

R E P O R T

ON THE

FACTORY SYSTEM OF THE UNITED STATES.

BY

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LETTER OF TRANSMITTAL.

BOSTON, MASS., *November 25, 1882.*

Hon. C. W. SEATON,
Superintendent of Census.

SIR: I have the honor to transmit herewith a report upon the factory system of the United States. In accordance with the original plan approved by your predecessor, I have considered briefly the history of the system, not only as to its institution and growth in this country, but as to its origin and growth in Great Britain.

I have endeavored, as far as possible, to present illustrations of the results, benefits, advantages, and disadvantages of the system, drawn from personal observations in the principal factory towns of Europe during the summer of 1881.

While many statements made in this report cannot be given in tabular form, they are, as a rule, the results of careful investigation, and should be accepted in their text form as statistical matter.

I wish to thank you, as well as your predecessor, for the very generous support you have given me in conducting the investigation intrusted to me.

I desire also to express my obligations to Alexander Redgrave, esq., C. B., chief factory inspector of Great Britain, and Messrs. Coles, of Manchester, and Henderson, of Glasgow, superintendents of inspectors of factories, for their very valuable personal services in securing for me every facility for the examination of British mills.

Respectfully, yours,

CARROLL D. WRIGHT,
Special Agent.

THE FACTORY SYSTEM OF THE UNITED STATES.

During the years immediately preceding the independence of the colonies, and while the important events which led to their consolidation into one nation were transpiring, the factory system was being developed in England as a new industrial system which was to influence the growth and development and civilization of the new as well as of the old nation. Nor was the independence of the colonies without its direct influence in enabling the manufacturers of England successfully to establish the system; indeed, the loss of the colonies was a potent factor in the firm establishment of the factory system in England. So the early and English history of the system is as legitimate in this report as the account of its planting and growth in the United States.

THE ORIGIN OF THE FACTORY SYSTEM.

The influences which led to the institution of the factory system were almost as diverse in their nature as the ramifications of the system itself. These influences are clearly defined, although some of them have never been recognized in the connection in which I place them; their power, however, not only abstractly but concretely, is fully recognizable in the origin of the system, which is of comparatively recent date, and is entirely the result of the influences existing or coming into existence during the last half of the eighteenth century. These influences were both direct and subtle in their character, but all important in their place and combination. As a great fact the system originated in no preconceived plan; on the contrary, it was formed and shaped by the inevitable force of circumstances. Those who were called the fathers of the system were men of great intelligence and enterprise. (a)

In its origin the factory system was applied to the textile trades of England, and indeed it did not till recent years embrace other industries; so that the history of the system becomes the history of the textile industries.

A factory is an establishment where several workmen are collected for the purpose of obtaining greater and cheaper conveniences for labor than they could procure individually at their homes; for producing results by their combined efforts which they could not accomplish separately; and for preventing the loss occasioned by carrying articles from place to place during the several processes necessary to complete their manufacture. The principle of a factory is that each laborer, working separately, is controlled by some associating principle which directs his producing powers to effect a common result, which it is the object of all collectively to attain. Factories are therefore the legitimate outgrowth of the universal tendency to association which is inherent in our nature, and by the development of which all industrial success has been gained; and from this principle springs the necessity for subdivision of labor, without which the factory system would have met with but feeble growth. The more the principle of association appears prominent in any species of production the more rigidly does it become entitled to the name of factory and the more generally does it receive the name in common parlance.

It is entirely unnecessary to dwell upon the advantages that have resulted from the division of labor, but in considering the definition of the factory system it must be borne in mind that the minute subdivision of labor requires an equally extensive power of combination to unite the several parts so that their aggregate shall produce one harmonious result. The type-founder is never allowed to forget that he is working for the compositor; the compositor has constant reference to the pressman; the pressman to the folder; and the folder to the binder. The man who cuts the wire for pins fits them for the operative who points them, and he turns them out of hand ready for the person who heads them.

The factory is, therefore, in broad terms, an association of separate occupations conducted in one establishment, in order to facilitate the combination of the processes into which most branches of manufactures are divided. (b)

The first force which tended to create this system was that of invention, and the stimulus to this grew out of the difficulty which the weavers experienced in obtaining a sufficient supply of yarn to keep their looms in operation.

a *Factories and the Factory System.* W. Cooke Taylor, LL. D. London, 1844.

b *Ibid.*

Prior to 1767 all yarn used in the manufacture of textiles of all kinds was spun in single threads, by the fingers of the spinsters, upon the domestic spinning-wheel. For a generation prior to this period various attempts had been made to increase the product. The machines in use for weaving as well as for spinning were nearly as simple as those in use in India.

The processes of spinning and of weaving were generally performed in the same cottage, the weaver continually pressing upon the spinner for a supply of weft or warp, but the weaver's own family could not respond with a sufficient quantity, and he had much difficulty in collecting it from neighboring spinsters. In consequence much time was wasted, and the weaver often subjected to high demands for the yarn, for which, as the demand exceeded the supply, the spinster could put her own price. Indeed, as Dr. Aiken, in his *History of Manchester*, has related, "the weavers, in a scarcity of spinning, have sometimes been paid less for the weft than they paid the spinner, but durst not complain, much less abate the spinner, lest their looms should be unemployed."

The cotton manufacture of England at this time, though rapidly increasing, could never have received such impetus as to have become of great national importance without the discovery of some method for producing a greater quantity and a better quality of yarn with the same expenditure of muscular labor; (a) for, while a high and sustained price for yarn would indeed have attracted new hands to the employment, such high price would of itself have tended to keep down the rising industry, by making the goods too costly for general consumption.

Invention, paradoxical as it may seem, had really aggravated the difficulty by a device for facilitating the process of weaving. I have reference to the fly-shuttle, invented, in 1738, by John Kay. By this device one man alone was enabled to weave the widest cloth, while prior to Kay's invention two persons were required. One can readily see how this increased the difficulty of obtaining a supply of yarn; for the one-thread wheel, though turning from morning till night in thousands of cottages, could not keep pace either with the weaver's shuttle or with the demand of the merchant. (b) In 1738, however, John Wyatt invented an elementary mechanical contrivance whereby a single pair of hands could spin twenty, a hundred, or, on a perfected machine, even one thousand threads. I need not occupy space with the details relating to the various inventions which culminated in a grand constellation of mechanical devices which have influenced the world in a deeper sense than any other, save printing.

The invention for spinning, already referred to, and which really embodied the method of spinning by rollers, was made by John Wyatt, of Birmingham, for which royal letters-patent were granted in 1738, in the name of Lewis Paul. The specification of this patent describes the very principle of spinning by rollers which distinguished the spinning-machine brought into use thirty years later by Sir Richard Arkwright, and which was universally adopted, and of which Sir Richard is generally supposed, even at the present day, to have been the inventor. It has been quite clearly proven, however, that Wyatt was the inventor. It is true he did not succeed in making his fortune, or even in introducing his machine into use; he lacked the pecuniary means, and could not hold out long enough to realize the success his genius merited; but, more than all, he lacked the time and attendant circumstances, with all their subtle influences, which accompanied the train of inventions a generation or so later. Wyatt's invention slumbered for thirty years, till it was either rediscovered, or, what is just as probable, till its principles came accidentally to the knowledge of Arkwright, who, previous to 1769, had been a barber at Preston. He was possessed of a keen sagacity, which enabled him to appreciate the value of his invention, and his perseverance, talent, and good fortune served him by its means to enrich himself and his country.

In every mode of spinning, whether by the rude teak-wood wheel used in India or by the present ring spinning-frame, "the ends to be accomplished are, to draw out the loose fibers of the cotton in a regular and continuous line, and, after reducing the fleecy roll to the requisite tenuity, to twist it into a thread." The roll or sliver, previously prepared by the process of carding, must be drawn out to a considerably greater fineness before it is of the proper thickness to be twisted; this is accomplished by two or more rollers, placed horizontally, revolving in contact; the sliver of cotton, being put between the first pair of rollers, is by their revolution drawn through and compressed; while still passing between these rollers the cotton is caught by another pair, immediately in front, which revolve with much greater velocity than the first, and which therefore draw out the sliver to a much greater length and degree of fineness; after passing through successive pairs of rollers the reduced sliver is attached to a spindle and fly, the rapid revolutions of which twist it into a thread and at the same time wind it upon a bobbin.

Such is the admirable contrivance by which a machine is made to do what was formerly effected by the fingers of the spinner. And this is the invention ascribed to Sir Richard Arkwright, and on which his renown for mechanical genius rests, but which was clearly described in principle, as I have related, by John Wyatt, thirty years before Arkwright knew anything of cotton-spinning. Under Wyatt's invention, a mill for spinning was built at Birmingham in 1741 or 1742, which was turned by two asses walking round an axis, and ten girls were employed in attending the work. This establishment was unsuccessful, and in 1743 was broken up. Some years later a work upon a larger scale, but under Wyatt's invention, was built upon a stream of water at Northampton; but this did not prosper, and in 1764 it passed into use in other directions.

Arkwright labored under great difficulties in perfecting his invention, and it was only through the assistance rendered him by his friend, Mr. John Smally, of Preston, a liquor merchant and painter, that he was able to carry

on his experiments. In consequence of the machinery riots at Blackburn, on account of Hargreaves' invention of the spinning-jenny, Arkwright, in 1767, went to Nottingham, whither Hargreaves had already repaired. Arkwright finally formed a copartnership with Jedediah Strutt, of Derby. The significance of this alliance, so far as America is concerned, was great indeed, as I shall show; its direct results were to terminate the pecuniary difficulties of Arkwright, and he soon made his machine practicable, and in 1769 introduced it to the public, taking letters-patent therefor.

During Arkwright's experiments James Hargreaves, a weaver of Stand-Hill, near Blackburn, invented an admirable machine called a spinning-jenny, by which one spinner could spin many threads at a time. The evidence goes to show that Hargreaves conceived his invention and began to embody it as early as 1764. Though illiterate and humble, he must be regarded as one of the greatest inventors in the cotton manufacture, and entitled, along with Arkwright, to the renown associated with the inauguration of the era of machinery. In fact, by some Mr. Hargreaves is considered to have preceded Arkwright, for the date of his invention was some years before Arkwright obtained his patent for his water-power frame for spinning. Hargreaves' machine differed so completely from Wyatt's description and from Arkwright's embodiment that there can be no doubt of its being a perfectly original invention.

Hargreaves' jenny, like Arkwright's machine, was intended to spin the roving into yarn; but it was not, like Arkwright's, capable of being applied to the preparation of the roving itself. Hargreaves is said to have conceived his idea one day when several children at play in his cottage overturned a single-thread machine while in operation; he observed that while in a horizontal position the wheel continued to revolve, and also the spindle. The idea occurred to him then that if a number of spindles were placed upright, side by side, several threads could be spun at once, all the spindles being actuated by the same wheel. He therefore constructed a frame embodying this principle, and with it, though it was rudely made, he and his family spun weft for his own weaving. It soon, however, became the subject of rumor that Hargreaves could by some unknown power spin more threads than any one else, and so his invention, instead of gaining him admiration and gratitude, excited the suspicions of the spinners, who raised an outcry that it would throw multitudes out of employment, and a mob broke into his house and destroyed not only his jenny but most of his furniture. Hargreaves was so thoroughly persecuted that he left his native county and went to Nottingham. At this place he was furnished with means, and was enabled to perfect his invention, taking out letters-patent in 1770, one year after Arkwright's patent was granted.

The machine of Arkwright was most particularly applicable to the production of warp, while the jenny-invented by Hargreaves was chiefly employed in spinning the woof or filling. For some years all the warp and woof used in the kingdom was spun on machines made from these models.

The mule spinning-machine, which Samuel Crompton invented in 1776, was a combination of the principles of the jenny and the water-frame, and entirely superseded the use of the jenny.

The machines of Hargreaves and Arkwright broke down the barrier which had so long obstructed the advance of the cotton manufacture, and the breaking down of this barrier inaugurated the factory system, which really dates from this period. Many minor improvements were made, not only in the methods of spinning, but in the processes necessary for the proper preparation of cotton for spinning; but, although I have dwelt quite at length upon the principal inventions, I need not discuss either those which followed as of course or the struggles through which all, inventors and capitalists, had to pass in their efforts to supply new and pressing demands. It is true that when this admirable series of machines was made known, and by their means yarns were produced far superior in quality to any before spun in England, as well as lower in price, a mighty impulse was given to the cotton manufacture. It was only an impulse, however, and the inventions would not have brought their fullest fruition without powerful influences which have not usually been considered in this connection, but which occupy a legitimate place in the evolution of industrial forces as the inventions themselves, which are simply the initiatory outgrowth of such evolution.

While the processes of production had become in England more efficient through the invention of spinning-machines, whereby the weavers were kept busy and allowed no rest, it was only where a stream gave force to turn a mill-wheel that the spinner or the wool worker could establish his factory, while even if this difficulty had not existed the inefficiency of distribution would have rendered useless, to a large degree, a greatly augmented production.

Mr. Green, in his *History of the English People*, speaking of the decade beginning with 1760, remarks:

The older main roads, which had lasted fairly through the middle ages, had broken down in later times before the growth of traffic and the increase of wagons and carriages. The new lines of trade lay often along mere country lanes which had never been more than horse-tracks, and to drive heavy wains through lanes like these was all but impossible. Much of the woolen trade, therefore, had to be carried on by means of long trains of pack-horses. * * * In the case of yet heavier goods, such as coal, distribution was almost impracticable, save along the greater rivers or in districts accessible from the sea. But at the time when Hargreaves and Arkwright were struggling to make their inventions available the enterprise of a duke and the ingenuity of a millwright not only solved the problem of distribution which the trade of the country was forcing upon England, and which improved cotton machinery was sure to complicate, but they paved the way by constructing canals for the greatest application of the steam-engine, which could not have played its part in establishing the factory system without means of distributing coal, and the system itself, without the steam-engine, would have been a feeble institution.

Francis, Duke of Bridgewater, was a shy, dreamy man, whom disappointment in love drove into a life of seclusion on his estates in the north. He was the possessor of collieries at Worsley whose value depended on their finding a market at the neighboring town of Manchester; and it was to bring his coal to this market that he resolved to drive a canal from the mine to the river Irwell. With singular good luck he found the means of carrying out his design in a self-taught mechanic, James Brindley. But in Brindley's mind the scheme widened far beyond the plans of the duke. Canals, as he conceived them, were no longer to serve as mere adjuncts to rivers; (a) for, as it is related of him, when under examination before a committee of the house of commons, and being jocularly asked for what he supposed rivers to have been created, he replied: "Undoubtedly to feed navigable canals."

What Brindley had discovered was in fact the water-road, a means of carrying heavy goods with the least resistance, and therefore the least cost, from the point of production to the point of sale. England at once seized on this discovery to free itself from the bondage in which it had been held.

From the year 1767, when Brindley completed his enterprise, a net-work of such water-roads was flung over the country; and before the movement had spent its force Great Britain alone was traversed in every direction by three thousand miles of navigable canals. (b)

The free and cheap distribution of coal and iron at once became an important factor, in fact the chief element in the development of the factory system, and now, for the first time in the history of civilization, a new motive power became indispensable to growth, for "what was needed to turn England into a manufacturing country was some means of transforming the force" of the sun "stored up in coal into a labor force; and it was this transformation which was brought about through the agency of steam".

Crude engines, in which steam was used as a means of draining mines, had long been in use; but the power relied on was mainly that of the weight of the air pressing on a piston, beneath which a vacuum had been created by the condensation of steam. There were many obstacles to the economical use of the engine, but these were overcome by the ingenuity of James Watt, a working engineer at Glasgow.

It would seem that the spirit of invention, of new thought in many directions, was in the very air after 1760 set in. Watt, in 1765, conceived the idea that, as steam was an elastic body, it would rush into a vacuum, and if a communication were made between the cylinder and an exhausted vessel it would rush into it, and might then be condensed without cooling the cylinder.

On the breaking out of the American war the steam-engine passed beyond its use in draining mines, and was rapidly adopted for all kinds of manufacturing industry. The location of mills upon streams of water was no longer a physical necessity; they could be built and run near large towns, whose crowded population could supply their operatives. The influence of this change of location has been the cause of most of the so-called factory evils. But one more generic invention, so far as textile machinery was concerned, was needed to establish the factory system; this was the power-loom. This, however, did not come till after the close of the American war. In 1785 Dr. Edward Cartwright invented the first power-loom. This was improved upon by various inventors till 1806, when power-looms began to be used in factories. Prior to this all the yarn spun by power-machines had been woven into cloth by hand-loom weavers, and of course the introduction of the power-loom caused a repetition of the scenes of riot which followed the introduction of spinning-machines. The power-loom closed the catalogue of machines essential to the inauguration of the era of mechanical supremacy. What inventions will come during the continuance of that era cannot be predicted, for we are still at the beginning of the age of invention. The wonderful results of its first twenty years of life are sufficient to indicate something of the future.

When the period of which I have spoken, the score of years from 1765 to 1785, had closed, England possessed powers which needed only the support of the silent forces of the nation to carry her to the very highest point in industrial supremacy. It should be remembered that the inventions whose origin I have outlined were not confined in their application to one manufacture, but that they gave nearly the same facilities to the woollen, the worsted, the linen, the stocking, and the lace manufactures as to the cotton, and that they spread in time from England to the whole of Europe, to America, and to parts of Africa and Asia. These inventions, however, were the material forces, powerful indeed, as agents, in building the factory system. What were the inner, subtle, but also powerful agencies at work to render the material forces successful?

While the inventions of which I have spoken were being perfected, Adam Smith was working out his memorable *Inquiry into the Causes of the Wealth of Nations*. When he was lecturing with applause in Glasgow from the chair of moral philosophy, James Watt was selling mathematical instruments in an obscure shop within the precincts of the same university, and was working out his inquiry into the practicable methods of applying steam.

It may seem as if no two departments of human thought were more widely separated than those in which these two men were engaged. One was a region purely mental, the other purely physical. The one had reference to the laws of mind, the other to the laws of matter; and yet the work of Adam Smith and that of James Watt were inseparably connected, not only as involving analogous methods of investigation, but as showing in their result the blending and co-operation of mental and material laws. (c) Dr. Smith treated of the philosophy of trade, and by his philosophy prepared the English mind to receive for England's benefit the commercial results, not only of her inventions, but of her losses from the war with her colonies and the diversion of her slave-trade capital. Adam Smith published his work in 1776, and during the seven years of strife with this country his doctrines had taken silent and almost unobserved possession of the minds of the thinking men of England, so that at the close of the

a Green's *History of the English People*, vol. iv, p. 279.

b *Ibid.*

c *Reign of Law*. Duke of Argyle, page 339.

war it was not difficult to turn the thoughts of manufacturers and merchants to the industrial possibilities of Great Britain. With the close of the war the industry of England was exerted to its fullest power in the task of supplying the world with cotton goods. Her pauper children were made to contribute to her industrial greatness; she flooded America with cheap goods, demoralized our merchants and our people, and actually drove them into a fever for foreign goods. The capital of England, released by the war, was free to engage in industrial and commercial enterprises, and well did the business brains of the country apply the doctrines of the Glasgow economist. But a stronger power than war or the pauperism of agricultural districts, from which the factories were largely supplied with cheap labor, was added to the combination of forces essential to the establishment of a new industrial order. This new influence took the shape of a great moral and religious power, which seemed to roll without obstacle over the land, changing the politics of the country and changing the directions of the employment of active capital.

The religious revival work of the Wesleys brought a nobler result than mere religious enthusiasm. A philanthropic impulse grew out of the Wesleyan impulse. The writings and the personal example of Hannah More drew the sympathy of England to the poverty and crime of agricultural laborers. A passionate impulse of human sympathy with the wronged and the oppressed grew with amazing strength, and under its influence the crusade against the iniquity of the slave-trade was sustained. So each and all who sought the elevation of the oppressed aimed a shot at the slave-trade, either directly or indirectly, for all helped to create the public sentiment which insisted upon its abolition.

Half the wealth of Liverpool was drawn from the traffic of its merchants in human flesh. * * * As the spirit of humanity told upon the people, apathy disappeared. Philanthropy allied itself with the Wesleyan movement in an attack on the slave-trade. (a)

The first assaults were repulsed by the opposition of the merchants, who argued that the abolition of the trade meant their ruin. But the movement gathered strength from year to year, and the traffic was suppressed; the vast amount of capital employed in it was forced into new channels, and naturally into commercial and industrial enterprises.

The philosophical bearing of these events in their relation to the establishment of the factory system cannot be denied. To be sure, invention alone would in time have succeeded in instituting the new system, but not for generations upon so enduring a basis. It required all the forces I have considered—physical, mental, commercial, and philanthropical—working in separate yet convergent lines, to lay the foundation of an entirely new system of manufactures; and these forces, coming into existence during the twenty years following the success of the efforts of Hargreaves and Arkwright, and extending in their wonderful influences over the earth wherever civilization has a foothold, constitute that period one of the most remarkable since the Christian era. In fact, no generation since has so completely stamped itself upon the affairs of the world.

England, at the close of the Revolution, held, as she supposed, the key to the industrial world of cotton manufacture; certainly she held the machinery, without which such manufacture could not be carried on in competition with her own mills. Parliament passed stringent laws prohibiting the exportation of machines, plans, and models of machines. Her policy began to shape itself with regard to trade outside the island, and that policy was to buy as little as possible and sell to everybody. England possessed all the raw material for a large list of products; cotton alone was wanting, but this she expected to receive from India. The American colonies she had destined for her food-raising department, and for an outlet, under her own control, for her surplus manufactures. This had been her expressed policy before the war, and this policy had stimulated her to the long-continued strife. By 14 Geo. III, c. 71, it was enacted that if any person exports any tools or utensils as are commonly used in the cotton or linen manufactures, or other goods wherein cotton or linen is used, or any parts of such tools or utensils, he shall not only forfeit the same, but also £200. Even the possession of such implements, with a view to exportation, made them liable to seizure and the possessor to arrest. (b) This law was passed in 1774, and related to the inventions of Arkwright and Hargreaves. This legislation on the part of England was contemporaneous with the non-importation resolutions of the colonies, nearly all of which, prior to the Revolution, took active steps to encourage manufactures.

ORIGIN OF THE FACTORY SYSTEM IN AMERICA.

At the time of the agitation of their independence the desire to plant the mechanic arts in this country became almost a passion—certainly a feature of the patriotism of the day. Hon. Edward Everett, in an address on American manufactures, in New York, in 1831, stated:

The first measures of the patriots aimed to establish their independence on the basis of the productive industry and laborious arts of the country. They began with a non-importation agreement nearly two years before the Declaration of Independence. That agreement, * * * with the exception of the Address to the People of America and Great Britain, was the only positive act of the first Congress.

In this country, as well as in England, the germ of the textile factory existed in the fulling- and carding-mills; the former, dating earlier, being the mills for finishing the coarse cloths woven by hand in the homes of our ancestors; in the latter, the carding-mill, the wool was prepared for the hand-wheel. At the close of the Revolution the domestic system of manufactures prevailed throughout the states.

The first attempts to secure the spinning machinery which had come into use in England were made in Philadelphia early in the year 1775, when probably the first spinning-jenny ever seen in America was exhibited in that city. During the war the manufacturers of Philadelphia extended their enterprises, and even built and run mills which writers often call factories, but they can hardly be classed under that term. Similar efforts, all preliminary to the establishment of the factory system, were made in Worcester, Massachusetts, in 1780. In 1781 the British parliament, determined that the textile machinery by which the manufactures of England were being rapidly extended, and which the continental producers were anxious to secure, should not be used by the people of America, re-enacted and enlarged the scope of the statute of 1774 against its exportation. By 21 Geo. III, c. 37, it was provided that any person who packed or put on board, or caused to be brought to any place in order to be put on any vessel for exportation, any machine, engine, tool, press, paper, utensil, or implement, or any part thereof, which now is or hereafter may be used in the woolen, cotton, linen, or silk manufacture of the kingdom, or goods wherein wool, cotton, linen, or silk are used, or any model or plan of such machinery, tool, engine, press, utensil, or implement, should forfeit every such machine, etc., and all goods packed therewith, and £200, and suffer imprisonment for one year. In 1782 a law was enacted which prohibited, under penalty of £500, the exportation or the attempt to export "blocks, plates, engines, tools, or utensils used in or which are proper for the preparing or finishing of the calico, cotton, muslin, or linen printing manufactures, or any part thereof". The same act prohibited the transportation of tools employed in the iron and steel manufactures. Acts were also passed interdicting the emigration of artificers. All these laws were enforced with great vigilance, and were of course serious obstacles to the institution of the new system of manufacture in America.

The manufacturers of this country were thus compelled either to smuggle or to invent their machinery. Both methods were practiced until most of the secrets of the manufacture of common goods were made available here.

