	18	15	55	40	16	18	8	7	1			362	19.89
1845	84	42	42	10	23	53	53	19	10	7	8	2			363	20.68
Tot.	1011	678	500	238	231	505	642	377	206	131	76	36	10	12	5006	20.65

CENSUSES IN LOWELL.

Abstract from all the Censuses which have been taken in the town and city of Lowell, Mass.

MALES.	1828.	FEMALES.
Under 7 years,	196	Under 7 years, 217
From 7 to 14,	138	From 7 to 14, 162
" 14 to 30,	723	" 14 to 30, 1496
" 30 to 50,	258	" 30 to 50, 277
Over 50,	27	Over 50, 38
Total,	1342	Total, 2190

Grand total, 3532.

MALES.	1830.	FEMALES.
Under 5 years,	324	Under 5 years, 302
From 5 to 10,	171	From 5 to 10, 202
" 10 to 15,	189	" 10 to 15, 249
" 15 to 20,	216	" 15 to 20, 933
" 20 to 30,	958	" 20 to 30, 1792
" 30 to 40,	358	" 30 to 40, 353
" 40 to 50,	111	" 40 to 50, 164
" 50 to 60,	37	" 50 to 60, 57
" 60 to 70,	14	" 60 to 70, 20
" 70 to 80,	6	" 70 to 80, 8
" 80 to 90,	1	" 80 to 90, 1
Total,	2385	Total, 4081
Colored Males,	7	Colored Females, 4
Total,	2392	Total, 4085

Grand total, 6477.

MALES.	1832.	FEMALES.
Under 10 years,	703	Under 10 years, 771
From 10 to 20,	563	From 10 to 20, 1464
" 20 to 30,	1996	" 20 to 30, 2713
" 30 to 40,	720	" 30 to 40, 633
" 40 to 50,	208	" 40 to 50, 238
" 50 to 60,	62	" 50 to 60, 83
Over 60,	27	Over 60, 52
Total,	4279	Total, 5955
Colored Males,	12	Colored Females, 8
Total,	4291	Total, 5963

Grand total, 10,254.

MALES.	1833.	FEMALES.
Under 10 years,	905	Under 10 years, 968
From 10 to 20,	813	From 10 to 20, 2998
" 20 to 30,	1638	" 20 to 30, 2914
" 30 to 40,	792	" 30 to 40, 675
" 40 to 50,	202	" 40 to 50, 132
" 50 to 60,	64	" 50 to 60, 159
Over 60,	23	Over 60, 80
Total,	4437	Total, 7926

Grand total, 12,363. Total colored population included, 33.

MALES.	June, 1836.	FEMALES.
Under 10 years,	1489	Under 10 years, 1520
From 10 to 20,	1124	From 10 to 20, 2990
" 20 to 30,	2200	" 20 to 30, 4689
" 30 to 40,	966	" 30 to 40, 1296
" 40 to 50,	372	" 40 to 50, 475
" 50 to 60,	144	" 50 to 60, 122
Over 60,	60	Over 60, 96
Total,	6345	Total, 11,288
Colored, 44.		Grand total, 17,633.

MALES.	May, 1840.	FEMALES.
Under 10 years,	1865	Under 10 years, 1865
From 10 to 20,	1369	From 10 to 20, 3464
" 20 to 30,	2143	" 20 to 30. 5568
" 30 to 40,	1128	" 30 to 40, 1605
" 40 to 50,	520	" 40 to 50, 650
" 50 to 60,	224	" 50 to 60, 318
Over 60,	92	Over 60, 170
Total,	7341	Total, 13,640
Colored, 58.		Grand total, 20,981.

MALES.	May, 1844.	FEMALES.
Under 10 years,	2441	Under 10 years, 2391
From 10 to 20,	1621	From 10 to 20, 3642
" 20 to 30,	2565	" 20 to 30, 5945
" 30 to 40,	1559	" 30 to 40, 2098
" 40 to 50,	773	" 40 to 50, 946
" 50 to 60,	320	" 50 to 60, 431
Over 60,	153	Over 60, 244
Total,	9432	Total, 15,697
Colored, 44.		Grand total, 25,163.

The total population in May, 1846, is 28,841. The number between four and sixteen years, 5,280.

ERRATUM.—In the obituary, on page twenty-seven, an error has occurred in recording the death of Josiah Kittredge, of Nashua, N. H., who is now living.