The planting of the mechanic arts in this country became a necessity during the war of the Revolution, and afterward the spirit of American enterprise demanded that New England and the middle states should utilize the water-powers which they possessed, and by such utilization supply the people with home manufactures.

When the people of the states saw that the treaty of Paris had not brought industrial independence, a new form of expression of patriotism took the place of military service; and associations were formed the object of which was to discourage the use of British goods, and as the Articles of Confederation did not provide for the regulation of commerce the legislatures of the states were besought to protect home manufactures. The Constitution of 1789 remedied the defects of the articles in this respect, and gave Congress the power to legislate on commercial affairs. The Constitution was really the outcome of the industrial necessities of the people, because it was on account of the difficulties and the irritations growing out of the various commercial regulations of the individual states that a convention of commissioners from the various states was held in Annapolis in September, 1786, which convention recommended the one that framed the new or present Constitution of the United States.

Of course those industries whose products were called for by the necessities of the war were greatly stimulated, but with peace came reaction and the flooding of our markets with foreign goods.

The second act under the Constitution was passed July 4, 1789, with this preamble:

Whereas it is necessary for the support of the government, for the discharge of the debts of the United States, and for the encouragement and the protection of manufactures, that duties be laid on goods, wares, and merchandise imported:

Be it enacted, etc.

Patriotism and statute law thus paved the way for the importation of the factory system of industry, and so its institution here, as well as in England, was the result of both moral and economical forces.

As early as 1786, before the adoption of the Constitution of the United States, the legislature of Massachusetts offered encouragement for the introduction of machinery for carding and spinning by granting to Robert and Alexander Barr the sum of £200 to enable them to complete a roping-machine, and also to "construct such other machines as are necessary for the purpose of carding, roping, and spinning of sheep's wool, as well as of cotton wool". The next year these parties were granted six tickets in a land-lottery. Others engaged in the invention and construction of cotton-spinning machines at Bridgewater, being associated with the Barrs, who came to Massachusetts from Scotland at the invitation of Hon. Hugh Orr, of Bridgewater, and for the purpose of constructing spinning-machines. There is no doubt that the machinery built by them was the first in this country which included the Arkwright devices; the first factory, however, in America expressly for the manufacture of cotton goods was erected at Beverly, Massachusetts, in 1787. This enterprise was aided by the legislature. The factory at Beverly was built of brick, was driven by horse-power, and was continued in operation for several years, but its career as a cotton-mill was brief, and no great success attended it. About the same time other attempts had been made in Rhode Island, New York, and Pennsylvania, but principally in Rhode Island and that part of Massachusetts contiguous to Rhode Island.

The honor of the introduction of power-spinning machines in this country, and of their early use here, is shared by these last-named states; for while Massachusetts claims to have made the first experiments in embodying the principles of Arkwright's inventions and the first cotton factory in America, Rhode Island claims the first factory in which perfected machinery, made after the English models, was practically employed. This was the factory.

built by Samuel Slater, in 1790, in Pawtucket, Rhode Island, which still stands in the rear of Mill street in that city, and the hum of cotton machinery can still be heard within its walls. Previous to 1790 the common jenny and stock-card had been in operation upon a small scale in various parts of the United States, but principally in Pennsylvania, New York, Rhode Island, and Massachusetts; but every endeavor to introduce the system of spinning known as water-frame spinning, or Arkwright's method, had failed. The introduction of this system was the work of Slater, whom President Jackson designated "The father of American manufactures". Samuel Slater was born in Belper, Derbyshire, England, June 9, 1768, and at fourteen years of age was bound as an apprentice to Jedediah Strutt, esq., a manufacturer of cotton machinery at Milford, near Belper. Strutt was for several years a partner of Sir Richard Arkwright in the cotton-spinning business; so young Slater had every opportunity to master the details of the construction of the cotton machinery then in use in England, for during the last four or five years of his apprenticeship he served as general overseer, not only in making machinery, but in the manufacturing department of Strutt's factory. Near the close of his term his attention was drawn to the wants of the states by accidentally seeing a notice in an American paper of the efforts various states were making by way of offering bounties to parties for the production of cotton machinery. Slater knew well that under the laws of England he could carry neither machines nor models or plans of machines out of the country; so, after completing his full time with Mr. Strutt, he continued some time longer with him, superintending some new works Mr. Strutt was erecting. This he did that he might so perfect his knowledge of the business in every department that he could construct machinery from memory, without taking plans, models, or specifications. With this knowledge Slater embarked at London September 13, 1789, for New York, where he landed November 17, and at once sought parties interested in cotton manufactures. Finding the works of the New York Manufacturing Company, to whom he was introduced, unsatisfactory, he corresponded with Messrs. Brown and Almy, of Providence, who owned some crude spinning-machines, some of which came from the factory at Beverly, Massachusetts. In January, 1790, Slater made arrangements with Brown and Almy to construct machinery on the English plan. This he did at Pawtucket, making the machinery principally with his own hands, and on the 20th of December, 1790, he started three cards, drawing and roving, together with seventy-two spindles, working entirely on the Arkwright plan, and being the first of the kind ever operated in America.

It is generally supposed that the course of the progress of the manufacture of cotton goods in this country is quite clearly marked, yet a careful study of the subject seems rather to dissipate the line of advancement instead of bringing it into clearer view. Dr. Leander Bishop, in his exceedingly valuable work, *A History of American Manufactures*, in speaking of the clothing manufacture, states that a correspondent of the *American Museum*, writing from Charleston, South Carolina, in July, 1790, refers to a gentleman who—

had completed and had in operation on the High Hills of the Santee, near Statesburg, ginning, carding, and other machines driven by water, and also spinning machines, with eighty-four spindles each, with every necessary article for manufacturing cotton. If this information be correct, the attempt to manufacture by machinery the cotton which they were then beginning to cultivate extensively was nearly as early as those of the northern states.

Certainly this bit of history of attempts in southern states, of the efforts of Samuel Wetherell, of Philadelphia, of the Beverly Company, in Massachusetts, of Moses Brown, at Providence, Rhode Island, all before Slater's coming, to introduce spinning by power, illustrates the difficulty of locating the origin of an institution when a country of such proportions as our own constitutes the field. It is safe, historically, to start with Slater as the first to erect cotton machinery on the English plan, and to give the factory system 1790 as its birthday.

The progress of the system has been uninterrupted from 1790, save by temporary causes and for brief periods; but these interruptions only gave an increased impetus to its growth.

In 1792, by the invention of the cotton-gin, an American, Eli Whitney, of Massachusetts, residing temporarily in Georgia, contributed as much toward the growth of the factory system as England had contributed by the splendid series of inventions which made the cotton-manufacturing machinery of the system.

The alarm of the people at the increase in the demand for foreign goods took shape again in 1794 and the decade following, and, by patriotic appeals to all classes, societies and clubs were formed pledged to wear only home-made goods. Congress was called upon to restrict importations. The result of all these efforts and influences stimulated the manufacture of cotton and other textiles. The water privileges of New England and the middle states offered to enterprising men the inducement to build factories for the spinning of yarn for the household manufacture of cloth. At the close of 1809, according to a report made by Mr. Albert Gallatin, Secretary of the Treasury in 1810, eighty-seven cotton factories had been erected in the United States, which, when in operation, would employ 80,000 spindles.

The perfect factory, the scientific arrangement of parts for the successive processes necessary for the manipulation of the raw material till it came out finished goods, had not yet been constructed. As I have said, the power-loom did not come into use in England till about 1806, while in this country it was not used at all till after the war of 1812. In England even it had not been used in the same factory with the spinning-machines. In fact, for many years the custom of spinning the yarn under one management and weaving the cloth under another has prevailed in England.

In 1811, Mr. Francis C. Lowell, of Boston, visited England, and spent much time in inspecting cotton factories, for the purpose of obtaining all possible information relative to cotton manufacture, with a view to the introduction of improved machinery in the United States. The power-loom was being introduced in Great Britain at this time, but its construction was kept very secret, and public opinion was not very favorable to its success. Mr. Lowell learned all he could regarding the new machine, and determined to perfect it himself. He returned to the states in 1814, and at once began his experiments on Broad street, Boston. His first move was to secure the skill of Paul Moody, of Amesbury, Massachusetts, a well-known mechanic. By and through the encouragement of Mr. Nathan Appleton, a company had been organized by Mr. Lowell and Mr. Patrick T. Jackson, with Mr. Appleton as one of its directors, for the establishment of a cotton manufactory, to be located in Waltham, Massachusetts, on a water privilege they had purchased. This factory was completed in the autumn of 1814, and in it was placed the loom perfected by Mr. Lowell, which differed much from the English looms. Mr. Lowell had neither plans nor models for his factory and looms, but in the year named the company set up a full set of machinery for weaving and spinning, there being 1,700 spindles, and this factory at Waltham was the first in the world, so far as record shows, in which all the processes involved in the manufacture of goods, from the raw material to the finished product, were carried on in one establishment by successive steps, mathematically considered, under one harmonious system. Mr. Francis C. Lowell, aided by Mr. Jackson, is unquestionably entitled to the credit of arranging this admirable system, and it is remarkable how few changes have been made in the arrangements established by him in this factory at Waltham.

So America furnished the stone which completed the industrial arch of the factory system of manufactures.

THE GROWTH OF THE FACTORY SYSTEM AS ILLUSTRATED BY THE COTTON MANUFACTURE.

After the success of the power-loom, the cotton manufacture took rapid strides, both in Europe and America. The hand-loom and the hand-weaver were rapidly displaced. Factories sprung up on all the streams of Yorkshire and Lancashire, in England, while in this country the activity of the promoters of the industry won them wealth, and won cities from barren pastures. They erected Lowell, Lawrence, Holyoke, Fall River, and many other thriving cities and towns, and now in this generation the industry is taking root upon the banks of southern streams. The progressive steps of this great trade are shown by the tables which follow. The facts for Great Britain for the year 1833 are taken from Baines' *History of Cotton Manufacture*, and have been corroborated as far as possible from other sources; they constitute the most reliable data obtainable for that period. For 1831, for the United States, we have the census returns and other sources, none of them very accurate, yet they give the best approximate figures.

It will be observed that the number of cotton factories in this country was 801 in 1831, 1,240 in 1840, 1,074 in 1850, and that since 1850 there has been a constant decrease in the number of establishments. This is the result of consolidation and the establishment of large works, the smaller factories being closed or united with the large ones. (a) While the number of factories has decreased, the consumption of cotton and the production of goods has steadily increased. Perhaps the best gauge of the progress of the industry is to be found in the quantity of cotton consumed per capita of the population. In Great Britain, in 1831, the home consumption of cotton per capita (excluding the proportion for the export trade) was 6.62 pounds; in 1881 it was 7.75 pounds; in the United States, for 1830, it was 5.9 pounds; in 1880 it was 13.91 pounds. That is, the clothing of the people of this country in 1830 required 5.9 pounds of cotton per annum, and now it requires 13.91 pounds.

If we take the per capita consumption of the factories, including exports and home consumption, the proportion for Great Britain in 1831 was 16.15 pounds; in 1881, 40.8 pounds; for the United States, in 1831, it was, on this basis, 6.1 pounds; in 1880 it had risen to 14.96 pounds. The ratios given as to spindles to persons employed, capital to spindles, product to spindles, capital to product, product to persons employed, while in some sense fallacious, and more valuable to the expert than to the general reader, yet are true for the time given and the existing circumstances, and certainly show the change of circumstances. The ratio of consumption to spindles is of course influenced largely by the number of the yarn produced, and many of the British mills spin finer numbers than do the mills of this country; but whatever may be the cause, the ratio stands as given, and shows that the attendant circumstances, either of machinery or kind of product, or of some other matter, vary as to the two countries.

a The number of cotton factories for 1880 should be increased by the number of mills engaged in working raw cotton, waste, or cotton yarn into hosiery, webbing, tapes, fancy fabrics, or mixed goods, or other fabrics which are not sold as specific manufactures of cotton or of wool; some of these work both fibers, but belong more in the class of cotton manufactures than in any other. These establishments, 249 in all, in 1880, have, without doubt, been included in the list of cotton-mills heretofore; so that now the total number, to correspond with the past, should be 1,005 cotton factories in the United States in 1880.

THE FACTORY SYSTEM OF THE UNITED STATES.

The following table shows the condition of the cotton manufactures of Great Britain and the United States in the years named:

Countries and years.	Number of establishments.	Capital invested.	Number of spinning spindles.	Number of looms.	Number of employes, including children.	Value of product.	Pounds of cotton consumed.
Great Britain { 1833	1, 151	\$170, 000, 000	9, 333, 000	100, 000	237, 000	\$156, 693, 465	262, 700, 000
{ 1878	2, 671	374, 720, 500	30, 527, 920	514, 911	482, 003	474, 916, 368	1, 439, 393, 000
United States { 1831	801	40, 612, 984	1, 246, 703	33, 433	57, 406	.....	77, 457, 316
{ 1880	756	208, 280, 346	10, 653, 435	225, 759	172, 544	192, 000, 110	750, 343, 981

The following table shows the condition of the cotton-spinning and weaving industry of Great Britain and the United States in the years named:

Countries and years.	Ratio of spindles to persons employed.	Ratio of capital to spindles.	Ratio of product to spindles.	Ratio of capital to product.	Ratio of product to persons employed.	Years.	Total annual consumption of cotton.	Total average consumption of cotton per year per capita of total population.	Average consumption of cotton (exclusive of exports) per capita of total population.
							<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Great Britain { 1833	39 to 1	\$18 21 to 1	\$16 79 to 1	\$1 00 to \$0 92	\$661 15 to 1	1831	262, 700, 000	18. 15	6. 62
{ 1878	32 to 1	9 48 to 1	12 01 to 1	1 00 to 1 27	983 46 to 1	1881	1, 439, 393, 000	40. 80	7. 75
United States { 1831	22 to 1	32 58 to 1	.....	.....	.....	1830	77, 457, 316	6. 10	5. 90
{ 1880	62 to 1	10 55 to 1	18 03 to 1	1 00 to 0 02	1, 113 23 to 1	1880	750, 343, 981	14. 06	13. 92

THE FACTORY SYSTEM OF THE UNITED STATES.

COTTON INDUSTRY OF THE UNITED STATES: 1831-1880—NUMBER

States and Territories.	NUMBER OF ESTABLISHMENTS.					NUMBER OF SPINDLES.					NUMBER OF LOOMS.				
	1831.	1850.	1860.	1870.	1880.	1831.	1850.	1860.	1870.	1880.	1831.	1850.	1860.	1870.	1880.
The United States.....	801	1,094	1,091	956	756	1,246,703	.....	5,235,727	7,132,415	10,653,435	33,433	.....	126,313	157,310	225,759
NEW ENGLAND STATES.															
1 Maine.....	8	12	19	23	24	6,500	.....	231,050	459,772	695,924	91	.....	6,377	9,902	15,971
2 New Hampshire.....	40	44	44	36	36	113,776	.....	636,788	740,843	944,053	3,530	.....	17,336	19,091	24,200
3 Vermont.....	17	9	8	8	7	12,392	.....	17,800	28,768	55,081	352	.....	362	628	1,180
4 Massachusetts.....	253	213	217	191	175	339,777	.....	1,073,498	2,610,541	4,236,084	8,981	.....	42,779	55,343	65,321
5 Rhode Island.....	116	158	153	139	115	235,753	.....	814,554	1,043,242	1,764,569	5,773	.....	17,315	18,075	29,669
6 Connecticut.....	94	128	129	111	82	115,528	.....	435,466	507,142	936,376	2,609	.....	8,675	11,943	18,261
Total.....	531	564	570	508	439	823,726	.....	3,858,962	5,493,308	8,032,087	21,336	.....	93,344	114,982	184,701
MIDDLE STATES.															
7 New York.....	112	86	79	81	36	157,316	.....	348,584	492,573	561,058	3,653	.....	7,885	17,218	12,403
8 New Jersey.....	51	21	44	27	17	62,979	.....	123,548	200,580	232,221	815	.....	1,567	2,176	3,189
9 Pennsylvania.....	67	208	185	138	59	120,810	.....	476,979	434,246	425,391	6,301	.....	12,994	12,862	8,483
10 Delaware.....	10	12	11	6	8	24,806	.....	38,974	20,534	40,188	235	.....	986	771	822
11 District of Columbia.....		1	1				.....	2,500				.....	83		
12 Maryland.....	23	24	20	22	19	47,222	.....	51,835	89,112	125,700	1,002	.....	1,070	1,947	2,425
Total.....	263	352	340	274	139	413,133	.....	1,042,480	1,246,045	1,391,164	12,006	.....	25,185	34,974	27,318
SOUTHERN STATES.															
13 Virginia.....	7	27	16	11	8	9,844	.....	49,440	77,116	44,340	91	.....	2,160	1,310	1,322
14 North Carolina.....		28	30	33	49		.....	41,884	39,897	92,355		.....	761	618	1,790
15 South Carolina.....		18	17	12	14		.....	30,890	34,940	82,334		.....	525	745	1,670
16 Georgia.....		35	33	34	40		.....	85,186	85,002	193,656		.....	2,041	1,887	4,493
17 Florida.....			1		1		.....	1,800		816		.....	20		
18 Alabama.....		12	14	13	16		.....	35,740	28,046	49,432		.....	623	632	803
19 Mississippi.....		2	4	5	8		.....	6,344	3,526	18,568		.....	90	152	644
20 Louisiana.....			2	4	2		.....	6,725	13,084	6,096		.....	150	292	120
21 Texas.....			1	4	2		.....	2,700	8,878	2,648		.....	100	235	71
22 Kentucky.....		8	6	5	3		.....	8,192	7,734	9,022		.....	76	72	73
23 Tennessee.....		33	30	28	16		.....	29,850	27,923	35,736		.....	243	313	318
24 Arkansas.....		3	2	2	2		.....		1,125	2,015		.....			28
Total.....	7	166	165	151	161	9,844	.....	298,551	327,871	542,048	91	.....	6,789	6,256	11,808
WESTERN STATES.															
25 Ohio.....		8	8	7	4		.....	19,064	23,240	13,328		.....	540	208	42
26 Indiana.....		2	2	4	4		.....	11,000	17,300	33,398		.....	375	448	770
27 Iowa.....				1			.....					.....
28 Illinois.....			3	5	2		.....		1,856	4,800		.....		16	24
29 Missouri.....		2	2	3	3		.....	5,000	16,715	19,312		.....	80	415	431
30 Michigan.....					1		.....			5,100		.....			131
31 Wisconsin.....					1		.....			10,000		.....			400
32 Minnesota.....					1		.....			1,708		.....			24
33 Utah territory.....			1	3	1		.....	70	1,020	432		.....		11	14
Total.....		12	16	23	17		.....	35,734	60,191	88,136		.....	995	1,093	1,842

OF ESTABLISHMENTS, SPINDLES, LOOMS, AND EMPLOYÉS.

WHOLE NUMBER OF EMPLOYÉS.					NUMBER OF MALE EMPLOYÉS.					NUMBER OF FEMALE EMPLOYÉS.					NUMBER OF YOUTH AND CHILDREN.				
1831.	1850.	1860.	1870.	1880.	1831.	1850.	1860.	1870.	1880.	1831.	1850.	1860.	1870.	1880.	1831.	1850.	1860.	1870.	1880.
62,208	92,286	122,028	135,369	172,544	13,500	33,150	40,850	42,700	59,085	38,027	59,136	75,169	69,637	84,539	4,601	.....	.....	22,042	28,320
289	3,739	6,764	9,439	11,759	84	780	1,828	2,006	3,858	205	2,959	4,936	6,246	6,481	.....	.....	.....	587	1,420
5,025	12,122	12,730	12,542	16,395	875	2,911	3,829	3,752	5,104	4,000	0,211	8,901	7,490	0,594	60	.....	.....	1,300	1,697
484	241	879	451	721	102	94	157	125	200	368	147	222	242	350	19	.....	.....	84	171
13,349	28,780	38,451	43,512	61,246	2,065	8,298	13,091	13,604	22,180	10,078	19,437	24,760	24,065	31,406	.....	.....	.....	5,753	7,570
8,500	10,875	14,077	16,745	21,174	1,731	4,959	6,353	5,583	8,045	3,297	6,916	7,724	8,023	9,199	3,472	.....	.....	3,134	3,930
4,315	6,186	9,002	12,086	14,484	1,399	2,708	4,028	4,443	6,134	2,477	3,478	4,974	4,734	5,434	439	.....	.....	2,000	2,016
81,956	61,893	81,403	94,775	125,770	6,856	20,745	29,886	30,293	45,921	21,110	41,148	51,517	50,805	62,554	3,990	.....	.....	19,767	17,704
5,510	6,320	7,059	9,144	9,227	1,374	2,032	3,107	2,608	2,937	3,652	3,688	4,552	4,546	4,201	484	.....	.....	1,000	2,080
5,438	1,712	2,534	3,514	4,170	2,151	616	1,010	1,086	1,180	3,070	1,096	1,524	1,745	2,201	217	.....	.....	683	708
14,806	7,663	14,994	12,730	9,879	6,545	3,504	6,412	3,859	3,339	8,351	4,000	3,582	6,097	4,454	.....	.....	.....	2,774	2,080
1,373	838	1,109	726	791	697	413	520	225	237	676	425	589	286	362	.....	.....	.....	215	192
.....	144	95	.....	.....	.....	41	70	.....	.....	.....	103	25	.....	.....	.....	.....	.....	.....	102
2,617	3,022	2,687	2,800	4,042	824	1,008	1,093	688	1,226	1,793	2,014	1,594	1,452	1,877	.....	.....	.....	720	939
20,834	10,699	29,078	38,974	28,118	11,591	8,274	12,212	8,466	8,919	17,542	11,425	16,866	14,120	13,185	701	.....	.....	6,382	6,014
418	2,963	1,441	1,741	1,085	143	1,275	694	921	274	275	1,088	747	507	530	.....	.....	.....	313	281
.....	1,619	1,755	1,453	3,232	.....	442	440	258	764	.....	1,177	1,815	916	1,727	.....	.....	.....	279	741
.....	1,019	891	1,123	2,018	.....	399	342	280	661	.....	620	540	508	772	.....	.....	.....	320	585
.....	2,272	2,813	2,846	6,215	.....	873	1,131	1,147	1,853	.....	1,399	1,682	1,080	2,951	.....	.....	.....	619	1,411
.....	95	65	.....	81	.....	28	40	.....	19	.....	67	25	.....	2	.....	.....	.....	.....	17
.....	715	1,312	1,032	1,448	.....	346	543	803	384	.....	800	769	445	681	.....	.....	.....	284	433
.....	36	215	265	695	.....	10	106	78	176	.....	17	109	88	313	.....	.....	.....	99	206
.....	.....	360	246	104	.....	.....	220	123	39	.....	.....	140	57	41	.....	.....	.....	66	24
.....	.....	130	201	66	.....	.....	130	184	40	.....	.....	.....	52	10	.....	.....	.....	55	16
.....	402	246	200	348	.....	181	130	77	124	.....	221	116	71	91	.....	.....	.....	121	133
.....	891	899	800	1,015	.....	810	323	252	283	.....	581	576	463	562	.....	.....	.....	175	230
.....	31	25	17	60	.....	13	14	8	16	.....	13	11	3	17	.....	.....	.....	0	27
418	10,043	10,152	10,173	16,317	143	3,886	4,113	3,640	4,033	275	6,157	6,039	4,100	7,587	.....	.....	.....	2,343	4,097
.....	401	840	462	481	.....	132	372	216	124	.....	269	468	147	320	.....	.....	.....	99	37
.....	95	367	504	708	.....	38	177	110	193	.....	57	190	179	301	.....	.....	.....	206	124
.....	.....	.....	6	.....	.....	.....	.....	3	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	27
.....	.....	11	98	280	.....	.....	10	26	60	.....	.....	1	31	88	.....	.....	.....	41	82
.....	155	170	361	508	.....	75	85	107	120	.....	80	85	154	207	.....	.....	.....	100	181
.....	.....	.....	80	.....	.....	.....	.....	.....	34	.....	.....	.....	.....	88	.....	.....	.....	.....	14
.....	.....	.....	266	.....	.....	.....	.....	.....	61	.....	.....	.....	.....	140	.....	.....	.....	.....	56
.....	.....	.....	22	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	12	.....	.....	.....	.....	6
.....	.....	7	16	29	.....	.....	4	10	16	.....	.....	.....	.....	8	.....	.....	.....	4	5
.....	651	1,395	1,447	2,330	.....	245	648	481	612	.....	406	747	516	1,213	.....	.....	.....	460	505

COTTON INDUSTRY OF THE UNITED STATES: 1831-1880-

States and Territories.	CAPITAL INVESTED.				
	1831.	1850.	1860.	1870.	1880.
The United States.....	\$40,612,084	\$74,500,931	\$98,585,269	\$140,706,291	\$208,280,846
NEW ENGLAND STATES.					
1 Maine.....	765,000	3,329,700	6,018,325	9,830,085	15,292,078
2 New Hampshire.....	5,300,000	10,950,500	12,586,880	13,332,710	19,877,084
3 Vermont.....	295,500	202,500	271,200	670,000	936,086
4 Massachusetts.....	12,891,000	28,455,630	33,704,074	44,714,375	72,291,601
5 Rhode Island.....	6,262,340	6,675,000	10,052,200	18,896,300	28,047,331
6 Connecticut.....	2,825,600	4,219,100	6,627,000	12,710,700	20,810,500
Total.....	28,838,840	58,832,430	69,260,270	100,103,770	156,754,690
MIDDLE STATES.					
7 New York.....	3,669,500	4,176,920	5,383,479	8,511,336	11,300,638
8 New Jersey.....	2,027,644	1,483,500	1,320,550	2,762,000	3,807,750
9 Pennsylvania.....	3,758,500	4,528,925	9,203,040	12,550,720	10,331,085
10 Delaware.....	384,500	460,100	582,500	1,165,000	874,570
11 District of Columbia.....		85,000	45,000		
12 Maryland.....	2,144,000	2,236,000	2,254,500	2,734,250	4,009,816
Total.....	11,984,144	12,970,445	18,789,069	27,723,306	31,014,730
SOUTHERN STATES.					
13 Virginia.....	296,000	1,908,900	1,367,543	1,128,000	1,190,100
14 North Carolina.....		1,058,800	1,272,750	1,030,900	2,855,800
15 South Carolina.....		857,200	801,825	1,887,000	2,776,100
16 Georgia.....		1,736,156	2,126,103	3,433,265	6,348,657
17 Florida.....		80,000	30,000		11,000
18 Alabama.....		651,900	1,316,000	981,000	1,246,500
19 Mississippi.....		38,000	230,000	751,500	1,122,140
20 Louisiana.....			1,000,000	592,000	195,000
21 Texas.....			450,000	496,000	50,000
22 Kentucky.....		239,000	244,000	405,000	360,000
23 Tennessee.....		669,600	965,000	970,650	1,145,600
24 Arkansas.....		16,500	87,000	13,000	75,000
Total.....	296,000	7,256,056	9,840,221	11,088,315	17,875,897
WESTERN STATES.					
25 Ohio.....		297,000	265,000	555,700	679,000
26 Indiana.....		43,000	251,000	551,500	1,090,000
27 Iowa.....				1,500	
28 Illinois.....			4,700	151,000	240,000
29 Missouri.....		102,000	169,000	489,200	890,000
30 Michigan.....					20,000
31 Wisconsin.....					200,000
32 Minnesota.....					5,000
33 Utah territory.....			6,000	42,000	20,000
Total.....		442,000	695,700	1,790,900	3,135,000

CAPITAL INVESTED, WAGES PAID, AND COTTON CONSUMED.

WAGES OF OPERATIVES.					COTTON CONSUMED YEARLY—POUNDS.				
1831.	1850.	1860.	1870.	1880.	1831.	1850.	1860.	1870.	1880.
		\$23,940,108	\$30,044,132	\$42,040,510	77,457,316	288,558,000	422,704,975	398,308,257	750,343,981
		1,368,888	2,565,107	2,936,640	588,500	14,133,950	23,733,165	25,887,771	54,135,061
		2,833,804	3,089,853	4,200,960	7,845,000	37,361,700	51,002,324	41,469,710	76,380,409
		78,468	125,000	161,748	700,000	1,009,350	1,447,250	1,235,652	3,562,088
		7,798,476	13,589,305	15,823,571	24,871,931	100,623,150	134,012,759	130,654,040	273,718,880
		2,847,804	5,224,650	5,320,308	10,414,578	22,820,850	41,614,797	44,630,787	81,137,172
		1,743,480	3,246,783	3,632,639	6,777,209	17,767,350	31,801,011	31,747,300	52,884,171
		16,720,920	28,740,788	32,170,861	51,257,268	193,771,350	283,701,306	275,625,278	541,373,880
		1,405,292	2,626,131	1,904,755	7,661,670	17,000,100	23,945,627	24,783,351	31,650,504
		408,336	1,009,351	1,156,961	5,832,204	6,496,650	9,004,649	7,920,035	9,950,609
		2,768,340	3,496,986	2,502,688	7,111,174	10,872,900	37,496,203	32,653,318	40,311,800
		220,224	190,069	192,727	1,435,000	2,128,500	3,403,600	2,587,015	3,236,184
		19,800				432,200	294,117		
		522,780	671,933	706,129	3,008,000	10,496,250	12,880,119	12,693,647	24,166,232
		5,464,772	7,994,470	6,613,260	25,048,048	56,420,400	87,113,715	80,937,966	169,321,428
		200,850	229,750	169,789	1,152,000	8,003,250	7,544,297	4,255,393	5,087,510
		189,744	182,951	439,059		6,127,650	5,540,738	4,238,270	11,832,641
		123,300	257,080	390,844		4,468,050	3,978,001	4,756,823	15,001,005
		415,392	611,868	1,135,184		9,103,500	13,907,904	10,921,176	33,757,199
		7,872		5,000		270,000	200,000		166,250
		198,408	210,679	239,998		2,343,600	5,246,800	3,240,523	7,271,701
		36,264	61,833	133,214		193,500	698,800	580,764	2,881,853
		49,440	60,600	12,572			1,995,700	748,525	644,000
		15,600	68,211	2,466			588,000	1,077,118	110,980
		41,280	57,951	63,850		1,692,000	1,820,000	1,584,025	1,882,234
		130,180	178,156	161,071		2,884,050	4,072,710	2,872,582	4,944,279
		4,428	4,100	7,339		76,500	187,500	66,400	340,000
		1,481,704	1,929,779	2,750,986	1,152,000	85,163,000	46,786,510	34,351,195	84,528,737
		151,164	113,520	104,500		1,921,500	3,192,500	2,226,400	2,506,182
		84,888	113,200	162,829		303,750	1,813,044	2,070,318	6,364,887
			275					20,000	
		2,640	25,500	47,885			95,000	857,000	1,090,130
		30,600	120,300	97,680		972,000	990,000	2,196,600	3,082,132
				67,209					300,000
				6,400					1,541,797
									200,000
		3,420	6,300	2,100			12,000	23,500	25,788
		272,712	370,095	505,403		3,197,250	6,163,444	7,393,818	15,110,916

COTTON INDUSTRY OF THE UNITED STATES: 1831-1880—VALUE OF

States and territories.		VALUE OF ALL MATERIALS.				
		1831.	1850.	1860.	1870.	1880.
The United States			\$34,835,056	\$57,285,534	\$111,738,930	\$102,206,347
NEW ENGLAND STATES.						
1	Maine		1,573,110	3,319,335	6,746,780	7,320,152
2	New Hampshire		4,839,420	7,123,196	12,318,807	10,140,004
3	Vermont		114,415	181,030	292,209	508,207
4	Massachusetts		11,280,309	17,214,592	37,371,590	55,094,100
5	Rhode Island		3,484,579	5,799,223	13,268,315	12,261,437
6	Connecticut		2,500,062	4,028,406	8,818,651	8,020,127
	Total		23,800,904	37,670,782	78,816,481	74,200,020
MIDDLE STATES.						
7	New York		1,085,973	3,061,105	6,990,020	4,652,745
8	New Jersey		666,645	1,165,435	1,964,768	2,018,175
9	Pennsylvania		3,152,530	7,386,213	10,724,052	6,105,700
10	Delaware		312,068	570,102	704,733	527,205
11	District of Columbia		67,000	47,403		
12	Maryland		1,165,579	1,698,413	3,409,420	2,887,933
	Total		7,340,795	13,923,671	23,793,595	16,191,758
SOUTHERN STATES.						
13	Virginia		828,375	811,187	937,820	640,301
14	North Carolina		531,903	622,363	963,809	1,463,045
15	South Carolina		295,971	431,525	761,469	1,808,300
16	Georgia		900,419	1,466,375	2,504,758	4,019,078
17	Florida		30,000	23,600		18,095
18	Alabama		237,081	617,633	764,965	783,711
19	Mississippi		21,500	79,800	123,568	337,140
20	Louisiana			226,600	161,485	72,470
21	Texas			64,140	216,519	14,827
22	Kentucky		180,907	214,755	375,048	253,818
23	Tennessee		297,500	384,548	595,780	553,761
24	Arkansas		8,975	11,600	13,780	83,305
	Total		3,332,631	4,954,120	7,419,010	9,999,145
WESTERN STATES.						
25	Ohio		237,060	374,100	493,704	286,092
26	Indiana		28,220	229,025	542,875	651,434
27	Iowa				4,959	
28	Illinois			11,930	177,525	142,183
29	Missouri		86,446	110,000	481,745	376,081
30	Michigan					41,000
31	Wisconsin					194,650
32	Minnesota					30,000
33	Utah territory			6,000	7,051	3,472
	Total		351,726	781,955	1,707,850	1,725,418

MATERIALS, QUANTITY OF GOODS MANUFACTURED, AND VALUE OF PRODUCTS.

GOODS MANUFACTURED YEARLY—POUNDS.					VALUE OF PRODUCTS.				
1831.	1850.	1860.	1870.	1880.	1831.	1850.	1860.	1870.	1880.
59,514,926			349,314,592	607,204,241		\$85,501,687	\$115,681,774	\$177,489,739	\$192,090,110
525,000			23,627,155	44,332,698		2,630,616	6,235,623	11,844,181	13,310,363
7,255,000			35,003,432	63,881,540		3,861,749	13,699,904	10,090,672	17,053,403
574,500			1,051,000	2,159,108		280,300	357,450	546,510	855,804
21,301,063			113,803,458	210,160,105		21,394,401	38,004,255	59,403,153	72,280,518
9,271,481			38,503,000	60,905,642		6,495,972	12,151,101	22,049,203	22,875,111
5,612,000			27,296,710	42,285,517		4,122,952	8,011,387	14,026,334	16,069,771
44,539,103			239,284,815	432,744,610		43,785,090	70,350,000	124,959,053	143,363,030
5,297,713			22,113,630	25,640,456		5,019,323	6,070,878	11,178,211	8,266,836
1,877,418			6,723,748	8,275,200		1,269,648	2,217,728	4,015,708	4,548,275
4,207,192			32,494,857	34,457,323		5,812,126	13,650,114	17,490,080	11,021,054
1,201,500			2,437,040	2,867,969		538,439	941,703	1,060,898	871,007
2,224,000			10,496,077	22,324,511		100,060	74,400		
14,807,823			74,266,561	93,574,519		2,021,896	2,973,877	4,852,808	4,682,114
108,000			3,456,569	4,339,476		1,446,109	1,489,971	1,435,800	1,040,062
			3,444,166	9,046,380		985,411	1,046,047	1,345,052	2,554,482
			4,125,210	12,251,272		842,440	718,050	1,529,937	2,895,760
			9,596,806	27,733,153		1,395,656	2,371,207	3,648,073	6,481,894
			134,000			49,620			25,000
			2,843,000	6,154,470		398,585	1,040,147	1,088,707	1,228,019
			529,573	2,481,022		22,000	176,328	234,445	670,093
			629,025	166,496			466,500	251,550	86,776
			887,695	99,880			80,695	374,598	21,600
			1,389,000	1,722,500		445,039	315,270	498,960	418,280
			2,881,477	3,874,616		508,481	608,122	941,542	674,717
			53,125	255,000		17,860	23,000	22,562	50,000
108,000			20,835,640	68,858,205		6,111,001	8,400,337	11,372,186	16,356,598
			1,918,000	1,903,182		594,204	723,500	681,835	637,000
			1,770,481	5,298,020		86,660	344,350	778,047	1,155,020
			18,000					7,000	
			739,000	917,634			18,987	279,000	210,861
			1,949,900	2,200,027		142,000	230,000	798,050	522,980
				250,000					70,000
				1,314,864					928,389
				160,000					40,000
			23,195	13,129			10,000	16,393	7,937
			6,427,576	12,086,847		823,764	1,326,837	2,560,735	2,981,196

The foregoing tables clearly indicate the rapid extension of the cotton manufacture to the southern states, where the cotton is at hand and labor is much cheaper than at the north. The number of spindles in the southern states was increased from 327,851 in 1870 to 542,048 in 1880, or 65+ per cent.; in New England the increase was from 5,498,408 to 8,632,087, or very nearly 57 per cent.; the middle states from 1,246,045 in 1870 to 1,391,164 in 1880, or 11+ per cent.; the western states from 60,191 in 1870 to 88,136, or 46+ per cent. In the whole country the increase was from 7,132,415 spindles in 1870 to 10,653,435 in 1880, or 49+ per cent. It will be seen that the states of Michigan, Wisconsin, and Minnesota have been added to the list of cotton manufacturing states since 1870.

On the continent of Europe the cotton manufacture has come under the rule of the new system, but not to that extent shown in Great Britain and America. Mulhall, in his *Progress of the World*, gives the number of spindles to each operative in various countries, as follows: Great Britain, 83; United States, 66; Germany, 46; France, 24; Russia, 20; Switzerland, Austria, India, 20; average, 54.

THE GENERAL APPLICATION OF THE FACTORY SYSTEM.

In nearly all industries where the terms of the definition of a factory can apply, that is, where raw material can be converted into finished goods by consecutive, harmonious processes, carried along by a central power, the factory system has been adopted. In all textile manufactures this has been the case, and the adoption of the new system in the woolen, silk, worsted, flax, and all textile trades, followed immediately upon, or was contemporaneous with, the adoption of the system in the cotton trade. Outside of the textile trades the extension of the system has been rapid indeed, until the statistics of industries of Great Britain and of the United States are simply the statistics of manufactures under the factory system. This statement is, in the main, true of Belgium, France, and Germany, although in France a very large proportion of weaving, especially of fine goods and silks, is still done by hand; in the silk industry in France, however, the power-loom is now rapidly displacing the hand-loom. Notwithstanding this general adoption of the system by the textile trades in the great manufacturing states of Europe and America, more than one-half the population of the globe is clothed with hand-made goods.

While the inauguration of the factory system in the United States was some fifteen years later than its birth in England, the extension of the system has been more rapid and its application more varied here than in any other country. As parties engaged in industries other than the manufacture of textiles saw the wonderful results of systematized labor, by its division under the scientific methods of the factory system, they gradually adopted the new order, until now it is quite safe to say that of the nearly three millions of people employed in the mechanical industries of this country at least four-fifths are working under the factory system. Some of the other remarkable instances of the application of the system are to be found in the manufacture of boots and shoes, of watches, musical instruments, clothing, agricultural implements, metallic goods generally, fire-arms, carriages and wagons, wooden goods, rubber goods, and even in the slaughtering of hogs. Most of these industries have been brought under the factory system during the past thirty years.

It is but a comparatively few years since the manufacture of boots and shoes was carried on in the little home shops which were attached to or built near the dwellings of the shoemakers. These little shops, in which a few men, rarely more than four, worked upon the bench, upon stock received from the manufacturer, cut out and ready to be put together, are closed, and the great shoe-factory takes their place. In the shoe-factory is to be seen the perfect adaptation of the manufacture of goods by successive, harmonious processes. The shoe-factory is rapidly doing away with the clogs of England and the sabots of the continent. The watch-factory presents, perhaps, the most completely scientific application of the factory system. It certainly has brought the watch within the means of the poor man. Pianos, house organs, tapestry carpets, and many other luxuries which the rich only could afford, are now enjoyed by the masses, simply as the result of the factory system of industry.

The history of the achievements of the modern system would require volumes devoted to that particular subject; the instances referred to indicate the vast extent of the application of the system; if they do not, the fact that the product of the industries of the United States has reached \$6,000,000,000 per annum will illustrate the extent of its growth. Many goods are made under a mixed system of manufacture, but the tendency is to bring all under the factory system as rapidly as possible. This tendency is accelerated by the small expense and the comparative ease with which inventions are secured and protected in this country; and this may account, in some degree, for the more general adoption of the system here than in other countries. It is quite impossible to arrive at an accurate statement as to the number of persons it would require under the old individual system to produce the goods made by the present factory workers of this country, but by careful computations in some branches of work a rough estimate of the whole would indicate that each factory-system employé in 1882 represents, on an average, at least fifty employés under the individual system. Thus it would require about one hundred and fifty million persons working under the old system to produce the goods made by the three million or so factory workers of to-day. This computation may be very wide of the truth, but any other is equally startling. This estimate will hardly be disputed when it is considered that in spinning alone eleven hundred threads are spun now at one time where one was spun under the old system. The influence of the new system upon production is shown in the appropriate section.

THE FACTORY AND THE DOMESTIC SYSTEMS OF INDUSTRY CONTRASTED—APPARENT EVILS OF THE FACTORY SYSTEM.

The rapid extension of the factory system, absorbing as it does small enterprises and crushing out the ideal system of manufacture, has not been accomplished without great social changes, affecting the morals as well as the politics and the legislation of the countries in which it has been established. No one disputes the economic advantages of the modern system; few admit that it is a moral force in the actual progress of civilization; yet the system is, and has been, an active element in the upbuilding of the character of the peoples involved in the changes inaugurated by it.

None of the systems of labor which existed prior to the present or factory system were particularly conducive to a higher civilization. Wages have been paid for services rendered since the wants of men induced one to serve another; yet the wage system is of recent origin as a system. It arose out of the feudal system of labor, and was the first fruit of the efforts of men to free themselves from villeinage. The origin of the wage system cannot be given a birthday, as can the factory system. It is true, however, that the wage system rendered the factory system possible, and they have since grown up together. The first may give way to some other method for dividing the profits of production, but the factory system, perfected, must remain, whether under a socialistic system or under whatever other political system that may exist, until disintegration is the rule in society.

The feudal and the slave systems had nothing in them from which society could draw the forces necessary to growth; on the contrary, they reflected the most depressing influences, and were actually the allies of retrogression. The laborer owned nothing; not even in the sweat of his own brow could he earn his bread. It is not so very long ago that the factory system stepped upon the bondage of labor. The one actually overtook the other, so slow was the retirement of the slave system.

The domestic system, which claims the eighteenth century almost entirely, was woven into the two systems which existed before and came after it; in fact, it has not yet disappeared. It is simple fact when we say that the factory system set aside the domestic system of industry. There is something poetic in the idea of the weaver of old England, before spinning machinery was invented, working at his loom in his cottage, with his family about him, some carding, others spinning the wool or the cotton, and writers and speakers are constantly bewailing the departure of such scenes. I am well aware that I speak against popular impression, and largely against popular sentiment, when I assert that the factory system in every respect is vastly superior as an element in civilization to the domestic system which preceded it; that the social and moral influences of the present outshine the social and moral influences of the old. The hue and cry against the prevailing system has not been entirely genuine on either side of the Atlantic. Abuses have existed, great and abominable enough, but not equal to those which have existed in the imaginations of men who would have us believe that virtue is something of the past. The condition of the workers of society has never been the ideal condition, and the worker is too often the victim of a contemptible selfishness which tempts men to commit the crime of robbing the operative of his just share in the results of his toil. That the evils of the factory system are sufficient to call out all the sentiments of justice and philanthropy which enable us to deal with wrong and oppression I do not dispute; but I claim that, with all its faults and attendant evils, it is a vast improvement upon the domestic system of industry in almost every respect, not only with reference to the individual and the family, but with reference to society and the state.

The usual mistake is to consider the factory system as the creator of evils, and not only of evils, but of evil-disposed persons. This can hardly be shown to be true, although it is true that the system congregates evils or evil-disposed persons, and thus gives the appearance of creating that which already existed. People have not yet outgrown the impression created by the reports of Sadler, before a parliamentary committee, in 1832. It is difficult, I know, to establish close comparisons of the conditions under the two systems, because they are not often found to be contemporaneous; yet sufficient evidence can be adduced, I think, from a consideration of the features of the two, to establish the truth of my assertions.

It should not be forgotten that "the term factory system, in technology, designates the combined operation of many orders of work-people * * * in tending with assiduous skill a series of productive machines continuously impelled by a central power. This definition includes such organizations as cotton-mills, flax-mills, silk- and woolen-mills", and many other works; "but it excludes those in which the mechanisms do not form a connected series, nor are dependent on one prime mover." It involves, in its strictest sense, "the idea of a vast automaton, composed of various mechanical and intellectual organs, acting in uninterrupted concert for the production of a common object, all of them being subordinated to a self-regulated moving force." (a)

So a factory becomes a scientific structure, its parts harmonious, the calculations requisite for their harmony involving the highest mathematical skill, and in the factory the operative is always the master of the machine, and never the machine the master of the operative. Under this system the work is carried on in an establishment peculiarly adapted to it, and the operative's home is separated from the workshop. Under the domestic system the home of the worker was the workshop also, and the wheels or looms disputed with the inmates for the room and the

conveniences for housework. Small, close, crowded, with bad air and bad surroundings, the hut of the domestic worker was occupied day and night by a class which has not found and cannot find its like under the factory system; for as a rule the operative of to-day occupies a home, even in the factory tenement or boarding-house, superior in every sense to the home of the domestic worker.

Under the domestic system of industry grew up that great pauper class in England which was a disgrace to civilization. It was fed by the agricultural districts more than by those devoted to manufactures. (a) It continued to grow until one-fourth of the annual budget was for the support of paupers. The evil became fixed upon the social life as one of its permanent phases. Legislation, philanthropy, charity, were utterly powerless in checking it, and it was not checked till the inventions in cotton manufactures came, since which events it has been on the decline, taking the decades together. The factory absorbed many who had been under public support; on the other hand, it drew from the peasantry, by the allurements of better wages and without any guarantees as to permanence or care as to moral responsibility; yet on the whole the state was benefited more than any class was injured.

It is not true, however, as it is often asserted, that the factory destroyed the yeomanry of England. (b) The domestic laborer's home was far from the character poetry has given it. Huddled together in what poetry calls a cottage and history a hut, the weaver's family lived and worked, without comfort, conveniences, good food, good air, and without much intelligence. Drunkenness and theft of materials made many a house the scene of crime and want and disorder. Superstition ruled and envy swayed the workers. Ignorance under the old system added to the squalor of the homes of the workers under it, even making the hut an actual den, shared in too many instances by the swine of the family. The home of the agricultural laborer was not much better; in fact, in Great Britain and France, he has to a great degree continued in his ignorance and in his degraded condition.

Sentiment has done much, as I have said, to create false impressions as to the two systems of industry. The reports of the poor-laws commissioners of England are truer exponents of conditions, and show whether the town was, during the first fifty years of the new system, staining the country or the country the town.

From the documents published by these commissioners, it appears that but for the renovating influence of her manufactures England would have been overrun with the most ignorant and depraved men to be met with where civilization has made much progress. It has been in the factory districts alone that the demoralizing agency of pauperism has been most effectually resisted and a noble spirit of industry, enterprise, and intelligence called forth. Agriculturists gave children and youths no more than half the wages paid them in factories, while they filled the workhouses with the unemployed. Under the operation of the miserable poor-laws which the domestic system fathered, the peasantry were penned up in close parishes, where they increased beyond the demand for their labor, and where the children were allowed to grow up in laziness and ignorance, which unfitted them from ever becoming industrious men and women. (c)

But in the chief manufacturing districts, while the condition of the factory children became the subject of legislation for their protection, (a) their condition was one to be envied when compared with that of the children in mining and agricultural districts.

The spasmodic nature of work under the domestic system caused much disturbance, for hand-working is always more or less discontinuous from the caprice of the operative, while much time must be lost in gathering and returning materials. For these and other obvious reasons a hand weaver could very seldom turn off in a week much more than one-half what his loom could produce if kept continuously in action during the working hours of the day, at the rate at which the weaver in his working paroxysms impelled it. The regular order maintained in the factory cures this evil of the old system, and enables the operative to know with reasonable certainty the wages he is to receive at the next pay-day. His life and habits become more orderly, and when he has left the closeness of his home-shop for the usually clean and well-lighted factory he experiences an agreeable and healthful change. It is commonly supposed that cotton factories are crowded with operatives. From the nature of things the spinning- and weaving-rooms cannot be crowded. The spinning-mules, in their advancing and retreating locomotion, must have five or six times the space for working that the actual bulk of the mechanism requires, and where the machinery stands the operative cannot stand. In the weaving-rooms there can be no crowding of persons. During the agitation for factory legislation in the early part of this century, it was remarked before a committee of the house of commons "that no part of a cotton-mill is one-tenth part as crowded, or the air in it one-tenth part as impure, as the house of commons with a moderate attendance of members". This is true to-day; the poorest factory in this country is as good a place to breathe in as representatives' hall, in the national Capitol, during sessions, or as the ordinary school-room. In this respect the new system of labor far surpasses the old.

Bad air is one of the surest influences to intemperance, and it is susceptible of proof that intemperance does not exist and has not existed to such an alarming degree under the new as under the old system; certainly the influence of bad air has not been as potent. The regularity required in mills is such as to render persons who are in the habit of getting intoxicated unfit to be employed there, and many manufacturers object to employing persons guilty of the vice. At Amiens, France, the two systems were in existence, side by side and in full force, in 1860, and are now to a considerable extent. The domestic system exists in the country around Amiens, while the factory

a See section on "Factory Legislation".

b The main causes of the destruction of this most useful element of English country life are given by Mr. Lecky, in his *History of England in the Eighteenth Century*, vol. 1, p. 212.

c *Phil. of Manufactures*, pp. 354-357.

system prevails in the city itself. The country workers have had a very bad reputation. The evil of intemperance is inveterate. The people living under the old system have resisted improvement; they wish to live and die in the houses of their parents, and express no desire to leave them. The great mass of these workers were at home, even at a date as late as 1860, under a roof that was never abandoned. The investigations of Louis Reybaud prove that the homes of the factory workers were incontestably better than those of the home workers, for they were free from the incumbrances and clogging influences which existed when the means and materials for manufacture disputed with the necessities of housekeeping for a great part of the room. This difference in the homes under the two systems is also the result of circumstances easily explained. The factory workers as a rule earn more than the home workers, and by having fixed and regular hours they are kept from falling into habits of idleness. They know, to a centime, what they will have at the end of the week. Their dependence is their security. Their wages have the merit of steadiness. The condition of the home workers is precarious, as often they are out of work at times for weeks and months. Financial crises, derangements of commerce, change in fashion—all these affect them far more seriously than they do the factory people. To-morrow is never sure with the workers under the domestic system, and privation in the future is always staring them in the face. All these bad conditions are aggravated by the serious intemperance of the home workers about Amiens. There are no heads of establishments under the domestic system to influence these men; they occupy an independent and really an isolated position. Under the factory system in France intemperance is often dealt with effectually, and the first honor belongs to the heads of the establishments. By concerted action, which should be taken for an example, they often close their doors against those addicted to intemperance. In Amiens, in 1881, I found that the factory had brought both classes up from the condition described by Reybaud and that drunkenness had ceased to be an obstacle to the success of industrial establishments. Drunkenness, in fact, is not a serious obstacle to such success at the present time, either in this country or in Europe. This I assert not only on the authority of men occupying positions which enable them to judge, but as the result of my own investigations in leading factory centers. The study of the conditions attending the hand-weavers of Lyons brings the facts stated by Reybaud into clear light. In Lyons at the present time there are about 40,000 hand-weavers working upon silk goods. These weavers live and work in small rooms, in high buildings, some of them having eight stories. The sleeping places of the children are recesses or shelves, like small scaffolds, on the walls. Sometimes the *chef d'atelier* runs several looms in one large room, paying the weavers, who in this case live elsewhere, one-half the proceeds from their work; but the larger number live, work, and sleep in the same apartments. This is true to the extent that in many cases, as the hand-weavers of Lyons themselves have informed me, work can be done upon black goods only, as the vapors from cooking would injure goods of light colors. The children of the weavers rarely go out of the rooms except on Sunday. In my visits to weavers' homes I invariably found the children clinging about the looms or tucked in the corners of the rooms, a pale and dispirited-looking class. The buildings are close and odorous from bad sanitary arrangements, and have a general penitentiary look and smell. The occupants correspond in looks and bearing with the houses. They eat little or no meat, are listless and sullen, and, taking everything into consideration, they are worse off than any other class of operatives I have ever seen. On the other hand, the power-loom silk weavers of Lyons, working in factories outside the city, have better pay, live better, are steadier, and generally thrive. Prominent manufacturers corroborated my own conclusions, and added that the manufacturer had no interest in the hand-loom weaver, for he seldom saw him, and did not superintend his work, for he did not see him at his work; while the factory worker becomes of interest in himself to the proprietors, his presence being requisite, and his usefulness depending upon constancy and sobriety.

A picture the reverse of that made by the hand-loom weavers of Lyons is presented by those of Crefeld, in Rhenish Prussia. Here there are some 40,000 hand weavers, working on silk goods, but they live and work in ample cottages, four-fifths in their own houses, and have grounds for cultivation. The living rooms are separate from the weaving rooms. The municipal government has done much to enable these people to secure houses of their own and to educate their children. Consequently the hand weavers of Crefeld are happy, contented, thrifty, and intelligent. The condition of the hand-loom weavers of Crefeld is an exception to the rule. (a)

a I visited Crefeld in June, 1881, and through the courtesy of our consul, Hon. J. S. Potter, and Herr Heimendahl, president of the chamber of commerce, I learned the secret of the prosperity of the hand weavers. I find the following in my note-book: The population of Crefeld proper is about 85,000. Around Crefeld are eighty-two small villages; in these and in Crefeld there are about 40,000 hand-loom weavers, four-fifths of them living in their own houses. These houses are very neat and comfortable; they have gardens about them, and many have two or three or more acres of land. In the town are some power-loom weavers, but they are not as happy and as contented as the hand weavers. The laws and regulations of Crefeld are made to favor the purchase of homes, freeholds, and the savings-banks aid the efforts of the municipality. The hand-loom weavers have their looms in a large room, but have three or four good rooms beside. All are well furnished and tidy. I saw scores of houses, and, without exception, they were neat and cosy cottages. The tenement house does not flourish here. The people are sober and virtuous, and apparently happy. They do not emigrate. The children are very clean and healthy. The condition of things is remarkable, and special in its nature. The whole system is the old domestic system, without the accompaniments of that system. The land system here is the secret of the success of the domestic system of industry. The weaving school of Crefeld, one of the best in the world, helps to sustain the science of hand-loom work for velvets and figured silks, so that the young are brought up to the domestic system. In other countries where the hand-loom is still used it is usually the old weaver only that is found. The weaver of Crefeld earns from 3 to 4 marks (75 cents to \$1) per day. Houses with three rooms rent for

It is true that many disadvantages appear to accompany the factory system, and these, upon superficial study, are denominated evils; but a careful study shows that these apparent evils or disadvantages do not of necessity belong to the system, nor can they be attributed to it. Such study does show that existing factory evils, so called, may be congregated by it, but are not called into existence by it. For the categorical consideration of such alleged evils they may be classified as follows:

A.—The factory system necessitates the employment of women and children to an injurious extent, and consequently its tendency is to destroy family ties and domestic habits and ultimately the home.

B.—Factory employments are injurious to health.

C.—The factory system is productive of intemperance, unthrift, and poverty.

D.—It feeds prostitution and swells the criminal lists.

E.—It tends to intellectual degeneracy.

These are the apparent disadvantages which many honestly believe belong naturally to and are inseparable from the system, and which will be associated with the system as long as it exists. For the sake of directness these will be examined in order.

A.—The factory system necessitates the employment of women and children to an injurious extent, and consequently its tendency is to destroy family ties and domestic habits and ultimately the home.

In one sense this is true; in another it is not true. I cannot discuss the question as to differences in the capacity of individuals, nor why this one is born to good conditions and that one to bad, but must take the facts as they are. The majority of human beings are born to the lot of toiling with their hands for their daily bread. This decree necessitates employment, and until all classes can be employed at fairly remunerative rates poverty, even to pauperism, must be a large factor in society. This was the case at the birth of the factory system. In fact, the great evils which became apparent during the early days of the system were simply, as I have said, the results of bringing together the labor which had become pauperized under the domestic system and in agricultural districts. The factory brought these evils to the light, and the employment of women and children became an offense in the eyes of the public, not because it was severer than under the old system, but because under the new the evils of such employment could be seen.

It is true that the success of the system, so far as textiles are concerned, has depended in a large degree upon such employment, and it is also true that such employment has enabled women and children to step from the ranks of degrading dependence and pauperism to the ranks of comparative comfort and the dignity which comes from self support. In the early days of the factory the children were by their employment really placed in a much better position than they occupied before.

It is to be regretted that no authoritative statistics on an extended scale exist relative to the employment of married women in factories, and the train of bad results which follows such employment. The employment of married women it seems to me is the very worst feature of factory employment, but the facts relating to it are the most meager. I have been able, however, to gather some information.

In England the proportion of married women to the whole number of women employed in textile works is unknown, but for those factories concerning which I have been able to make inquiries 10 per cent. is the average. In Germany I found from 20 to 50 per cent. of the textile-factory women to be married. Dr. Engel (*a*) gives the percentage in various industries as 24. Proprietors in both countries discourage the employment of married women. The statistics of Massachusetts show that the married female operatives constitute 8 per cent. of the whole number of females employed in all textile factories.

In the states named below, in a number of representative factories employed on plain goods only, I have found the percentage of married women to the whole number of women above fifteen years of age to be as follows: In Massachusetts, 23.5; New Hampshire, 19.9; Maine, 14.5; Connecticut, 19.4; Rhode Island, 21.9; New York, 9.9; Georgia, 19.2.

I am well satisfied from all I can learn that, taking all textile factories into consideration, the percentage would not exceed 10. It is evident, then, that in Great Britain and the United States infant mortality is not, on the whole, affected to any great degree by the employment of married women; but it is affected seriously so far as the children of those employed are concerned. In a general way the statistics of infant mortality in some of the leading factory and agricultural towns and towns with mixed employments in Massachusetts and Rhode Island are valuable as indicative of the influence of the employment of married women. The ratio of deaths of children under five years of age to 1,000 of population is given for census years only (1870, 1875, 1880), but the number of deaths in each town named is given for each year from 1870 to 1880, inclusive. I have taken these two states, because for them only could I ascertain all the elements essential for the succeeding tables.

about \$18 per annum. Members of the family not employed on the looms cultivate the soil; consequently, if styles change and times are for a while dull, the people are in good condition to wait the returns of prosperity in weaving. In the weaving school pupils are taught all processes of silk and velvet weaving, both on hand- and power- looms. In the museum of the school there are 3,000 specimens of the silk productions of different periods and countries since the thirteenth century. The people believe in technical education, and it has done, and is doing, much to enhance their prosperity.

a Of the royal bureau of statistics at Berlin.

THE FACTORY SYSTEM OF THE UNITED STATES.

MASSACHUSETTS: FACTORY CITIES AND TOWNS.

Years and classification.	Clinton.	Fall River.	Holyoke.	Lawrence.	Lowell.	Millbury.	New Bedford.	North Adams.	Pittsfield.	Southbridge.	Aggregates.
1870 { Population.....	5,429	26,766	10,733	28,921	40,928	4,397	21,320	12,090	11,112	5,208	166,804
Deaths under 5 years.....	53	265	155	252	416	38	108	106	68	44	1,595
Deaths under 5 years to 1,000 of population..	0.8	9.9	14.4	8.7	10.2	8.6	5.1	8.8	6.1	8.4	9.0
1871.....	58	280	185	208	347	49	90	71	41	64	.....
1872.....	52	517	251	320	392	51	194	106	112	60	.....
1873.....	36	670	227	312	488	42	139	107	78	50	.....
1874.....	35	549	214	318	509	37	141	114	92	42	.....
1875 { Population.....	6,781	45,340	18,200	34,916	49,688	4,529	25,895	15,760	12,207	5,740	217,176
Deaths under 5 years.....	49	539	225	421	382	34	180	121	78	50	2,079
Deaths under 5 years to 1,000 of population..	7.2	11.9	13.8	12.1	7.7	7.5	7.0	7.7	6.4	8.7	9.6
1876.....	54	546	203	309	528	37	107	124	60	30	.....
1877.....	47	563	100	433	432	38	167	75	70	20	.....
1878.....	20	582	224	380	438	29	180	29	48	37	.....
1879.....	60	553	242	346	347	22	207	37	51	23	.....
1880 { Population.....	8,020	48,961	21,915	39,151	50,475	4,741	26,845	10,191	13,864	6,464	239,136
Deaths under 5 years.....	42	655	275	391	633	35	218	44	87	47	2,427
Deaths under 5 years to 1,000 of population..	5.2	13.4	12.5	10	10.6	7.4	8.1	4.3	6.5	7.3	10.1

MASSACHUSETTS: AGRICULTURAL TOWNS.

Years and classification.	Ashby.	Ashfield.	Belmont.	Blandford.	Northfield.	Petersham.	Savoy.	Southampton.	Sudbury.	Swansea.	Aggregates.
1870 { Population.....	994	1,180	1,513	1,026	1,720	1,335	861	1,150	2,001	1,294	13,173
Deaths under 5 years.....	3	1	11	4	2	3	1	3	7	.....	85
Deaths under 5 years to 1,000 of population..	3.0	0.8	7.3	3.9	1.2	2.2	1.2	2.6	3.3	.....	2.7
1871.....	3	2	11	1	2	4	2	5	4	4	.....
1872.....	1	2	10	3	5	.....	4	5	4	2	.....
1873.....	2	2	14	3	2	1	1	2	3	3	.....
1874.....	2	.....	6	.....	1	4	.....	3	1	2	.....
1875 { Population.....	962	1,190	1,937	964	1,641	1,203	730	1,050	1,177	1,308	12,162
Deaths under 5 years.....	1	4	16	5	4	3	2	4	6	2	47
Deaths under 5 years to 1,000 of population..	1.0	3.4	8.3	5.2	2.4	2.5	2.7	3.8	5.1	1.5	3.9
1876.....	4	.....	12	3	7	1	3	5	3	5	.....
1877.....	1	.....	15	1	2	5	4	3	3	0	.....
1878.....	1	.....	10	2	8	3	1	3	5	1	.....
1879.....	2	2	9	2	8	7	.....	4	8	5	.....
1880 { Population.....	914	1,066	1,615	979	1,608	1,109	715	1,046	1,178	1,355	11,580
Deaths under 5 years.....	.....	2	9	6	4	1	1	3	3	1	30
Deaths under 5 years to 1,000 of population..	.....	1.9	5.5	6.1	2.5	0.9	1.4	2.9	2.5	0.7	2.6

MASSACHUSETTS: CITIES AND TOWNS WITH DIVERSIFIED INDUSTRIES.

Years and classification.	Attleborough.	Cambridge.	Pitchburg.	New Marlborough.	Newton.	Northampton.	Sandwich.	Springfield.	Waltham.	Worcester.	Aggregates.
1870 { Population.....	6,760	30,634	11,260	1,855	12,325	10,160	3,694	26,763	9,065	41,105	163,070
Deaths under 5 years.....	42	362	94	6	34	44	10	195	61	464	1,252
Deaths under 5 years to 1,000 of population..	6.2	9.1	8.3	3.2	2.7	4.3	2.7	7.3	6.7	9.8	7.7
1871.....	31	343	69	3	26	47	8	216	51	488	.....
1872.....	42	505	68	6	65	87	20	327	54	682	.....
1873.....	62	421	72	5	58	82	12	263	63	412	.....
1874.....	38	528	67	3	68	91	10	239	45	381	.....
1875 { Population.....	9,224	47,888	12,289	2,037	16,165	11,108	3,417	31,053	9,967	49,317	192,355
Deaths under 5 years.....	60	571	70	5	73	78	12	248	69	418	1,604
Deaths under 5 years to 1,000 of population..	6.5	11.9	5.7	2.5	4.5	7.0	3.5	8.0	6.9	8.5	8.3
1876.....	41	419	198	3	58	67	10	228	50	423	.....
1877.....	41	473	73	10	70	43	10	165	64	415	.....
1878.....	46	396	46	7	82	39	7	146	63	346	.....
1879.....	37	370	49	3	66	46	5	227	48	340	.....
1880 { Population.....	11,111	52,660	12,429	1,876	16,995	12,172	3,543	33,340	11,712	58,291	214,138
Deaths under 5 years.....	67	377	94	3	86	60	16	240	46	454	1,448
Deaths under 5 years to 1,000 of population..	6.0	7.2	7.6	1.6	5.1	4.9	4.5	7.2	3.9	7.8	6.7

THE FACTORY SYSTEM OF THE UNITED STATES.

RHODE ISLAND: FACTORY CITIES AND TOWNS.

Years and classification.		Burrillville.	Lincoln.	Pawtucket.	West-erly.	Woonsocket.	Aggre-gates.
1870	Population	4,674	.....	6,619	4,709	*7,098	23,700
	Deaths under 5 years	18	.....	29	6	30	89
	Deaths under 5 years to 1,000 of population	3.9	.....	4.4	1.3	4.7	8.8
1871	.....	14	87	25	12	61	.....
1872	.....	25	91	28	18	162	.....
1873	.....	24	92	29	23	141	.....
1874	.....	29	99	90	18	110	.....
1875	Population	5,249	11,565	18,494	5,408	13,576	54,262
	Deaths under 5 years	22	88	87	28	134	359
	Deaths under 5 years to 1,000 of population	4.2	7.6	4.7	5.2	9.9	6.6
1876	.....	15	97	103	13	107	.....
1877	.....	23	119	135	21	141	.....
1878	.....	11	85	123	12	120	.....
1879	.....	17	84	106	20	127	.....
1880	Population	5,714	13,765	19,930	6,104	16,050	60,663
	Deaths under 5 years	43	98	121	32	170	464
	Deaths under 5 years to 1,000 of population	7.5	7.1	6.4	5.2	10.6	7.0

* Not including population acquired in 1870 by annexation from Smithfield.

RHODE ISLAND: AGRICULTURAL TOWNS.

Years and classification.		Coven-try.	Foster.	Gloucester.	Scituate.	South Kings-town.	Aggre-gates.
1870	Population	4,349	1,630	2,385	3,846	4,493	16,703
	Deaths under 5 years	14	.....	2	8	11	35
	Deaths under 5 years to 1,000 of population	3.2	.....	0.8	2.1	2.4	2.1
1871	.....	17	.....	4	14	12	.....
1872	.....	22	3	8	10	10	.....
1873	.....	14	2	6	10	10	.....
1874	.....	19	2	15	18	7	.....
1875	Population	4,580	1,543	2,098	4,101	4,240	19,562
	Deaths under 5 years	12	3	3	25	19	62
	Deaths under 5 years to 1,000 of population	2.6	1.9	1.4	6.1	4.5	3.7
1876	.....	14	2	9	9	8	.....
1877	.....	7	3	5	12	12	.....
1878	.....	21	1	6	15	6	.....
1879	.....	12	.....	8	6	8	.....
1880	Population	4,519	1,552	2,250	3,810	6,114	17,245
	Deaths under 5 years	14	2	9	13	4	42
	Deaths under 5 years to 1,000 of population	3.1	1.3	4.0	3.4	0.8	2.4

RHODE ISLAND: TOWNS WITH DIVERSIFIED INDUSTRIES.

Years and classification.		Cumber-land.	North Kings-town.	Smith-field.	Warren.	War-wick.	Aggre-gates.
1870	Population	3,882	3,568	*17,378	3,008	10,453	38,288
	Deaths under 5 years	10	16	39	6	37	108
	Deaths under 5 years to 1,000 of population	2.6	4.5	2.2	2.0	3.5	2.8
1871	.....	15	12	2	16	71	.....
1872	.....	19	15	5	27	58	.....
1873	.....	19	10	4	26	40	.....
1874	.....	22	17	7	18	54	.....
1875	Population	5,673	3,505	2,857	4,005	11,614	27,054
	Deaths under 5 years	24	11	9	31	47	122
	Deaths under 5 years to 1,000 of population	4.2	3.1	3.2	7.7	4.0	4.4
1876	.....	11	10	6	10	37	.....
1877	.....	31	7	12	34	49	.....
1878	.....	33	7	11	29	58	.....
1879	.....	28	7	5	16	75	.....
1880	Population	6,445	3,940	3,085	4,007	12,104	29,650
	Deaths under 5 years	40	17	10	18	58	152
	Deaths under 5 years to 1,000 of population	7.6	4.3	3.2	4.5	4.8	5.1

* Including present towns of Lincoln and North Smithfield, and part of present town of Woonsocket.

The tables are very significant, although it must not be presumed that the employment of married women is the sole cause of the very high percentage of deaths under five years in factory towns compared with deaths in towns of diversified industries and agricultural towns. Crowded houses, bad sanitation, and the general effect of compact towns upon young children, especially during inclement seasons, are potent influences in producing the high rates in the first class of towns given in the preceding tables. The statistics of factory towns in England do not exhibit a larger proportion of deaths of infants than occur in other large towns where few or no factories are in operation, yet the proportion is very much larger than in agricultural towns.

In Germany, according to information furnished by Dr. Ernst Engel, chief of the royal bureau of statistics, in a factory city in the district of Zwickau, a few years ago, out of 459 children born in one year, 169, or 36 per cent., died under one year of age. Of those who died it was learned that 98 had not been nursed at all, and only 32 for the full time. In another factory city in the same district, in the same year, out of 423 children born, 185, or 43 per cent., died the first year, of whom 98 were never nursed at all, and only 23 for the full time, and of the remainder only two for more than twenty weeks. In a third city, 48 per cent. in 1873 and 41 per cent. in 1874 of all the children who died had not reached the age of one year, and the great majority were the children of factory operatives. In a fourth factory city, of 731 persons who died in 1874 the children numbered 510, of whom 406 were under one year of age. The attending physicians in the cities ascribed the infant mortality partly to the bad condition of houses, but mainly, without hesitation, to the fact that the mothers gave their attention to the work in the factory; that natural nursing was either given up entirely or continued for only a short time; and that the children, instead of receiving a mother's care, were left to the guardianship of older children.

In the district of Liegnitz, in Prussia, the rate of mortality has decreased among small children since hand-loom weaving gave way to factory employment. At Aix, in all cases where the mothers resumed work in the factory soon after confinement, an unusual mortality occurred among the infants.

In the greater part of the districts of Bavaria the health of the factory operatives seems good. If here and there a greater mortality among infants and poor health among the older children are met with, it should not be ascribed to any special branch of industry, nor necessarily to factory work, but to the unfavorable conditions under which children belonging to the working class, whether in the factory or out of it, are brought up.

In Swabia, the city of Augsburg alone furnishes unfavorable reports. Out of 418 children under one year belonging to the factory population, 273, or 65 per cent., died in a year; out of 1,692 infants of the remaining population, 732, or 43 per cent., died.

In Wurttemberg much complaint has been made of an excessive mortality among infants, but the cause is thought to be, not that the mothers are employed in the factories, but in that lack of maternal care which is notorious among the working classes of this district. According to the statistics from these districts, the mortality is often greatest in those places in which few women are employed in the factories, while places in which such employment is general make a favorable showing as to infant mortality.

The mortality among infants in Baden and Hesse does not seem disproportionately large among the factory population. A single report from Hesse speaks of an unusual mortality due to lack of proper care and food.

Some physicians in Saxe-Meiningen report an excessive mortality among the infants of those women who are employed in the porcelain and toy trades. This is true not only for those employed in the shops, but for those who work in their own houses.

By the German law (a) women are not to be employed for three weeks after confinement, and in some factories they are allowed three-fourths of their wages for this period of rest. I know of no such provision of law elsewhere. My own investigations in large representative factory towns in this country indicate the evil results of the employment of married women. In many cases where mothers had lost their first, second, and in some cases the third child, while operatives, they had, on leaving the factory, raised up children, each succeeding child growing more healthy as the period after factory work became more extended. A well-known physician in one of the towns spoken of informed me that chlorosis attended factory work among young girls; that in Canada, where he had practiced, about 10 per cent. of the females were attacked by this disease, while in the factory towns in the states he found 90 per cent. of the Canadian girls suffering from this trouble. Many physicians in factory places testify that functional irregularities prevail among female operatives to a greater extent than among others; on the contrary, some of the most eminent practitioners give an opinion at variance with this, and insist that if home life is cleanly, and accompanied by good conditions, the factory worker should be as healthy as others. One of the best known physicians in one of the largest factory towns in New England states that factory labor does not incapacitate women for bearing healthy children; that it is better for them to work in factories than to pass the period of gestation in inactivity, as many of the wealthy do; that the air-space in the mills is sufficient to insure pure air, the ventilation being far superior in the mills to that in the homes of the operatives. He is of the opinion, however, that too severe work entails a bad state of health upon mother and child. It is the testimony of all physicians that the factory is better for married and even pregnant women than unwholesome houses. In one city, from thirty-two families where the mothers had continued in the factories almost till confinement, there had been forty-four deaths of infants.

^a See section on "Factory Legislation".

I am confident, from all the testimony I have been able to gather, that there are many more children of mothers working in factories during pregnancy who die in infancy than of other classes; and that while many children die when only a few months or a year old, in consequence of the factory work of the mother during pregnancy, many born healthy, or comparatively so, die from want of proper maternal care. I am further satisfied that the conditions of the homes of these women are as deleterious to their health, and to infants born to them, as the work of the factory. I am also satisfied that to exclude such women from the factory would be an act of great injustice to those concerned. And yet I am satisfied that the employment of married women is the worst apparent evil of the factory system. I am not aware of many attempts to relieve communities of the unhappy results of such employment.

At Mulhouse, in Alsace, the birthplace of industrial societies, there are maternity associations for aiding factory women in confinement. It is worth while in this country to study the effect of such institutions, and I have therefore extracted from a recent official document, published at Mulhouse, an account of the attempts in that city to aid women:

We know what considerations affect the state of the woman who is to become the mother of a child. The least imprudence can compromise the existence of two beings, the mother and the child which is to be. Mothers know in general that prolonged privations or too much hard work exert a disastrous influence on the shape and health of the child. Nothing is more distressing than the condition of the woman who becomes a mother when she is not surrounded by those conditions of well-being and care which her state requires. On the other hand, nothing sadder, from a humanitarian point of view, can be seen than the frightful mortality which affects children in the first days of their lives, when they lack aid and indispensable precautions in the first months of their existence.

Dr. Penot stated on authority, ten years ago, in a report made to the Industrial Society of Mulhouse, that in the industrial cities, more than anywhere else, the mothers, pressed by want, continued their work in the factories to the last moment possible, almost to the time of their becoming mothers, and that they resumed work in a very few days afterward, which course could not fail to give very deplorable results as regards sickness and death among the mothers as well as the young children. Justly excited by this state of things, the manufacturers and heads of firms of the greater part of our establishments were soon actively engaged in taking proper measures to supply a suitable remedy by establishing funds for the aid of women in labor. These excellent institutions have carried on their work almost without change for fifteen years, and have largely increased; the most encouraging results have been obtained.

Several industrial establishments take upon themselves the cost of the midwife, medicine, clothing, etc., and beside pay the mother her daily wages during the time devoted to necessary rest.

Messrs. Hartmann, Schmalzer & Co. (now Germain & Co.), at Malmerspach, pay to the working woman when she becomes a mother the sum of 20 francs, and beside her full wages for the first four weeks afterward, on condition that she devotes all her time to the care of herself and child. In certain cases the unmarried mothers are allowed to enjoy the same advantages.

At Guebwiller, Messrs. Bourcart, Son & Co., since 1865, have paid all the necessary expenses of their working women who became mothers, beside their full wages for three weeks. Several ladies of this city have also established an association the object of which is to furnish aid to women about to become mothers. In 1877 the number of women aided was 300; the sum spent each year is about 1,200 francs. At Cernay, Messrs J. Gros & Co. pay for medical care and 50 francs beside, on condition that the mothers do not begin work for fifteen days.

In 1864, Mr. Jean Dollfus brought to the attention of the Industrial Society the important question of caring for women in labor. The house of Dollfus, Mieg & Co. had adopted the plan of paying the charges of the midwives, and also had paid the wages of the working women until their health was fully restored. Mr. Jean Dollfus saw by examination of the records, that had been kept with care, that the number of deaths of children belonging to the working people in his employ had sensibly diminished as the result of the measures he had taken. He spoke of his plan, and recommended it to the attention of the other manufacturers. It was only necessary to bring to their knowledge so important a fact to have them look at it immediately in the same light, and they began at once the study of the question.

The question is not as simple as it at first appears. Although decided to make all necessary sacrifices, the heads of establishments were not in accord as to ways and means. Was it expedient to make a distinction between married women and unmarried mothers in the distribution of aid? Was it best for the patrons to bear all the expense of such aid, or was it better for all the women in an establishment to have a certain sum retained from their wages and put into a common fund, the firm adding an equal sum each time? The two systems have been tried.

Messrs. Trapp & Co., to-day Tournier & Co., have also given aid to women and girls in labor, but without having any recourse to any association whatever, the firm paying all expenses; only, in order to establish a distinction between the married women and the unmarried mothers, Messrs. Trapp & Co. give help openly to the first, but reach the latter who need assistance in an indirect way. These various regulations each have merit and have been regularly carried out for a sufficient number of years to enable us to prove with great satisfaction the happy results obtained.

The most important of these organizations, which is centralized in the house of Dollfus, Mieg & Co., has undergone many changes since 1872; the assessments for each working woman after three years were raised from 15 to 20 centimes, the patrons paying the same sum. Since that time the association, which was in debt 2,600 francs, has paid that sum, and in 1877 had in its treasury 11,152.25 francs. The aid paid to each woman is now 60 francs for the full six weeks, instead of the 54 francs paid up to 1875. The woman has also received during the past year the services of a physician without expense, and the association pays the apothecary. In several cases the association has purchased clothing for the infants, which has been given to the most needy women. Every five years a report is made of the results secured by the association. The first of these reports was made to the Industrial Society by Mr. Burtat in 1871; the second by Mr. Gustave Dollfus in 1875. These two reports show a considerable amelioration in the health of the women and children assisted, and a notable diminution in their mortality since 1872. It is shown that the mortality of children born within the association, reckoning from the day of birth to one year, has fallen from 28 to 21 per cent. This result is satisfactory enough to encourage both the manufacturers and the employés to continue in the path they have so far followed.

It is perhaps to be regretted that all the manufacturers in this locality have not joined in one association; for often in changing from one factory to another a working woman who finds herself in need of aid from the association loses it because she has not worked long enough in one of the establishments belonging to it. The services that these institutions have rendered for more than ten years are well known and appreciated; many working women not employed in the associated establishments voluntarily pay 40 centimes assessment, in order to enjoy the advantages that the association supplies.

Mr. Gustave Dollfus, of Mulhouse, a broad philanthropist, who has learned his philanthropy from his knowledge as a large manufacturer of the wants of the operatives, made a report to the Industrial Society of Mulhouse, in February, 1880, upon the results of the efforts of the Maternity Association. In this report Mr. Dollfus said :

When M. Jean Dollfus proposed the foundation of this association, in 1866, he did not foresee remarkable results. Our association dates from August, 1866. It is consequently thirteen years old. There have been during that time 3,281 births of living children and 151 still-born, being an average of 4.40 per cent. The first six years show an average of 5.47 per cent. of still-born, while the last six years show an average of 3.26 per cent. The year 1877-'78 shows only 1.61 per cent., which is a diminution of 44 per cent. in the number of still-born.

The proportion of illegitimate births shows an average of 19.47 per cent.; there has been a noticeable falling off, for the first six years give an average of 21.02 per cent. and the last six years 17.82 per cent., showing a falling off of 14.30 per cent. in the number of illegitimate births. The deaths to 100 births, from a day old to six months, were, for legitimate children, 21.33 per cent. for the first three years, and 13.78 per cent. for the last three years. For illegitimate children in the same years the average of 30.84 per cent. was reduced to 16.55 per cent. In the first case the reduction has been 36 per cent., and in the second case 46 per cent. of the number of deaths. The number of those dying between six months and a year has remained about the same.

The total number of deaths of legitimate children at the end of a year, which was 26.36 per cent., has been reduced to 19.86 per cent., and that of illegitimate children from 38.52 per cent. to 25.82 per cent. As a whole, the mortality of children, which was 28 per cent., is no more for the last three years than 20.86 per cent.; that is to say, the falling off has been 27 per cent. of the number of deaths.

With an average of 267 births in a year there have been during the last three years 52 deaths, instead of 72, which was the proportion for the first three years. The result is striking, and certainly merits careful attention.

The association made payable to its members from 1866 to 1873 an assessment of 15 centimes; the proprietor added for each working woman an equal sum. The woman in confinement received then 54 francs for six weeks, during which she was obliged to remain at home to give to her new-born child the care that it needed. The association numbered then 1,946 members and had 286 births in a year. The assessment was found to be too small, for at the end of the seven years the treasury showed a deficit of 4,000 francs. Since June, 1873, each working woman has paid an assessment of 20 centimes, and so has the proprietor; the deficit has been covered, and the treasury has a reserve of 16,000 francs. The assistance, which was 54 francs, has been raised to 60 francs. The association binds itself to pay the midwife 8 francs and the fees of the physician and apothecary in case of the sickness of the mother or child. The year 1878-'79 showed only 1,550 members; this falling off was caused by a reduction in the number of employes in certain print-works. Messrs. Schaeffer & Lalance, having noticed the results obtained, have decided with ardor to have their employes join the association, so that we number to-day 1,738 members.

We wish and ought to show the moral influence of the association, as well as the benefits that an examination of the statistics proves have been secured. A woman depending upon her own labor for her support returns to the factory as soon as possible after her confinement and leaves her child in the care of strangers or puts it out to nurse. The mother is thus, from the first, forced to separate herself from her child, to which she has not had time to become attached. This child will remain all its life little better than an adopted child; the mother will not show for it the true maternal love. The family tie will not exist; but if it does, it will be very feeble. The six weeks during which the mother takes care of her child will attach them to each other. The maternal love will be developed, will become rooted in the mother's heart, and the family ties so established will last forever. To attach children to their parents and parents to their children is a moral work and elevates the dignity of both. Our regulations have been sent for from Paris and London, where the public aid prefers, as we do, this kind of an association to the nursery or infant asylum, because it develops the family ties, while the others break them and prevent their growth. It can be seen that our association is doing a good work; for that reason it is so much the more to be regretted that, as a general measure, all the establishments in our city do not decide to join it, for then so much more good could be done. (a)

The following table shows the results within and without the association at Mulhouse, and in comparison with a district more rural in its conditions :

INFANT MORTALITY IN THE FIRST YEAR AFTER BIRTH.

[Twins are counted only as one birth.]

Places and years.	Births, not including still-born.			Still-born.	Still-born to 100 births.	Illegitimate to 100 births.	Deaths (at the end of first year) to 100 births.		
	Legitimate.	Illegitimate.	Total.				Legitimate.	Illegitimate.	Total.
Mulhouse, 1871.....	1,567	413	1,980	98	4.72	20.86	36.56	51.57	39.69
Mulhouse, 1873.....	2,019	383	2,402	115	4.57	15.00	26.50	48.34	29.18
Average.....					4.64	18.40	31.53	47.45	34.43
Brunstatt, 1871.....	96	6	102	6	5.56	5.88	81.25	100.00	35.29
Brunstatt, 1873.....	96	2	98	5	4.85	2.04	28.25	100.00	29.60
Average.....					5.20	8.96	29.75	100.00	32.44
Association,* 1871.....	104	81	275	10	6.46	20.45	23.19	48.14	30.54
Association, 1873.....	268	41	309	8	2.52	13.27	28.86	46.84	29.44
Average.....					4.40	21.86	47.49	47.49	29.99

*For aiding women in labor.

Does the employment of women and children tend to destroy the home? To the extent that women who are mothers and have the care of a household, and who become careless of maternal ties through hard work and maternal duties combined, it does; for the factory mother who has buried several children learns sooner or later to speak of

her losses in a careless and unfeeling manner. Domestic felicity does not and cannot reach a very high place when a mother must arise before the rest of the family to prepare hastily the breakfast for all, then hasten to the mill and make her time good till the noon hour, when the dinner must be prepared as hastily as was the breakfast; while at night, after a day of constant labor, she must see that supper is served and then take up the thousand and one duties of the household, which keep her busy till the hour has long passed when she should be asleep. No ten-hour law has been able to reach the factory woman with a family.

It is gratifying to be able to believe that the number of married women employed in factories is decreasing. Notwithstanding the evil results of their employment, their condition is a vast improvement upon that which surrounded the workers under the domestic system.

The home in the United States suffered more from the institution of the factory system than it did in England, for there the factory found a population ready to become factory workers, while here it was necessary to provide for a new population, and this opened the way for the tenement house and the factory boarding-house, two features of factory life quite unknown in England and on the continent, and which are gradually disappearing in this country, (a) while the individual home is increasing in its influence. With this growth of the influence of the individual home there is, as I have said, a gradual decrease in the employment of married women. If, at times, the employment of women has taken the mother from the care of her infant, it has enabled more who had no home to become self-supporting, for the employment of women generally is now no evil, thanks to improved machinery and generally wise legislation.

Young children are now almost universally excluded from the factory and workshop. Where their age permits, they are much better off inside than outside the factory, and their employment enables them to contribute to home support rather than to draw from the income of the family.

B.—*Factory employments are injurious to health.*

That some factory employments are injurious to health is true, but it is not true that factory employment, as such, in comparison with any other mechanical employment, is unhealthy. A recent writer, describing a watch factory, states what is true as to all factories:

The first requisites of a watch factory are neatness and abundance of light. It is now recognized that no man can do his best work unless he is physically comfortable. Excess of heat or cold, a poor light, and, more than all, bad air, are positive hinderances to good work. Of two men, equally skilled, one in a close, damp, or hot room with a bad light, and the other in a dry, sweet, and healthful room with the best light, the man who has the most comfortable quarters will do the most and best work in a day.

It is now seen that everything that contributes to the physical and mental comfort of workmen pays a good return on the cost, and certainly makes better citizens of the operatives.

Intelligent employers of labor adopt all plans which can be devised for securing the health of their operatives. Factory legislation compels the ignorant employer to adopt them. If some means could be devised to make all the homes of the operatives as neat, clean, and wholesome as the factory, we should hear no more of the tendency of the factory to physical degeneracy. All employments have features not conducive to health. These features are incidental, and cannot be separated from the employment. In mining coal, for instance, the nature of the occupation is bad in nearly all respects; but coal must be had, and there is never any lack of miners. What, then, shall be done? Operators are in duty bound, of course, to make all evils, whether incidental or artificial, as light as possible, and should introduce every improvement which will lighten the burdens of all who are obliged to seek employment in the lowest grades of labor. Machinery is constantly elevating the grades of labor and the laborer. The working of mines, even, is to-day an easy task compared to what it was a few years ago. The workers themselves have much responsibility on their own shoulders, so far as the healthfulness or unhealthfulness of an occupation is concerned. The professional man can soon burn out his fires if he does not have a care for the supply of fuel. Sedentary habits are as bad for one class of workers as the presence of fibers, smoke, and dust is for another, and each should be held responsible for the best care of himself under whatever condition he finds himself employed. Let the children of factory workers everywhere be educated in the rudiments of sanitary science, and then let law say that bad air shall be prohibited, even in homes, and I believe the question of the health of the operatives will not so seriously trouble us.

It is often asserted that the air of the factory is very deleterious to health, not only because it is impure, but because there is an insufficient supply. This assertion comes from persons who have not inspected factories. To the man acquainted with the inside of a textile factory no evidence is needed, but to the public it may be essential. I am able to present facts on this point relating to Mulhouse and to Massachusetts.

Some years ago, while calculating the average air-space allowed to each operative in the textile factories of Massachusetts, I ascertained, so far as possible from scientific sources, the amount of air-space which has been deemed essential to secure a proper condition under which the operative may work with safety, so far as the air he breathes is concerned.

The royal commissioners appointed by the British government to inquire into the sanitary condition of barracks and hospitals reported, in 1857, that the capacity of the rooms should be not less than 600 cubic feet of air-space for each soldier, and the supply of air per minute and per man not less than 20 cubic feet. Mr. Carl Pfeiffer,

a See section on "Homes of Operatives".

formerly secretary of the American Institute of Architects, has given the following estimate of fresh air required by every person every hour:

	Cubic feet.
In hospitals, ordinary patients	2, 000 to 2, 800
In hospitals, wounded patients	4, 800
In hospitals, epidemic patients.....	5, 600
In workshops.....	2, 000 to 3, 500
In prisons	2, 100
In barracks	1, 000 to 1, 650
In theaters	1, 400 to 2, 400
In schools for children	400 to 500

By this estimate each operative should have from 2,000 to 3,500 cubic feet of fresh air per hour, or a supply of from 30 to 60 cubic feet per minute.

Pettenkofer, Wilson, and Parkes, all eminent authorities, agree in the opinion that 3,000 cubic feet of pure air should be supplied to each adult per hour, or about 50 cubic feet per minute; that the problem is to determine how many times the air in a smaller space can be changed; how much smaller the space may be than 3,000 cubic feet; and what agencies shall be used to change the air. Practically it is determined that by what is called natural ventilation (*i. e.*, no fans, blowers, exhausts, etc., being used) the air in a small space can be changed but a few times per hour without creating draught; hence the smaller the space the more rapid the change must be, and the greater the danger from draught; and, indeed, without the best appliances, air can be changed in a small space only a few times, say six or eight per hour, at best, without danger. Consequently, it is far better to have 3,000 cubic feet of air-space, and change the air gradually once an hour, than an air-space of 1,000 cubic feet and change three times an hour.

Ranke, in his *Elements of Physiology*, fixes as the necessary minimum amount for each individual the average quantity of 2,118 cubic feet of air per hour, or about 35 cubic feet per minute. It is well established that the breath of one adult will vitiate about 500 cubic feet of air per hour, while the heat of the body, of gas and other lights, fires, etc., will vitiate perhaps half as much more; so that, on this basis, an adult in a sweet and well-built dwelling requires at least from 700 to 800 cubic feet of air per hour. How much, then, should the operative have when surrounded by the various gases, steam, dust, heated air, and oil-fouling condition of the factory, and working in a room with many others—all the circumstances connected with his employment demanding a large consumption of oxygen? It is clearly and quite positively shown that an operative in our mills, or a workman in our work shops, should have a supply of fresh air of from 25 to 50 cubic feet per minute, or 1,500 to 3,000 cubic feet per hour, and an air-space of from 1,000 to 3,000 cubic feet, according to surroundings and means of ventilation. The statistics show whether or not he has this air-space.

I have the exact measurement of 2,140 separate rooms, comprising 64 different kinds of rooms, or rooms used for 64 different purposes, in textile factories. The following table shows the style of room, number of each kind examined, the average amount of air-space to each operative employed in the various rooms; also, the largest and the least amount of air-space to one operative, in the several departments. A few large rooms used for purposes where but a small number of people are employed have been left out of the table, but they do not affect the average given. It will be borne in mind that machinery and materials diminish the average amounts of air-space given at least 25 per cent.

Names of rooms.	Number of rooms inspected.	Average air-space, in cubic feet, to each operative.	Largest amount of air-space, in cubic feet, to one operative.	Least amount of air-space, in cubic feet, to one operative.	Names of rooms.	Number of rooms inspected.	Average air-space, in cubic feet, to each operative.	Largest amount of air-space, in cubic feet, to one operative.	Least amount of air-space, in cubic feet to one operative.
Bleachery.....	21	7, 055	50, 869	1, 428	Packing.....	93	5, 269	24, 901	532
Boiler-room.....	9	19, 485	73, 500	4, 100	Picker-house.....	32	7, 434	24, 000	923
Braiding-room.....	4	5, 246	12, 666	2, 037	Printing.....	11	2, 458	4, 420	579
Burling-room.....	7	2, 200	6, 720	847	Repairing.....	43	4, 890	15, 350	1, 178
Cloth-room.....	9	3, 620	6, 321	1, 180	Reeling.....	6	2, 551	6, 840	784
Combing-room.....	3	5, 554	7, 250	3, 571	Spinning (ring).....	127	3, 049	11, 572	555
Carding.....	13	3, 461	6, 652	1, 125	Spinning (mule).....	281	5, 213	21, 960	687
Cotton-house.....	3	10, 758	19, 200	1, 574	Spinning (jack).....	39	3, 279	10, 044	1, 519
Dressing.....	139	6, 748	33, 583	1, 014	Spinning (flyer).....	4	8, 692	24, 055	1, 579
Dyeing.....	80	5, 080	70, 025	443	Spinning (cop).....	4	1, 802	2, 231	1, 313
Drying.....	56	11, 782	53, 912	1, 188	Spooling and warping.....	162	3, 953	21, 299	574
Engine-room.....	6	14, 113	24, 288	2, 540	Scouring.....	19	6, 070	11, 060	1, 027
Engraving-room.....	7	2, 130	3, 000	521	Steaming.....	2	20, 531	38, 400	2, 672
Finishing-room.....	100	3, 298	26, 673	540	Shearing.....	7	10, 239	50, 369	2, 400
Folding-room.....	29	3, 748	12, 393	974	Twisting.....	6	3, 736	6, 840	1, 303
Fulling-room.....	11	4, 487	11, 037	2, 000	Weaving.....	276	3, 327	34, 908	495
Gigging-room.....	9	3, 573	5, 113	2, 330	Wool washing.....	6	8, 713	27, 440	1, 309
Hosiery-room.....	4	1, 437	3, 612	1, 126	Wool sorting.....	23	3, 131	13, 060	1, 695
Machinery.....	26	7, 022	50, 000	720	Winding.....	7	1, 371	3, 278	511
Preparation.....	395	5, 815	62, 050	947					

The following table shows the ventilation for the factories of Mulhouse:

Industry.	Number of employes.	Cubic feet for each employe.	Remarks.	Industry.	Number of employes.	Cubic feet for each employe.	Remarks.
Cotton carding	117	2, 191	Stories.	Cotton spinning.....	67	6, 184	Stories.
Do.....	89	2, 509	Do.	Do.....	32	6, 254	Do.
Do.....	115	2, 756	Do.	Do.....	207	7, 703	Ground floor.
Do.....	27	3, 110	Do.	Do.....	25	7, 703	Stories.
Do.....	30	3, 075	Do.	Do.....	75	9, 294	Ground floor.
Do.....	57	3, 710	Do.	Wool spinning.....	307	4, 417	Do.
Do.....	225	4, 205	Ground floor.	Do.....	138	4, 876	Do.
Do.....	8	5, 407	Stories.	Do.....	160	5, 013	Do.
Do.....	44	7, 951	Ground floor.	Wool twisting and reeling.....	161	2, 050	Stories.
Do.....	13	8, 754	Stories.	Wool twisting.....	56	3, 296	Do.
Wool combing.....	115	4, 735	Ground floor.	Washing and pressing wool...	35	5, 205	Ground floor.
Do.....	77	7, 279	Do.	Preparing for weaving.....		1, 626	Stories.
Cotton spinning.....	10	4, 064	Stories.	Do.....	43	2, 181	Do.
Do.....	25	4, 417	Do.	Do.....		3, 251	Do.
Do.....	135	4, 523	Do.	Weaving.....	354	1, 201	Do.
Do.....	87	4, 947	Do.	Do.....	680	1, 343	Ground floor.
Do.....	17	5, 613	Do.	Do.....		1, 519	Do.
Do.....	145	6, 149	Ground floor.	Do.....	346	2, 156	Do.

These facts are of the highest value in answering the question relative to crowded factories, and are as true of Great Britain as of Alsace and of Massachusetts. The trouble is not in the air-space of the factories, but in that of the homes. In the construction of factories of all kinds at the present time the most careful attention is paid to their ventilation, and large sums are paid for improved methods of changing the air and for regulating its temperature. The air of a cotton factory is better than that of a lecture-room.

It is often alleged that the mortality of factory operatives is much higher than for other classes of wage workers. This is true in some sense, and for some localities, but not as a rule, as the following tables will show.

The following table shows, for England, the influence of occupations on mortality, at different ages, in 1853:

Occupations.	Age.		Years during which the influence of the occupation shows itself the most.				Age.	
	15 years.	20 years.	25 years.	35 years.	45 years.	55 years.	65 years.	75 years.
Average of mortality per 100 in all classes.....	0.632	0.859	0.985	1.305	1.853	3.215	6.676	16.584
Protestant clergymen.....		0.090	0.583	0.730	0.933	2.460	5.027	16.398
Physicians.....		1.117	1.287	1.474	2.047	3.046	6.287	18.414
Civil engineers.....	0.169	0.577	0.944	1.531	1.049	2.217	5.387	20.389
Servants.....	0.242	0.503	0.901	1.368	1.857	3.184	7.848	22.786
Coachmen.....	0.306	1.091	1.218	2.025	2.954	4.724	9.986	22.076
Tailors.....	0.644	1.087	1.200	1.385	2.006	3.300	6.982	18.451
Butchers.....	0.292	0.589	1.005	1.732	2.245	3.745	8.223	20.102
Cotton operatives.....	0.714		0.929	1.166	1.855	3.723	8.527	22.617
Miners.....	0.308		0.984	1.245	2.047	4.950	10.026	24.807
Day laborers.....	0.513		0.872	1.080	1.507	2.784	6.060	18.250
Farmers.....	0.484		0.694	0.834	1.221	2.313	5.065	16.805

From this table it can be seen that the mortality of clergymen is least, while coachmen, butchers, and miners have the least chance to live long. The cotton operatives present this peculiarity, that they do not sensibly exceed the average until they arrive at fifty-five years of age.

The following statement shows the mortality to 1,000 persons in each occupation in Paris, France, in 1853:

Lawyers.....	28.70
Architects, engineers, and mathematicians.....	39.80
Servants.....	155.80
Cultivators (farmers).....	62.90
Fundholders and proprietors (landlords).....	27.90
Rag pickers.....	37.29
Workmen in shops.....	49.00
Cotton operatives.....	27.00
Army.....	403.00

This statement shows that the death-rate in Paris is largest among the servants. This is explained by the small rooms in the mansards where they sleep, by dark kitchens, etc. They are also persons unfitted to do the heavy work in the country, being too weak physically, and consequently they flock to the cities.

It will be seen from the tables, pages 21 and 22, that the percentage of infant decedents to the population in factory towns is very much lower in Rhode Island than in Massachusetts, even with the fact that deaths under five only are given for Rhode Island, while for Massachusetts they also include the children of five years of age. The proportion of children employed in textile factories to the whole number of persons employed is larger in Rhode Island than in Massachusetts, being 18+ per cent. for the former state and 11 per cent. for the latter.

It is perfectly easy, if one is so disposed, to prove by statistics that factory employments are very detrimental to health, or that they are no more so than other mechanical employments. For instance, of 837 spinners employed in fine spinning in Manchester, England, in 1832, before the miserable cellarages of that town had begun to disappear, 621, or 74.2 per cent., reported themselves in good health, 171, or 20.4 per cent., to have pretty good health, and 45, or only 5.4 per cent., to be in indifferent health.

I have found many men and women in the linen factories of Dundee who had worked in flax and jute for thirty years or so, and in the worst processes of transforming the raw material to yarn, and, with the exception of the hand hacklers, the answer to my questions as to the effect of the work was that no ill effects were experienced. Examples of the reverse might easily be given, for it is quite true that the unhealthfulness of some kinds of labor performed in factories has been and is considerable, although less than the bad effects attending the household system. In spinning-rooms, for instance, the flying particles of fiber have a deleterious effect. Science is removing the effects of cotton dust as well as the effects of revolving shafts and the presence of steam in some departments.

Physicians make very conflicting reports regarding the health of factory operatives for different localities, or sections of the same city even. My own conclusion in the matter is that factory operatives, so far as reasonable labor is concerned, may be as healthy as any other class engaged in mechanical pursuits; that if they are not so, it is owing to one of two causes, or the two combined, namely, too severe labor imposed, or bad sanitary conditions at home, for the difference in the health of those families who live in individual houses where hygienic care is taken and those living in close quarters in crowded tenements, the work being equal for both, is very marked indeed. So the statistics of the one or the other portion of factory operatives proves the one or the other conclusion, as the motive of the person using the statistics may indicate. The truth lies between the two extremes. In a factory center, where every effort is put forth by the proprietor to secure good homes and every means is taken for cleanliness in homes and in mills—and the operatives are sufficiently progressive to co-operate with the proprietors, and these two conditions are generally found together—the mortality rates will not be exceptional. Reverse these conditions, and the rate rises in proportion to the general neglect.

Arguments are often drawn from the statistics of Manchester, England, relative to the past; but thirty or forty years ago there were nearly 50,000 working people in Manchester living in cellarages or underground dens. To-day there are not half a dozen families living in such abodes, and consequently the deaths from zymotic diseases have been reduced to the lowest point. During the past ten or twelve years the deaths from typhus and typhoid fevers have been reduced from 635 to 68, or from 1.83 per 1,000 of the population to 0.18, and by very regular reduction, as will be seen from the following table taken from the report of the officer of health of Manchester for 1881:

Years.	Number of deaths.	Rate per 1,000 of the population.
1868.....	635	1.83
1869.....	403	1.16
1870.....	302	1.13
1871.....	282	0.80
1872.....	242	0.68
1873.....	232	0.66
1874.....	188	0.53
1875.....	177	0.50
1876.....	225	0.63
1877.....	164	0.46
1878.....	115	0.32
1879.....	68	0.18

Dr. John Leigh, the health officer of Manchester, informs me that he believes the next generation of operatives will be much better educated than the present—have better habits, better amusements, etc. This condition he asserts is now coming as the results of education, reading-clubs, coffee-rooms, etc.

Perhaps Oldham, England, is the most emphatic type of the factory town; it has a population of nearly 115,000; its factories are mostly devoted to spinning; it has about 250 factories, running over 10,000,000 spindles, or nearly as many as the whole United States, and is often quoted as the largest factory town in the world. The population of Oldham is stated by the registrar-general to be 112,176, dating to the middle of 1881. It may be well, as showing the growth of the borough, to give the various totals, from 1851 to 1881, thus: 1851, 52,820; 1861, 72,333; 1871, 82,629; 1881, 112,176.

The following table shows the mortality rate of Oldham, in comparison with several places in England having different kinds of manufactures, or, in some instances, but few:

Towns.	Estimated population in 1881.	Deaths.		
		Weekly average, 1880.	Registered in the week.	Annual rate per 1,000.
London	3,608,774	1,560	1,452	19.8
Oldham	112,176	51	49	22.8
Liverpool	353,988	285	257	24.2
Manchester	341,269	177	146	22.3
Salford	177,700	92	67	19.7
Newcastle	145,675	63	56	20.1
Leeds	310,490	129	123	20.7
Sheffield	285,623	123	123	22.5
Bradford	184,037	79	65	18.4
Hull	155,161	68	52	14.1
Birmingham	402,296	157	121	15.7
Bristol		82	68	17.1

All these facts only seem to emphasize the conclusion already stated, and lead me to add that manufacturing concerns and municipal governments acting together can render factory employment as healthful as any mechanical labor can be; and that if this is not done there is culpable negligence somewhere. Low health conditions in factory places, where such conditions exist, are not due to the factory system, but to negligence either on the part of proprietors or of employés; usually, as I have said, on the part of both parties; but in too many cases on the part of the operatives themselves, who sometimes shamefully abuse a good, clean tenement, in spite of all the owner can do to keep it in order. When a landlord is permitted to erect a tenement house in such a way that the ventilators from the privies of an adjoining block discharge their foul gases under the windows of the new structure, as I have found in some instances in an American factory town, blame of ill-health on the part of the operatives occupying such places must not be laid wholly upon employer and employés, but upon legislatures as well, for not giving boards of health the power to interpose before an epidemic occurs.

Law is fast asserting itself in the interest of the health of the people, and it is the knowledge of such conditions as I have referred to which stimulates and encourages the law-makers to take advanced ground in sanitary matters.

C.—*The factory system is productive of intemperance, unthrift, and poverty.*

If it could be shown that the factory leads to intemperate habits, it would follow conclusively that it is productive of unthrift and poverty, the sure conditions resulting from intemperance. It is true that a great deal of drunkenness exists in factory towns and among factory operatives; it is not true that the factory is the creator of this. On the other hand, the investigations of Louis Reybaud, a member of the Institute of France, conducted in the name of the Academy of Moral and Political Science, relative to the condition of workingmen in various branches of industry, prove conclusively that the factory operatives are far more temperate than those engaged under the domestic system. The industries of France afford the very best opportunities for comparative study in this respect. In the United States drunkenness has never been much of an obstacle in the way of the success of the factory. Factory towns support a large number of common laborers, and the intemperance of this class is usually attributed to the factory. It must be frankly and freely admitted that whatever of unthrift there may be among factory operatives is to a very large degree due to the habit of beer-drinking, but employers, overseers, and even the operatives themselves are creating an *esprit de corps* which does not allow a man to remain in a factory when in the habit of getting drunk. This sentiment is on the increase, and as soon as proprietors will shut their doors to all habitual drunkards, as many have shut them already, the factory will become the most powerful agent we have for the prevention of intemperance. Its power in this direction is far greater than is generally known.

Unthrift and poverty do not belong to the factory system of industry to any such extent as they belonged to the system which it supplanted; indeed, the poverty existing at the birth of the factory system was one of the most potent influences which enabled it to grow. This is the historical view, not the sentimental one. There was a time, within a quarter of a century, too, when the drunkenness of factory operatives constituted a serious obstacle to the successful operation of factories in Great Britain and on the continent. Sunday was a day of debauch, and many, spinners especially, did not get into condition for work before Tuesday or Wednesday. It is the unanimous testimony of manufacturers in the leading factory towns of Great Britain that drunkenness is not now a serious obstacle to the running of their works, and in many places on the continent the same testimony is given.

The savings-bank records of factory towns in Europe prove the assertions as to poverty and unthrift to be groundless so far as the Old World is concerned, and too many evidences exist here to require especial argument against such assertions. I know full well how hard is the struggle many make to support their families, and that beer-drinking is the chief cause, in too many cases, of the severity of the struggle; but it cannot be shown that the factory

system produces either intemperance or unthrift. If we take the French Canadian factory population of the United States upon which to base a conclusion, we cannot arrive at any other result than that the factory stimulates thrift and prosperity. The United States afford the very best proof possible of the thriftiness of factory people, in this, that within a generation the nationality of the cotton-factory operatives has changed from American and English to English and Irish, largely the latter, and now to French Canadian; with each change has come a class seeking an improvement of condition, and as the improvement has come the old have stepped up from the mills to higher occupations, shop-keeping, farming, etc., and the new have stepped in, and as their children become better educated than their parents, others coming to our shores will crowd them out of the factories that they, the newcomers, may receive the advantages which have given their predecessors a push along in the way of progress.

D.—*It feeds prostitution and swells the criminal lists.*

The charge that the factory feeds prostitution and swells the criminal lists is absolutely unfounded. This impression first grew from the condition of Manchester, England, where a large cellarage population, which has entirely disappeared, was attributed to the factory. It has been shown by the returns from the penitentiary of Manchester that the ranks of prostitution were not fed from the factory, 8 out of 50 coming from the factory and 29 out of 50 from domestic service. An extensive examination of the criminal records of a large number of British factory towns discloses the fact that neither the ranks of prostitution nor the criminal lists are increased to such extent from the factory population of those towns as from other classes. This is equally true in this country. It should be borne in mind that regular employment is conducive to regular living, and that regular employment does not, as a rule, harmonize with a life of prostitution, intemperance, and crime. The virtue of the factory women of this country and of Europe will compare favorably with that of any other class, and much better than with many departments of social life. A manager connected with the establishments of the Messrs. Coates, at Paisley, and who had been in service there forty years, informed me that during that period no one had ever gone from those works into a life of prostitution. Certainly there is nothing in factory employment conducive to vicious lives.

Much has been said by writers, in treating of the factory, of Manchester, and its "hoodlum" class is cited as the operative population. Nothing could be farther from the truth; it was the miserable hovel tenantry outside the factory workers which made Manchester's criminal lists in the past so large. Another common mistake has been made in taking a place like Manchester by which to judge the factory system. Manchester is not purely a factory town.

Most of the attempts to support charges of the abundance of crime and prostitution in operative towns in England by statistical tables have been based on the supposition that the great town nuisances are connected with the factory system. To ascertain the true facts as to crime and the factory system it is necessary to know the ratio of factory operatives to the whole population and the ratio of the number of criminals from the operative ranks to the whole number of criminals. In this investigation I have sought to learn these ratios, but the police departments of British cities and towns, while entering in the records the occupations of parties arrested, do not publish these occupations. Manchester is an exception. The statements contained in the tables relating to crime in factory towns in England I have taken from the original records. In the United States I have found but few factory places where the occupations of parties arrested are entered even, and then they are rarely reported. The statistics used in this report have been furnished me by the city marshals or chiefs of police of the places for which statistics are given. The following table exhibits the facts for Manchester, and it will be seen that in no year was the proportion of arrests of factory operatives to the whole number of arrests equal to the proportion of factory operatives to the whole population. I have used arrests instead of convictions, because I could not trace the parties through to conviction, but about the same percentage of all parties arrested were discharged from arrest or acquitted upon trial; so the arrests, as used for all, furnish a good basis for conclusions:

Year.	Total number taken into custody.	Total number of factory operatives taken into custody.			At work.			Out of work.			Percent- age of fac- tory oper- atives 20 years of age and up- ward to whole pop- ulation.	Percent- age of ar- rests of fac- tory oper- atives to whole num- ber of ar- rests.
		Both sexes.	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.	Males.	Females.		
1874.....	20, 103	1, 880	723	1, 166	1, 167	506	661	722	217	505	14	9.3
1875.....	20, 828	2, 574	789	1, 785	1, 659	565	1, 094	915	224	691	14	12.3
1876.....	19, 750	2, 053	560	1, 493	1, 312	395	917	741	165	576	14	10.3
1877.....	18, 917	1, 640	426	1, 223	1, 010	290	720	639	186	503	14	8.7
1878.....	18, 638	1, 584	408	1, 176	950	284	725	625	174	451	14	8.4
1879.....	18, 657	1, 593	438	1, 155	884	235	640	709	203	506	14	8.5
1880.....	20, 256	1, 820	515	1, 305	998	270	722	822	239	583	14	8.9
Total.....	137, 149	13, 162	3, 859	9, 303	7, 980	2, 501	5, 488	5, 173	1, 358	3, 815	14	9.5

The next table shows the facts as to arrests, as described for important factory towns in England, Scotland, and Ireland. In Oldham and Blackburn the ratio of arrests of factory workers is much greater than the ratio of

factory operatives to the whole population. This disproportion is the result of minor misdemeanors, and not of crimes, as I was informed by the chief constables of these towns:

Name of place.	Total number taken into custody during year.	Total number of factory operatives taken into custody.	Percentage of factory operatives, 20 years of age and upward, to whole population.	Percentage of arrests of factory operatives to whole number of arrests.
Oldham, England.....	2,484	748	21.5	30.1
Huddersfield, England.....	1,565	119	18.5	7.6
Halifax, England.....	1,850	188	16.5	10.1
Blackburn, England.....	1,738	606	17.6	34.8
Bradford, England.....	2,432	442	18.4	18.1
Ashton-under-Lyne, England.....	671	101	23.9	15.0
Salford, England.....	4,521	622	11.7	13.7
Bolton, England.....	1,291	173	16.7	13.4
Belfast, Ireland.....	11,581	487	....	4.2
Dundee, Scotland.....	6,620	1,425	18.9	21.5
Glasgow, Scotland.....	* 858	* 33	17.7	3.8

* One week.

What has been said of Great Britain is equally true of France and Germany, so far as I have been able to learn. M. Reybaud found a constantly-decreasing criminal list among constantly-increasing factory populations. If the factories have a bad influence on morals, crime should remain in proportion as the number of factory workers increases. The contrary, however, is the case in France, for in the district alluded to by Reybaud (*a*) the criminal list in 1855 was 2,214, while in 1859 it had, by steady reduction, fallen to 1,654, and in a constantly-increasing factory population.

In Chemnitz, in Saxony, the director of police informed me that in 1876 the total number of arrests was 2,884; in 1880 it was 2,699, of which number 2,366 were males, and only 333 females, although the larger proportion of operatives are females, and the operative population of Chemnitz is constantly increasing. The operatives of Chemnitz rarely get drunk.

The exhibit for representative factory towns in the United States is equally gratifying. In Lewiston, Maine, the factory population is 34 per cent. of the whole population over ten years of age. The following table shows the arrests from 1870 to 1881, inclusive, and the proportion of arrests of factory operatives of the whole number of arrests in each year:

Year.	Whole number of arrests.	Number of factory operatives arrested.	Percentage of arrests of factory operatives to whole number of arrests.
1870.....	203	19	9.3
1871.....	223	23	12.5
1872.....	267	22	8.2
1873.....	291	27	9.2
1874.....	546	51	9.3
1875.....	792	54	6.8
1876.....	544	43	7.9
1877.....	443	33	7.4
1878.....	407	37	9.0
1879.....	279	30	10.7
1880.....	233	24	8.4
1881.....	242	18	7.4
Total.....	4,520	386	8.5

The next table is for Pawtucket, Rhode Island, whose factory population is 21 per cent. of the whole over ten years of age:

Year.	Whole number of arrests.	Number of factory operatives arrested.	Percentage of arrests of factory operatives to whole number of arrests.
1876.....	733	79	10.0
1877.....	573	59	10.2
1878.....	635	64	10.0
1879.....	540	77	14.2
1880.....	638	52	8.1
1881.....	586	77	13.1
1882.....	671	103	15.3
Total.....	4,426	511	11.5

a See *Le Coton*, by Louis Reybaud.

The police records of Fall River, Massachusetts, one of the largest textile cities in America, are very perfect, and afford the following facts:

Year.	Whole number of arrests.	Number of factory operatives arrested.	Percentage of arrests of factory operatives to whole number of arrests.
1874.....	2, 116	631	29+
1875.....	2, 497	748	29+
1876.....	2, 288	773	33+
1877.....	2, 332	848	36+
1878.....	2, 141	759	35+
1879.....	1, 591	627	39+
1880.....	1, 853	632	34+
1881*.....	1, 729	569	32+
Total.....	16, 547	5, 587	33+

* Ten months.

The operatives, as the above table shows, supply 33+ per cent. of the whole number of arrests, while they constitute 38+ per cent. of the whole population over ten years of age.

In Lowell the records show occupations of persons arrested for 1880 and 1881; for the latter year I have the report for ten months only. The factory population of Lowell is 30+ per cent. of the whole population over ten years of age; the mill operatives in 1880 furnished 22+ per cent., and in 1881, for ten months, 24+ per cent. of the whole number of persons arrested. In the great shoe-factory city of Lynn, Massachusetts, the shoe factories furnish 28+ per cent. of the whole population over ten years of age, and 24 per cent. of the persons arrested.

The following statement is from the city marshal of Nashua, New Hampshire, an important factory city:

CITY MARSHAL'S OFFICE,
Nashua, New Hampshire, November 4, 1882.

CARROLL D. WRIGHT,
Special Agent, U. S. Census.

DEAR SIR: In reply to your inquiry relative to the extent to which the factory operatives of this city contribute to our criminal list, I would say that although we keep no record of occupations, yet I have made a careful examination of my criminal docket for the six months ending November 1, 1882, and estimate that about 7 per cent. of those arraigned before our police court during that time were factory operatives. From my personal knowledge of the parties, and on consultation with my officers, I think this estimate is very nearly correct.

Yours, truly,

JAMES H. HUNT,
City Marshal, Nashua, New Hampshire.

The following statement is from one of the oldest factories in New England:

We have no statistics, but during the last ten years we have employed at this establishment about 450 operatives; during that time one young man has been convicted of breaking and entering a store and sentenced to state prison, and a young lad who was concerned with him was sent to the reform school. This, so far as I remember, and I have the memory of others to assist me, is the sole case of crime that has been prosecuted. There was one other case of stealing, not prosecuted, and there have been a few brawls, drink at the bottom of them, but the parties have settled among themselves on getting sober. As a whole, our community is very orderly. There are some who drink, and any trouble there is comes from them. We bear it to a certain point, but if the offense is repeated, after warning, we discharge the offending parties.

The foregoing facts are quite representative in their character, and they dispel the prevailing impression that the bulk of the crime of manufacturing towns comes from the factory. It is true that the new system of industry, by securing a better competency, fights bad instincts with the very best of weapons—the interest of those it employs. In large towns the factories have had to contend with all the nuisances which a rapid increase of population beyond the due limits of accommodation must necessarily produce. Notwithstanding the very poor material with which the factory system is often required to deal, the contest for civilization is progressing successfully through its influence, and when the power of moral forces is universally recognized in the conduct of industrial enterprises the ratio of arrests of factory workers to the whole number of arrests will be much less than it is now.

I cannot give statistics relative to prostitution, but all my inquiries have developed but one opinion, and that is that the factory does not feed prostitution to an undue degree. This is true of all countries. A factory girl whose character is not good finds herself in an atmosphere uncongenial at first, but finally so chilling that she leaves the establishment. What there is in factory employment, other than other employments, which should tend to prostitution, it is difficult to understand. Until some effort is made to prove the contrary, I must conclude that the impression generally entertained in this particular is the result of prejudice or of ignorance of the true nature of the work.

E.—*It tends to intellectual degeneracy.*

In considering this objection, which many bring against the factory system, I cannot use statistical data, but am obliged to rely to some extent upon the opinions of those whose positions entitle their statements to the fullest confidence. I am able to assert, however, that no opinion of my own is stated which is not the result of my own observations and investigations; that is, while the treatment of the above objection appears to be statements of opinion only, the statements are really facts. These statements will apply to England as well as to America, although it is quite impossible to compare the intellectual progress of English and American factory operatives; for while England has had her own race constantly to deal with, America has had to deal with operatives from all lands congregated in her factory towns.

The impression that the factory system tends to intellectual degeneracy I believe to be entirely unfounded. Through the simplification of mechanical processes ignorant labor is congregated in factory centers, but it is not created or induced by the factory. The fact that the ignorant masses are enabled by the factory to engage in what it once took skilled labor to perform has given the widespread impression that factory labor has degraded the skilled, when the truth is it has lifted the unskilled; and this is the inevitable result of the factory everywhere. It is a curious fact that after the factory system was inaugurated in England, and the poor, degraded, and excessively ignorant pauper labor of the southern agricultural districts was lifted up to respectable and self-supporting employment and to comparative self-respect, the factory was held to be responsible for the ignorance which it found; and so the laws of England, and in later years of America too, have insisted upon the education of children as a prerequisite to factory employment. This may explain the superior intelligence of the children of factory towns in England as compared with those of agricultural localities. The half-timers of England and the factory children of America are laying a foundation, if proprietors will only recognize the power of moral forces in the conduct of industrial enterprises, which will in another quarter of a century change the social complexion of our factory towns. If the advantages afforded in factory towns will stimulate rural districts to emulate the work of providing for the proper amusement and instruction of children and young people, perhaps the constant depletion of such places may be checked and the inhabitants of crowded towns be attracted to the soil. The mental friction of the factory is not without its healthful influences. Certainly it is better for the persons engaged than the filthy little shops, occupied by a few foul-talking people, which characterized the domestic system. Instead of dwarfing the minds and the skill of the skillful, as is often alleged, the factory enlarges the minds and increases the power of the unskillful. Louis Reybaud, to whose investigations I have referred, testifies that the abasement of intelligence, which is said to follow in proportion as tasks are subdivided, is a conjecture rather than a truth shown by experience, and is presumed not proven. To prove abasement from factory employment it would be necessary to show, for example, that the hand weaver, who throws the shuttle and gives motion to the loom, is of a class superior to the machine weaver, who superintends such double movement. Employment of the muscles in several operations instead of one has nothing in it to elevate the faculties, and this is about all the opponents of the factory claim. In their view, says Reybaud again, "the most imperfect machines, those which require the most effort, are the ones which sharpen the intellectual faculties to the greatest degree. We can easily see where this argument would carry us if pushed to the end." There is no abasement; on the contrary, it is from the influences resulting from the factory system that we discern the elevation of an increased proportion of working people from the position of unskilled to that of skilled laborers, and the opening of an adequate field of remunerative employment to women, two of the most important improvements in the condition of the working masses which could be desired; and these results are stimulated by the factory system.

The impression that the factory degrades the intellect, so far as this country is concerned, springs from the remembrance of the Lowell factory girl, engaged in her literary work, and a contemplation of the present factory girl. We are deceived by this. It requires but a superficial consideration to understand that forty years ago the cotton factories of this country were filled with English and American operatives of a high grade of intelligence. The American girls came from our farming districts, and were the daughters, in many instances, of the best citizens. As machinery was improved, or the American girl was crowded into higher pursuits, the Irish came in and the former operatives stepped out, but did not thereby deteriorate; but the Irish girl stepped up in the grade of employment. Now, within a decade or two, the French Canadian has been successful in displacing, and rapidly, too, the Irish operative, and the latter has not deteriorated thereby; but the French Canadians have taken a step in advance of their old condition. When they go back to their own country, as many do, they carry back with them the results, whatever they are, of contact with a new system, and the effects of such contact will tell upon their children, if not upon themselves. The factory brings progress and intelligence, and establishes at the centers the library, the public hall, the lyceum, and the concert. Such institutions, in the nature of things, could not have found a lodgment under the domestic system. It is in evidence that the book trade of Great Britain flourishes and fades with her manufactures in closest sympathy, while it is nearly indifferent to the good or bad state of her agriculture.

The domestic system could not deal with machinery. While machinery in one sense means the factory system, it is really the type and representative of the civilization of this period so far as mechanics are concerned, because

it embodies the concentrated, clearly wrought-out thought of the age. There is something educational in the very presence of machinery. A large proportion of the machines made use of under the factory system of industry were invented by workmen who have been desirous of finding out easier and readier means of performing their accustomed task. These things stimulate industry, which in turn stimulates frugality.

One of the positive results of the factory system has been to enable men to secure a livelihood in fewer hours than of old; this means intellectual advancement, for as the time required to earn a living grows shorter civilization grows up. The most ignorant factory operative of to-day is more than the peer of the skilled workman of a few generations ago in all that goes to make up condition—environment. The fact that the lowest grade of operatives can now be employed in our factories does not signify more ignorance, but a raising of the lowest to higher employments. This process will be repeated again and again, unless society is compelled to take up what is called a simpler system. We should not forget that the machine is the servant of the workman, and neither his competitor nor his master. This process is constantly narrowing the limits of the class which occupies the lowest step in the progress of society. This mission alone stamps the system as an active element in the moral elevation of the race. The factory system does not tend to intellectual degeneracy.

I have considered the main objections which are usually brought against the factory system, and have compared it with the system it supplanted. Its evils come mostly under the heads enumerated, but they are evils which attend the development of the system; they are not its results. Before the system can be condemned as a system it must be shown that it is worse than that which it displaced. This cannot be done. We need not apologize for the weaknesses of the present system, for they come mostly from ignorance, not from the system itself. Under enlightened men it becomes everywhere a great moral power, and a positive, active, and potential element in the processes of civilization. But, admitting every possible domestic evil which accompanies low social conditions—the neglect of young children, and consequent high rates of infant mortality, the physical degeneracy which follows mechanical employments when engaged in by married women—and yet none of these can be attributed to the factory system as the creator of such evils. It cannot be held responsible for their creation. They belong to the ignorance of the substratum of society which the factory system is constantly lifting to another and a higher plane, thereby lessening, instead of increasing, the misery of the world.

The softening of the misery caused by the change in systems has occurred but in subtle ways. Transition stages are always harsh upon the generation that experiences them; the great point is that they should be productive of good results in the end. The mind recoils at the contemplation of the conditions which the vast increase of population would have imposed without the factory system.

It is a sad law, perhaps, but it is an invariable law, that industry in its march takes no account of the positions that it overturns nor of the destinies that it modifies. We must keep step with its progress or be left upon the road. It always accomplishes its work, which is to make better goods at a lower price, to supply more wants and also those of a better order, not with regard for any class, but having in view the whole human race. Industry is this, or it is not industry; true to its instincts, it has no sentiment in it unless it is for its own interest; and yet such is the harmony of things, when they are abandoned to their natural course, notwithstanding the selfishness of industry, directed to its own good, it turns finally to secure the good of all, and while requiring service for itself, it serves at the same time by virtue of its resources and its power. (*a*)

INFLUENCE OF THE FACTORY SYSTEM UPON WAGES, PRICES, AND PRODUCTION.

The economic advantages of the factory system must be looked for in the increase of wages and production and the decrease in the prices of goods produced. If the purchasing power of wages, so far at least as the products of the factory and the leading necessities of life are concerned, has not been enhanced, the new system of industry has not yet wrought the good it is capable of working. Authoritative statistics from original and worthy sources, as well as from trustworthy writers and investigators, must answer the question. It is the province of another officer (*b*) of the Census Bureau to compile and analyze the general statistics of wages; but, so far as wages are or have been affected by the factory system, they come legitimately within my consideration.

Here, again, I shall take the cotton industry as illustrative of the influence of the system.

The abnormal condition surrounding the hand weaver of England during the last quarter of the last century is often quoted to show that the workingman of to-day is not so well off as was the workingman one hundred years ago. In some specific departments and under some specific conditions this may be true, but it is impossible to prove what would have been had not something else occurred. The question as to the influence of the factory system upon wages is a difficult one to solve. This difficulty becomes, so far as the cotton trade is concerned, more complicated when we consider the wages of hand-loom weavers after the fly-shuttle came into use, and one weaver could do the work of two. The two tables on page 36 show the rapid declension of wages in England from 1795 to 1834. The first table was furnished the committee of the house of commons, on hand-loom weavers, in July, 1834, by Mr. John Makin, a manufacturer of Bolton, England. The second table was furnished the committee on manufactures from the books of Manchester manufacturers.

a *Le Coton*. Reybaud.

b Joseph D. Weeks, esq., special agent on wages.

The following table shows the wages paid for weaving a six-quarter 60-reed cambric, 120 picks in one inch, in Bolton:

Year.	Wages.	Year.	Wages.	Year.	Wages.	Year.	Wages.
1795....	\$7 98	1805....	\$6 00	1815....	\$3 36	1825....	\$2 04
1796....	7 98	1806....	5 28	1816....	2 88	1826....	1 68
1797....	6 06	1807....	4 32	1817....	2 16	1827....	1 56
1798....	7 20	1808....	3 60	1818....	2 16	1828....	1 44
1799....	6 00	1809....	3 84	1819....	2 28	1829....	1 32
1800....	6 00	1810....	4 68	1820....	2 16	1830....	1 32
1801....	6 00	1811....	3 36	1821....	2 04	1831....	1 32
1802....	6 06	1812....	3 36	1822....	2 04	1832....	1 32
1803....	5 76	1813....	3 60	1823....	2 04	1833....	1 32
1804....	5 76	1814....	5 76	1824....	2 04	1834....	* 1 32

* After making deductions for expenses, the clear wages of the weaver are only 99 cents per week.

The following table shows the wages paid for weaving the second quality of 74's calico in the neighborhood of Burnley and Skipton:

Year.	Wages.	Year.	Wages.	Year.	Wages.	Year.	Wages.
1802....	\$2 06	1810....	\$1 48	1818....	\$0 78	1826....	\$0 30
1803....	1 68	1811....	90	1819....	58	1827....	34
1804....	1 44	1812....	1 10	1820....	62	1828....	40
1805....	1 36	1813....	1 34	1821....	70	1829....	26
1806....	1 30	1814....	1 40	1822....	62	1830....	34
1807....	1 14	1815....	98	1823....	53	1831....	38
1808....	66	1816....	68	1824....	44	1832....	31
1809....	60	1817....	64	1825....	53	1833....	33

Mr. Edward Baines, whose work on cotton manufactures I have already quoted, writing in 1835, and on the facts given the committees referred to, says:

These tables naturally draw our attention to the occasions on which the great fall in the wages of weavers took place and to the immediate causes of that fall. It may first be observed that the wages of weaving had previously risen even more rapidly than they afterward fell. Before the invention of the fly-shuttle and the spinning-machines the weavers' wages were very moderate; and when the greater difficulty of weaving without the fly-shuttle and the greater strength required by the coarse goods then made are considered, it may be doubted whether the weavers then earned higher wages in proportion to their labor than at present. The fly-shuttle, which enabled a weaver to turn out twice as many webs as before, was the first cause of a material improvement in wages. As the price of goods did not fall in proportion to the increased facility of production, the weaver gained considerably by the invention. Then came in rapid succession the grand inventions of the spinning-jenny, the water-frame, and the mule, which caused the unparalleled extension of the manufacture we have already seen and enabled the cotton weavers to produce a great variety of delicate fabrics before unknown to their looms. Calicoes, muslins, cambrics, mankeens, and many other tissues began to be woven in England, and as they could be afforded much below the prices formerly paid for the Indian goods of those qualities the demand for them was great and urgent, weavers were in the utmost request, and their wages rose to a rate exceeding those of any other class of workmen; common weavers of steady and industrious habits soon rose into manufacturers, and many fortunes were made at the loom. This induced multitudes to learn the trade, and it continued to attract hands long after the demand was satisfied. An employment so easily learned and so handsomely remunerated became inevitably surcharged with laborers. Then came the reaction. Wages must have fallen even with an unvarying trade, but at every shock which the manufacture received from external or internal circumstances a great and sudden decline took place, which, from the constant pressure of a surplus body of laborers, could never be recovered.

From 1795 to 1807, as will be seen by the above tables, wages gradually receded, notwithstanding a depreciating currency, except in the year 1802, when the peace of Amiens opened the markets of Europe for a short space to English commodities.

The year 1808 was that of the American embargo, when an extremely small supply of cotton reached this country, and thousands of weavers were thrown out of employment. Hence the price of weaving calicoes fell from 4s. 9d. in 1807 to 2s. 9d. in 1808. The revival of trade, the flush of paper money, and the famine price of corn raised wages again, and they were sustained by the reopening of the continental markets and the quantities of English goods poured in upon them. In the year 1814 the national fever was at its height. Before 1816 all its debilitating consequences were felt. The foreign markets were glutted; the merchants received no returns; the exchanges fell; government issued no more orders to the manufacturers; the American war closed to us a large market and deprived us of the supply of cotton-wool; the Bank of England rapidly contracted its issues; the paper bubble burst; banks and commercial men failed in fearful numbers; a wretched harvest plunged the farmers into alarm and distress, and many of the disbanded soldiers and sailors, turning to the loom as the easiest trade they could learn, came into competition with the weavers. Under the accumulated disasters of this crisis the weavers received their severest blow. The wages of cambric weavers fell from 24s. in 1814 to 12s. in 1816, and those of calico weavers from 5s. 10d. in the former year to 2s. 10d. in the latter. Before they could in any degree recover the power-loom rose into formidable competition with the hand-loom. The commercial crisis of 1825-26 was the final calamity; and thus, under reiterated strokes, the hand-loom weavers have been pressed down, and have never, till within the last two years, had even a glimpse of improvement. During that time their wages, have risen about 10 or 15 per cent., but the weavers still remain the most depressed and degraded class of English laborers.

These were the occasions and direct causes of the lamentable fall in weavers' wages; but their effects could not have been so serious if there had not been permanent causes, belonging to the nature of the employment itself. Of these, the first and grand cause is the easy nature of the employment. The weaving of calicoes is one of the simplest of manual operations, understood in a few moments, and completely learned in a few weeks. It requires so little strength or skill that a child eight or ten years of age may practice it. A man brought up to any other employment may also very shortly learn to weave. From the facility of learning the trade, and from its being

carried on under the weaver's own roof, he naturally teaches his children to weave as soon as they can tread the treadles, if he cannot obtain places for them in a factory. Thus they begin at a very early age to add to the earnings of the family, and the wife also toils in the same way to increase their scanty pittance. But it is obvious that that which is only a child's labor can be remunerated only by a child's wages. There are large departments of hand-loom weaving which are almost entirely given up to women and children, and their wages go far to regulate all the rest. The men, where they are able, procure better kinds of work; and where they are not able, they must put up with the most paltry earnings.

The second cause for the low wages of weavers is that their employment is in some respects more agreeable, as laying them under less restraint than factory labor. Being carried on in their own cottages, their time is at their own command; they may begin and leave off work at their pleasure; they are not bound punctually to obey the summons of the factory bell; if they are so disposed, they can quit their loom for the public-house, or to lounge in the street, or to accept some other job, and then, when urged by necessity, they may make up for lost time by a great exertion. In short, they are more independent than factory operatives; they are their own masters; they receive their materials, and sometimes do not take back the web for several weeks; and—what is a lamentable, but far too common occurrence—they have the power, in case of urgent necessity or strong temptation, to embezzle a few cops of their employer's web in order to buy bread or ale. All this makes the weaver's occupation more seductive to men of idle, irregular, and dissipated habits than other occupations. It is a dear-bought, miserable liberty, but, like poaching or smuggling, it is more congenial to some tastes than working under precise restrictions for twice the remuneration. The mention of this unquestionable fact by no means implies a charge against the weavers that they are all of loose habits and morals; but it helps to account for many continuing at the loom, notwithstanding the wretchedness of their circumstances.

I have given Mr. Baines' opinion at length because he has stated the case so clearly. I have fully verified his statements in every way possible. The above tables have been quoted simply that they should not be used to refute subsequent conclusions, and because mechanical weaving has been generally alleged as the principal cause of the distress of the hand-loom weavers; the other causes have been much more efficient, because a great part of the distress was produced before the power-loom came into use. It is true that the fierce competition between the hand- and the power-loom weavers, after the advent of the latter, accelerated the decline of the former and kept the wages of both classes at a very low point, for each tried to cut the throats of the other, industrially, if not physically. The true period from which to treat of wages under the factory system in Great Britain is, from the nature of things, as described, from 1830 to 1835, or half a century ago. In this country the period from 1815 to 1820 would be the true one, because the condition of things related of the hand-loom weavers of England never existed here, the factory being hailed as a boon by the people of America.

From 1833 the wages of factory operatives in Great Britain may be determined with sufficient accuracy to entitle the data given to our confidence. As already stated, at this period hand-loom weavers were in a deplorable condition; this was true of large towns and of villages; their wages were a miserable pittance, and they worked in confined and unwholesome dwellings. On the other hand, there was no large class of workmen in the kingdom receiving better wages than the operatives in cotton factories. The average earnings in 1833 of 67,819 employes, consisting of 19,247 men, 20,962 women, and 27,610 children, were 10s. 5½d. (\$2 51) per week for all, indiscriminately, men, women, and children. The respective earnings of different classes of mill operatives will be seen from the following table, (a) which shows the average net weekly earnings of the different classes of operatives in the cotton factories of Manchester, Stockport, Duckenfield, Staleybridge, Hyde, Tintwistle, Oldham, Bolton, etc., drawn from the returns of 151 mills, employing 48,645 persons, in May, 1833:

Denomination of process in which employed.	Class of operatives.	Classification as respects age and sex.	Average weekly net earnings.
Cleaning and spreading cotton.....		Male and female adults and some non-adults.....	\$1 98 ^c
Carding.....	Carders, or overlookers.....	Male adults.....	5 64 ^c
	Jack-frame tenters.....	Principally female adults.....	1 92 ^c
	Bobbin-frame tenters.....	Principally female adults.....	1 79 ^c
	Drawing tenters.....	Principally female adults.....	1 80 ^c
Mule spinning.....	Overlookers.....	Male adults.....	7 02 ^c
	Spinners.....	Male and female adults, but principally the former.....	6 16 ^c
	Piecers.....	Male and female adults, and non-adults, but principally the latter.....	1 30 ^c
Throstle spinning.....	Scavengers.....	Male and female non-adults.....	70 ^c
	Overlookers.....	Male adults.....	5 37 ^c
	Spinners.....	Female adults and non-adults.....	1 80 ^c
Weaving.....	Overlookers.....	Male adults.....	6 31 ^c
	Warpers.....	Male and female adults.....	2 04 ^c
	Weavers.....	Male and female adults, male and female non-adults, but chiefly females.....	2 00 ^c
Reeling.....	Dressers.....	Male adults.....	6 68 ^c
Roller covering.....	Reelers.....	Female adults and non-adults.....	1 91 ^c
Attending the steam-engine, and making machines.	Roller coverers.....	Male and female adults.....	2 91 ^c
	Engineers, firemen, mechanics, etc.....	Male adults.....	4 92 ^c

The rates given above and the statements preceding the table are fully corroborated by the following table, prepared by the chamber of commerce of Manchester and published by the board of trade in the tables of revenue, which gives a statement of the weekly rates of wages paid to the undermentioned description of workmen in Manchester in the year 1832:

Spinners, men.....	\$4 80 to \$6 00
Spinners, women.....	2 40 to 3 60
Stretchers.....	6 00 to 6 24
Piecers, boys and girls.....	1 10 to 1 68
Scavengers.....	36 to 64
In the card-room:	
Men.....	3 48 to 4 08
Young women.....	2 16 to 2 28
Children.....	1 44 to 1 68
Throstle spinners.....	1 20 to 2 28
Reelers.....	1 08 to 2 16
Weavers by power:	
Men.....	3 12 to 4 04
Women.....	1 92 to 2 88
Dressers, men.....	6 72 to 7 20
Winders and warpers.....	1 92 to 2 64
Mechanics.....	5 76 to 6 24
Weaving by hand:	
Nankeens, fancy quality, woven by men.....	2 16 to 3 60
Nankeens, common quality, woven by children or women.....	1 44 to 1 92
Nankeens, best quality, woven by men.....	2 40 to 3 12
Checks, fancy quality, woven by men.....	1 68 to 1 80
Checks, common quality, woven by children.....	1 44 to 1 68
Cambries, woven by all ages.....	1 44 to 1 56
Quiltings, woven by men and women.....	2 16 to 2 88
Fustian cutters, all ages.....	2 40 to 2 88
Machine makers, men.....	6 24 to 7 20
Iron founders, men.....	6 72 to 7 20
Dyers and dressers, men.....	3 60 to 4 80
Dyers and dressers, young men.....	2 88 to 3 36
Dyers and dressers, boys.....	1 20 to 2 40
Tailors, men.....	4 32 to
Porters.....	3 36 to 3 60
Packers.....	4 80 to
Shoemakers.....	3 60 to 3 84
Whitesmiths.....	5 28 to 5 76
Sawyers.....	5 76 to 6 72
Carpenters.....	5 76 to
Stonemasons.....	4 32 to 5 28
Bricklayers.....	4 08 to 4 80
Bricklayers' laborers.....	2 88 to
Painters.....	4 32 to
Slaters, per day.....	88 to
Plasterers.....	4 56 to 5 04
Spademen.....	2 40 to 3 60

The rates of wages paid males and females, according to ages, in 1832, in the cotton-mills of Lancashire were given by the factory commissioners in 1833 as follows:

Age.	MALES.		FEMALES.	
	Number employed.	Average weekly wages.	Number employed.	Average weekly wages.
Below 11.....	246	\$0 59	155	\$0 53
From 11 to 16..	1,169	1 00	1,123	1 02
16 to 21..	736	2 45	1,240	1 75
21 to 26..	612	4 13	780	2 02
26 to 31..	355	4 89	295	2 08
31 to 36..	215	5 45	100	2 11
36 to 41..	168	5 19	81	2 93
41 to 46..	98	4 87	38	2 23
46 to 51..	88	3 99	23	2 12
51 to 56..	41	3 92	4	2 01
56 to 61..	28	3 25	3	1 52
61 to 66..	8	3 26	1	1 44
66 to 71..	4	2 60	1	1 44
71 to 76..	1	4 82	.....	.....
76 to 81..	1	2 08	.....	.....
Total.....	3,770	.....	3,844	.....

The foregoing tables are sufficient to show the wages paid in cotton factories in England from 1830 to 1835, and the rates stated had not changed much for twenty years before that. Rates for Scotland were lower. It has been seen that the wages for Lancashire and Cheshire factory operatives of all ages, including men, women, and children, averaged 10s. 6d. per week, while in Glasgow the average was 8s. 1½d., this difference being due chiefly to the greater proportion of women and children employed in Glasgow; for the average weekly wages of the men were 21s. 11d., and the average wages of the youngest children 2s. The following table (a) gives the wages for different classes in Glasgow mills in April, 1832:

Work and wages of cotton spinners.	Fine numbers.	Coarse numbers.
Men on piece-work.....	At wheels containing from 252 to 300 spindles, earn \$1 08 per day.	At wheels from 180 to 300 spindles, earn from 84 cents to \$1 08 per day.
Women reelers and winders.....	Earn 32 cents per day.....	Earn 28 cents per day.
Lads, and girls employed in the preparation-room, or as piecers to the spinners, and paid by the day.	From 14 to 17 years of age, earn 32 cents per day.....	The same as for fine numbers.
Children, as above.....	From 10 to 14 years of age, earn 20 cents per day.....	Earn 16 cents per day.
Children, as above.....	Under 10 years of age, earn 10 cents per day.....	Earn 8 cents per day.
Lads and girls.....		At wheels from 120 to 180 spindles, earn from 48 to 72 cents per day.

NOTE.—The wages of cotton spinners did not vary during the ten years preceding 1820, and but very little since that period. The prices quoted are all net to the workers.

It should be remembered that at this time (1830-'35) the hours of labor were 12 per day in factories for persons under eighteen years of age; but as such persons constituted a large proportion of the operatives, the same hours virtually applied to adults.

The four tables which follow show clearly the changes in wages and prices for the first generation of this century. The first two tables are from the reports of the commons' committee on manufactures, etc., already referred to, and the second two from the reports of the factory commissioners.

The following table shows the wages and work of fine cotton spinners, at different periods, from the wage-books of Mr. Thomas Houldsworth, of Manchester:

Years.	Work turned off by one spinner per week.		Wages per week.			Hours of work per week.	Prices from Greenwich hospital records.		Quantities which a week's net earnings would purchase.	
	Pounds.	Numbers.	Gross.	Piecers.	Net.		Flour per sack.*	Flesh per pound.	Pounds flour.	Pounds flesh.
1804.....	12	180	\$14 40	\$8 60	\$7 80	7½ sup.	\$10 02	12 to 14	117	02½
	9	200	16 20	7 44	8 70	7½ sup.	10 92	12 to 14	124	73
1814.....	18	180	17 28	6 60	10 08	7½	16 92	10	175	07
	13½	200	21 60	7 20	14 40	7½	16 92	10	290	90
1833.....	22½	180	19 12	5 04	8 08	60	10 80	12	210	07
	19	200	15 66	5 40	10 26	60	10 80	12	267	85

* The sack of flour was taken at 280 pounds.

The above is the result of an average of several men's work at the different periods. There were 111 spinners employed in the mill in 1833; their average net earnings were \$7 98 each per week. There were in the same mill 917 persons employed in card-rooms, doubling, ruling, and piecing; their net earnings averaged \$1 70 per week. To show the rate of wages at different periods in these departments, the following table has been obtained from the wage-books of the concern.

The following table gives the wages of carders, reelers, and doublers at different periods:

Occupations.	1806.	1811.	1815.	1818.	1824.	1833.
Card-room, males.....	\$3 60	\$3 60	\$8 72	\$3 60	\$3 60	\$3 60
Card-room, males.....	4 08	4 08	4 44	4 32	4 26	4 26
Card-room, males.....	8 40	8 40	9 00	9 60	9 60	7 20
Card-room, females.....	2 16	2 16	2 40	2 16	2 16	2 16
Reelers, females.....	4 56 to 7 20	3 60	3 60	3 60	3 60	2 88
Doublers, females.....	2 88	2 52	2 52	2 28	2 28	2 04

a From tables of revenue, commerce, etc., by board of trade.

Piecers' wages, with the exception of those of big piecers, who constituted one-third of the whole, did not vary sixpence per week within twenty years from 1814-'33. Big piecers' wages in 1833 were from \$2 04 to \$2 28; in 1814, from \$2 28 to \$2 52.

Mechanics' wages, blacksmiths, turners, filers, machine-makers, and fitters-up, were, in 1833, from \$6 48 to \$7 44 per week; within the twenty years (1814-'33) they had been as high as \$6 72 to \$8 40; but then they worked half an hour to one hour per day longer.

The following is a statement of the clear weekly average earnings of spinners, dressers, and weavers in the employ of Mr. Thomas Ashton, of Hyde, in the county of Chester, cotton manufacturer, in the years mentioned:

Description.	1816.	1821.	1826.	1831.	1832.
Spinners, first class.....	\$8 88	\$8 52	\$8 40	\$8 34	\$8 40
Spinners, second and third class.....	7 20	6 54	6 48	6 72	6 76
Spinners, fourth class.....				4 72	4 80
Dressers.....	7 20	7 20	7 20	7 32	7 32
Weavers.....	3 30	3 36	3 12	2 88	2 88

The weavers, all of whom were employed in attending the power-loom, were for the most part young girls.

In 1831 and the following year the total number of hands in Mr. Ashton's employ was 1,200, and their average earnings amounted to \$2 88 weekly for every description of hands, 52 weeks in each year.

The following table shows the average prices paid by Messrs. Ashton, of Hyde, for weaving $7\frac{1}{2}$ power-loom calico for each piece of 28 yards, and for uplands and Brazil cotton per pound, from which the same are made, with the average market price for which such pieces sold in the years undermentioned:

Year.	Weaving per piece.	Cotton per pound.	Market price per piece of 28 yards.	Year.	Weaving per piece.	Cotton per pound.	Market price per piece of 28 yards.
1814....	\$0 72	\$0 60	\$6 72	1823....	\$0 40	\$0 21	\$3 46
1815....	72	40	6 12	1824....	40	21	3 36
1816....	60	40	5 28	1825....	40	28	3 36 to 4 44
1817....	60	44	4 95	1826....	36	16	2 52
1818....	60	44	5 07	1827....	36	15	2 46
1819....	48	28	4 24	1828....	32	14	2 44
1820....	48	26	3 80	1829....	32	13 $\frac{1}{2}$	2 10
1821....	40	22	3 78	1830....	32	13	1 98
1822....	40	20	3 48	1831....	32	13	2 10

The progress of wages under the factory system from 1835 to 1860 is shown by the following tables, the facts for which were collected by David Chadwick, esq., treasurer of Salford, England, in 1859, from the wage-books of the cotton factories.

The following table shows the average return of weekly wages in the years named:

Name of trade.	1830.		1840.		1850.	
	Hours weekly.	Net earnings.	Hours weekly.	Net earnings.	Hours weekly.	Net earnings.
<i>Cotton manufacture.</i>						
Steam-engine tender.....	69	\$5 76	60	\$6 72	60	\$7 20
Stoker.....	69	3 84	60	4 08	60	4 32
Lodgekeeper.....	69	4 32	60	4 80	60	5 04
Warehouse boys, fourteen to eighteen years.....	69	1 80	60	1 80	60	1 92
Warehousemen, twenty-one years and upward.....	69	4 32	60	4 80	60	5 28
Night watchmen.....	69	3 89	60	3 84	60	4 32
<i>Carding department.</i>						
Scutchers (women and girls).....	69	1 68	60	1 80	60	1 92
Strippers (young men).....	69	2 64	60	2 88	60	3 36
Grinders.....	69	3 12	60	3 12	60	3 00
Overlookers.....	69	6 00	60	6 72	60	6 72
Card-winders, fourteen to eighteen years (boys).....	69	1 44	60	1 56	60	1 68
Drawing-frame tenters (girls and women).....	69	1 56	60	1 68	60	1 92
Bobbin and fly tenters (women).....	69	1 80	60	2 04	60	2 16

Name of trade.	1830.		1840.		1850.	
	Hours weekly.	Net earnings.	Hours weekly.	Net earnings.	Hours weekly.	Net earnings.
<i>Spinning upon self-acting mules.</i>						
Minders:						
No. 4's to 24's.....	60	\$3 84	60	\$4 32	60	\$4 80
No. 25's to 40's.....	60	4 32	60	4 44	60	5 28
Piecers (women and young men).....	60	1 02	60	2 16	60	2 40
Overlookers.....	60	4 80	60	5 28	60	6 24
<i>Throstle spinning.</i>						
Spinners:						
Girls fourteen to eighteen years.....	60	96	60	1 08	60	1 20
Women eighteen years and upward.....	60	1 68	60	1 80	60	2 16
Overlookers.....	60	4 32	60	4 80	60	5 76
Doffers to spinners (boys).....	60	1 20	60	1 32	60	1 44
<i>Reeling.</i>						
Throstle-reelers (women).....	60	2 16	60	2 28	60	2 28
Cop-reelers.....	60	2 04	60	2 16	60	2 16
Pin-winders (girls).....	60	1 32	60	1 44	60	1 32
Bobbin-winders (women).....	60	2 16	60	2 28	60	2 16
Warpers.....	60	5 28	60	5 28	60	5 52
Drawers.....	60	4 44	60	4 44	60	4 56
Dressers.....	60	4 80	60	4 80	60	4 80
Sizers.....	60	5 52	60	5 52	60	6 00
Beamers.....	60	5 28	60	5 28	60	5 28
<i>Doubling.</i>						
Doublers (women).....	60	1 68	60	1 80	60	2 16
Doffers to doublers (girls).....	60	96	60	1 08	60	1 20
Overlookers.....	60	5 76	60	6 00	60	6 72
Jobbers (young men).....	60	2 40	60	2 64	60	3 12
<i>Gassing yarn.</i>						
Gassers (young women).....			60	1 02	60	2 28
Singers by oil.....	60	1 02	60		60	

The following shows the wages paid for hand-mule spinning in the years named :

Work.	1830.		1840.		1850.		
	Net earnings.		Net earnings.		Net earnings.		
	Hours.	800 spindles.	Hours.	800 spindles.	Hours.	800 spindles.	1,600 spindles.
<i>Spinning upon hand mules.</i>							
Spinners:							
No. 40's.....	60	\$5 52	60	\$5 04	60	\$5 52	.....
No. 60's.....	60	6 00	60	5 04	60	5 52	.....
No. 80's to 100's.....	60	6 00	60	5 04	60	6 00	\$7 20
No. 120's to 140's.....	60	9 60	60	8 64	60	.....	9 60
No. 160's to 180's.....	60	10 08	60	8 64	60	.....	10 08
No. 180's to 220's.....	60	10 80	60	9 60	60	.....	10 80
Piecers, 14 to 18 years.....	60	1 32	60	1 32	60	1 44	1 44
Piecers above 18 years.....	60	1 02	60	2 04	60	2 16	2 40

The following shows the wages paid for power-loom weaving in the manufacture of cotton cloths, etc., in the years named :

Work.	1830.				1840.				1850.			
	Hours.	2 looms.	3 looms.	4 looms.	Hours.	2 looms.	3 looms.	4 looms.	Hours.	2 looms.	3 looms.	4 looms.
Power-loom weavers (principally women):												
72-reed printers' cloth.....	60	\$2 16	.....	\$4 08	60	\$2 16	\$3 12	\$3 84	60	\$2 40	\$3 60	\$4 32
40-inch shirtings.....	60	2 16	.....	4 08	60	2 16	3 12	3 84	60	2 58	3 84	4 80
38-inch domestics, 52 reed, 18 picks.....	60	2 40	.....	3 84	.....	2 40	.....	3 84	.....	2 40	.....	3 84
Helpers (girls).....	60	1 20	.....	1 20	.....	1 20	.....	1 20	.....	1 20	.....	1 20
Bed-ticks.....	60	.....	.....	.....	60	2 88	.....	.....	60	2 88	.....	.....
Small wares.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Jaconets.....	.....	.....	.....	.....	60	2 64	.....	.....	60	2 64	.....	.....

The following shows the wages paid for power-loom weaving in the manufacture of velvets, etc., in the years named:

Work.	1839.		1849.		1859.	
	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.
Power-loom weavers:						
Velvets.....	59	\$2 88	59	\$2 88	59	\$3 36
Velveteens.....	59	2 88	59	2 88	59	3 36
Fustians.....	59	2 88	59	2 88	59	3 36

The following table exhibits the proportionate number of men, women, boys, and girls in a cotton-mill in Lancashire employing 500 persons, and the average amount of the wages paid weekly to each class in 1859:

Class of work.	Men.	Women.	Boys.	Girls.	Total.
Stokers, engineers, lodgekeepers, warehousemen, mechanics, and porters.....	20	2	5		27
Cotton mixing and blowing.....	7		1		8
Carding.....	17	36	4	16	72
Selfacting-mule spinning.....	24		10	1	35
Throstle spinning, winding, and warping.....	7	39	12	11	69
Power-loom weavers.....	10	173		92	275
Beaming, twisting, and sizing.....	10	1	1	2	14
Totals.....	95	251	33	121	500
Average of total wages of workers in all departments taken together.....	\$421 80	\$612 44	\$55 44	\$145 20	\$1,234 88
Average weekly wages to each person.....	4 44	2 44	1 68	1 20	2 47

It will be seen that of the total number 19 per cent. are men, 50.2 per cent. women, 6.6 per cent. boys, and 24.2 per cent. girls.

The wages of nearly all classes of factory operatives appear to have increased from 10 to 25 per cent. during the twenty years preceding 1859. This was mainly owing to the improvements in the construction of the machinery and the increased speed at which it was worked, and its consequently increased productive power.

Mr. Henry Ashworth, a manufacturer of Bolton, estimated in 1859 that—

Before 1842 the operative spinner's wages for the production of 20 pounds of yarn, No. 70's, on a pair of mules of 400 spindles each, was \$1 10, or 5½ cents per pound, and at this rate his net earnings amounted to about \$4 80 per week; and that in 1859, with the improvements effected in the spinning-mule, by which each machine carries 800 spindles, the same workman, with a little extra assistance by piecers (boys), can earn \$7 40 per week net, although the amount he receives in wages for 20 pounds of yarn is reduced from \$1 10 to 94½ cents, or 0.77 of a cent per pound.

The reduced cost upon the production of a week by the working of a pair of mules with 800 spindles each (instead of 400 each) amounts to \$5 72, which is shared in the following proportions, viz: to the operative, \$2 60, leaving \$3 12 for extra aid, the reduction of price to the consumer, and interest on additional capital, and profit to the master.

Mr. Ashworth also stated that the average rate of wages of a spinner on a pair of unimproved mules of 400 spindles each in producing No. 70's yarn had been as follows:

Year.	Per 20 pounds.	Gross earnings per week.	Piecer's wages per week.	Net.
1842.....	\$1 10	\$8 04	\$3 84	\$4 80
1846.....	1 18	9 12	3 84	5 28
1850.....	1 04	8 52	3 84	4 68
1859.....	1 22	9 84	3 84	6 00

The same workman, with a pair of "double deckers", with 1,600 spindles and more piecers, earned, in 1859, 94½ cents for 20 pounds, \$14 36 gross per week, less \$6 96 for piecers, or, net, \$7 40.

The facts relating to the wages of the cotton-factory operatives of the west of Scotland for the years 1851, 1856, and 1858 were collected by Dr. John Strang in the latter year, and were published by him in the following table:

Occupation.	1851.	1856.	1858.
Power-loom weavers.....	\$2 10	\$2 58	\$2 34
Spinners.....	6 00	7 20	6 48
Winders.....	1 92	2 16	2 16
Warpers.....	2 88	4 08	3 06
Dressers.....	7 68	9 60	8 40
Tenters.....	7 20	9 60	9 12
Twisters.....	2 16	2 88	2 88
Mechanics.....	5 76	6 48	6 24
Laborers.....	2 88	4 08	3 00

From this table it appears that wages increased very considerably between 1851 and 1856, but that after the financial panic of 1857 they fell off over 7 per cent.

The records of wages, and indeed of most data relating to manufactures since 1860, for England, have been very meager. From the facts collected by Dr. Edward Young, and published in the fifth annual report of the Massachusetts bureau of statistics of labor (1874), the following table, showing wages in 1870-1871, has been arranged:

Occupations.	Average weekly wages, standard gold.	Occupations.	Average weekly wages, standard gold.	Occupations.	Average weekly wages, standard gold.
CARDING.		Men:		DRESSING.	
Overseer:		First grade.....	\$15 73	Dressers.....	\$5 32
First grade.....	\$12 10	Second grade.....	13 81	Drawers, women:	
Second grade.....	10 89	Third grade.....	9 68	First grade.....	3 63
Third grade.....	8 47	Fourth grade.....	8 23	Second grade.....	3 20
Fourth grade.....	7 26	Back-boys:		Third grade.....	3 02
Fifth grade.....	6 77	First grade.....	2 60	Fourth grade.....	2 66
Sixth grade.....	6 29	Second grade.....	1 93	Twisters, men.....	5 80
Pickers, females.....	2 90	Third grade.....	1 33	Slashers.....	6 29
Strippers:		Men.....	6 29	SPOOLING.	
First grade.....	5 32	Boys:		Rulers, women:	
Second grade.....	4 35	First grade.....	1 45	First grade.....	3 15
Third grade.....	3 87	Second grade.....	72	Second grade.....	2 77
Grinders:		Women:		WEAVING.	
First grade.....	5 32	First grade.....	2 42	Weavers, men or women:	
Second grade.....	5 08	Second grade.....	2 18	First grade.....	6 05
Women:		Half-timers.....	60	Second grade.....	5 32
First grade.....	3 99	Young persons:		Third grade.....	4 43
Second grade.....	3 55	First grade.....	3 87	Fourth grade.....	3 26
Third grade.....	2 90	Second grade.....	3 63	Fifth grade.....	2 66
Fourth grade.....	2 18	Third grade.....	2 39	REPAIR SHOP.	
Girls.....	1 57	Fourth grade.....	1 57	Overseer.....	14 52
SPINNING.		Spinners:		Mechanics:	
Overseers:		Spare hands.....	2 42	First grade.....	8 18
First grade.....	14 52	Do.....	2 17	Second grade.....	7 74
Second grade.....	9 68	Hand-mule spinners who employ their own piecers, men:		Laborers.....	5 32
Third grade.....	8 47	First grade.....	12 10	YARD HANDS.	
Fourth grade.....	7 26	Second grade.....	10 89	Laborers.....	4 35
				Engineers.....	6 77

To show the present rates of wages in the cotton industry of Great Britain is a task more difficult than to ascertain rates for the past, for it seems to have been the settled policy of British manufacturers for the past fifteen or twenty years not to give their rates to the public.^(a) However, the reports of Colonel Albert D. Shaw,

^a The forthcoming report of the board of trade will supply much valuable material in this respect.

American consul at Manchester, corroborated by the excellent reports of the British board of trade and my own recent inquiries in Lancashire, have enabled me to present the following table of wages for 1880-1882:

Wages per day in an East Lancashire cotton-weaving mill. (Hours of labor, 56 per week.)		Wages per day in an Oldham cotton-spinning mill. (Hours of labor, 56 per week.)		Wages per day in a Blackburn cotton-spinning mill. (Hours of labor, 56 per week.)	
Weavers, 3 looms.....	\$0 04 to \$0 72	Mule-overlookers.....	\$1 00 to \$2 00	Spinning masters and carders.....	\$1 20 to \$2 00
Weavers, 4 looms.....	80 to 90	Carders.....	1 00 to 2 00	Spinners.....	1 20 to 1 40
Weavers, 6 looms.....	1 20 to 1 44	Strippers.....	} 38 to 96	Piecers.....	46 to 56
Weavers, children, half-timers.....	14	Jobbers.....		Creelers.....	28 to 34
Beamers or warpers.....	70 to 90	Grinders.....	} 65 to 76	Rovers.....	58 to 60
Winders.....	50 to 80	Drawing and slubbing hands.....		Slubbers.....	50 to 60
Tapers or sizers.....	1 20 to 1 08	Intermediate and roving.....	62 to 76	Drawers.....	52 to 50
Tacklers or overlookers.....	1 12 to 1 08	Little-tenders (full-time).....	36	Grinders.....	85 to ..
Engine drivers and firemen.....	96 to 1 08	Little-tenders (half-time).....	16	Blow-room hands.....	48 to 85
				Engine drivers.....	84 to 2 00
				Firemen.....	64 to 84

The course of the rates of wages in America under the factory system cannot be given with the fullness with which I have been able, from a vast deal of matter, to present British rates. Still, with few breaks, I am able to trace the progress of wages quite satisfactorily from the inauguration of the system to the present time. For the past forty years the American record is very clear. The early American record is not complicated by the presence of the hand-loom weaver, as a class, and of course is free from the results of the contentions of the hand- and power-loom weavers, and the consequent reactions and fluctuations in wages which in England so trouble the investigators of wages.

The hand-loom weaver of America never earned much over 50 cents per day, if we take the ordinary shirtings as the test; for of this fabric a hand weaver could turn off from 40 to 50 yards per week, for which he received from 5 to 10 cents per yard. These statements I gather from the books of Mr. Samuel Batchelder, a manufacturer, kept by him in 1813, and put into my hands by his son, Mr. John M. Batchelder, of Cambridge, Massachusetts. According to his books weavers were paid for shirtings 5 to 10 cents per yard; sheetings, 12 cents; ginghams, 10 to 12 cents; ticking, 10 cents; the price varying according to the fineness of the fabric.

In 1815, before the power-loom had affected production in this country, the congressional committee on manufactures reported the average wages of cotton-mill operatives, for men, women, and children indiscriminately, at \$1 50 per week, or \$78 per year. The women and children constituted 66 per cent. of the whole number of persons employed, which was reported to have been 100,000. These statements are not of much value, but they are the first, so far as I am aware, to give the wages of cotton-factory operatives.

The first Lowell factory started operations in 1823. At that time but few spinning-mills were in existence. Few accounts are to be found which give rates of wages, cost, or amount of product. Doubtless many such statements are in existence, but they are rarely obtainable. Through the courtesy of Mr. Edward Atkinson, I have received authentic records of a large number of representative factories, covering the period from 1828 to 1842-43. These records are manuscript statements regarding various factories, each statement being certified to by the agent or other officer of the corporation. The tabulations from these records, presented herewith, have not been in print before.

For 1828 we have this statement, showing the average wages of girls (women) per week for two of the best known factories in Massachusetts:

Carding.....	\$2 55
Spinning.....	2 58
Weaving.....	2 61
Dressing.....	2 82
Of all.....	2 62

These were gross wages; that is, board, usually \$1 25 per week, was deducted from the weekly pay as given. These rates did not vary much for several years; they were for sheetings and shirtings, No. 14 yarn. The same factory in 1836 paid wages to female operatives per week as follows:

Speeders, etc.....	\$2 44
Drawers.....	1 87
Warp spinners.....	2 21
Filling spinners.....	2 13
Weavers.....	2 05
Warpers.....	2 43
Dressers.....	3 11

Average for all females: highest, August, 1836, \$2 53; lowest, May, 1836, \$2 19 per week. Same conditions as to board as in 1828. These rates show some falling off after 1830-'31, but this is readily accounted for. When the

factories of Lowell made calls for operatives, they made a bid for the best by offering wages in excess of those paid for domestic service, which ranged from 50 cents to \$1 per week, including living; the women who went from house to house to spin and weave, or help in making the clothes of the family, could not earn much more than 75 cents per week. There was a widespread feeling that the factory might degrade, and thus a prejudice grew up against it which could not be removed except by wages liberal in comparison to those paid for other services. The financial difficulties of 1837, too, had an influence unfavorable to wages. In 1842-'43 they had not changed much, as will be seen from the following table, giving wages for men and women for a very large number of factories in New England. I have used a number for each establishment instead of the name of the corporation or firm:

Kind of goods.	No. of yarn.	CARDING.		SPINNING.		WEAVING.		DRESSING.		CLOTH-ROOM.		SHOP.	YARD AND WATCH.	OVER-SIERS.
		Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Men.	Men.
		Average wages per day, gross.	Average wages per week, net.	Average wages per day, gross.	Average wages per week, net.	Average wages per day, gross.	Average wages per week, net.	Average wages per day, gross.	Average wages per week, net.	Average wages per day, gross.	Average wages per week, net.	Average wages per day, gross.	Average wages per day, gross.	Average wages per day, gross.
1 Drillings	14	\$0 91	\$1 41	\$1 17	\$1 44	\$0 99	\$1 37	\$1 46	\$1 63	{ \$0 90 to 1 50 }	{ \$1 87 }	{ \$1 26 to 4 00 }	{ \$1 00 to 2 00 }	{ \$2 08 }
2 Drillings	15	92	1 52	1 10	1 39	1 19	1 80	1 19	1 98	{ 1 00 to 2 00 }	1 62	-----	{ 84 to 1 25 }	{ 2 20 }
3 Drillings	14, 15	77	1 49	1 10	1 45	1 29	1 31	1 22	1 81	(*)	(*)	1 33	94	2 30
4 Drillings, shirtings	14	80	1 41	95	1 11	1 15	1 42	1 56	1 82	1 08	1 50	1 55	1 06	1 94
5 Drillings	14	76	1 42	1 00	1 32	1 36	1 05	1 15	1 63	1 13	1 71	1 33	{ 80 to 1 16 }	{ 1 88 }
6 Drillings, shirtings	13, 14	77	1 50	1 10	1 46	1 07	1 91	1 08	1 35	1 20	1 60	1 33	1 00	1 94
7 Drillings	14	87	1 42	1 25	1 41	1 16	1 39	1 40	1 60	1 42	1 75	1 30	1 16	2 00
8 Drillings	14	91	1 42	1 13	1 42	1 11	1 47	1 11	1 79	1 19	1 78	1 47	1 13	2 25
9 Drillings, twilled goods	14	99	1 54	1 23	1 42	1 45	1 58	1 25	1 66	1 12	1 63	1 40	1 15	1 93
10 Sheetings	12, 14	90	1 42	1 14	1 43	1 10	1 34	1 33	1 78	1 10	1 87	1 64	{ 1 00 to 2 00 }	{ 2 08 }
11 Shirtings	14	86	1 42	1 17	1 45	1 04	1 40	1 34	1 60	1 10	1 87	1 64	{ 1 00 to 2 00 }	{ 2 08 }
12 Sheetings	14	90	1 57	1 40	1 37	1 26	1 35	1 23	1 72	93	1 51	1 38	1 06	1 97
13 Sheetings, shirtings	14	89	1 87	1 15	1 33	1 50	1 35	1 36	1 96	93	1 51	1 38	1 06	1 97
14 Sheetings	14	74	1 39	1 05	1 30	1 09	1 85	85	1 50	1 25	1 75	1 42	79	1 80
15 Sheetings	14	61	1 53	67	1 20	80	1 59	71	1 64	(†)	(†)	1 25	80	1 87
16 Sheetings	14	80	1 39	82	1 21	1 18	1 40	1 58	1 63	1 08	1 50	1 55	1 06	1 94
17 Sheetings	14	83	1 52	98	1 40	1 25	1 47	1 14	1 63	(*)	-----	1 33	94	2 15
18 Sheetings, shirtings, drillings	14, 15	88	1 61	1 29	1 39	1 02	1 51	1 20	1 92	{ 1 00 to 2 00 }	1 62	-----	{ 84 to 1 25 }	{ 2 37 }
19 Sheetings	14	90	1 39	1 18	1 37	1 26	1 30	1 27	1 67	1 00	1 75	1 25	1 04	2 00
20 Shirtings	14	88	1 45	1 10	1 39	1 20	1 27	1 42	1 57	1 00	1 75	1 25	1 04	2 00
21 Sheetings	14	89	1 36	1 20	1 40	1 37	1 30	1 36	1 81	1 02	1 75	1 32	1 03	1 95
22 Sheetings, drillings	14	88	1 45	1 01	1 36	1 37	1 62	1 24	1 76	1 29	1 50	1 43	94	1 95
23 Drillings, print cloths, lawns	22	75	1 47	95	1 27	1 28	1 53	1 54	1 90	1 08	1 50	1 55	1 06	1 94
24 Drillings, twilled goods	20	91	1 51	1 23	1 43	1 15	1 71	1 21	1 45	1 12	1 63	1 40	1 15	1 93
25 Print cloths, drillings	22	98	1 44	1 24	1 51	1 22	1 49	1 33	1 85	1 33	1 95	1 15	1 05	2 00
26 Shirtings, drillings, print cloths	24	74	1 44	93	1 39	1 09	2 07	1 19	1 74	1 25	1 75	1 42	79	1 80
27 Print cloths, drillings	24	62	1 54	72	1 20	93	1 72	71	1 61	(†)	(†)	1 25	80	1 87
28 Sheetings, drillings	26	90	1 61	1 22	1 50	1 33	1 73	1 62	2 07	1 33	1 95	1 15	1 05	2 00
29 Print cloths, drillings	30	97	1 50	1 25	1 48	1 33	1 53	1 63	1 73	1 33	1 95	1 15	1 05	2 00
30 Shirtings, print cloths	30	94	1 23	1 41	1 40	1 22	1 50	1 25	1 66	1 02	1 75	1 32	1 03	1 95
31 Sheetings, shirtings	30	87	1 48	1 32	1 38	1 31	1 57	1 63	1 67	1 02	1 75	1 32	1 03	1 95
32 Drillings, sheetings	30	78	1 30	89	1 25	1 04	1 70	84	1 36	(†)	(†)	1 25	80	1 87
33 Drillings, print cloths, sheetings	35, 38	83	1 37	1 03	1 40	1 20	1 88	1 37	1 76	1 13	1 71	1 33	{ 60 to 1 06 }	{ 1 87 }
34 Drillings, shirtings	36 to 39	74	1 43	1 26	1 45	96	2 45	1 54	2 02	1 30	1 60	1 33	1 00	1 94
35 Drillings, shirtings	40	91	1 60	1 29	1 54	1 20	1 68	1 37	1 65	1 39	1 78	1 47	1 13	2 25
36 Drillings, print cloths	40	98	1 61	1 16	1 51	1 18	1 69	1 32	1 90	1 19	1 78	1 47	1 13	2 25
37 Print cloths	38	95	1 42	94	1 54	1 37	1 95	1 66	2 01	1 33	1 95	1 15	1 05	2 00
38 Drillings, shirtings, sheetings	22, 36	92	1 53	1 22	1 37	1 24	1 56	1 38	1 77	1 12	1 63	1 40	1 15	1 93
Averages	-----	85	1 47	1 11	1 39	1 19	1 59	1 29	1 73	1 19	1 71	1 43	1 07	2 00

* Four and three-fourths cents per bale.

† Eight mills per hundred weight.

Occupations.	1840.	1850.	1860.	1870.	1875.	1880.	Occupations.	1840.	1850.	1860.	1870.	1875.	1880.
MASSACHUSETTS—Continued.							CONNECTICUT.						
ESTABLISHMENT No. 5.							ESTABLISHMENT No. 1.						
<i>Males.</i>							<i>Males.</i>						
Common laborers				\$8 10	\$8 10	\$7 68	Common laborers		\$5 00	\$8 00	\$7 00	\$6 00	\$6 50
Mechanics				13 50	15 00	14 10	Mechanics				12 75	10 50	12 75
Picker tenders				8 52	9 00	9 00	Picker tenders			4 50	7 00	5 50	6 00
Carders				6 30	5 40	6 30	Carders			4 50	7 00	6 00	5 50
Spinners, mule				8 52	7 98	9 24	Spinners, mule			6 30	9 00	8 50	8 50
Thread-dresser tenders				12 00	12 00	11 40	Weavers			5 50	6 75	6 25	6 75
Yard and watch				9 00	9 00	9 00	Slasher tenders				12 00	12 00	11 50
<i>Females.</i>							<i>Females. †</i>						
Weaving only							Weaving only			4 75	6 25	5 75	6 25
All departments, including weaving				6 00	5 70	6 00	All departments, including weaving			4 13	5 50	5 25	5 75
ESTABLISHMENT No. 6.							ESTABLISHMENT No. 2.						
<i>Males.</i>							<i>Males.</i>						
Common laborers			\$5 00	9 00	7 50	7 00	Common laborers			6 00	9 00	9 00	7 50
Mechanics			8 70	12 50	12 75	13 00	Mechanics			9 00	15 00	15 00	13 50
Picker tenders			3 75	6 75	6 00	6 00	Picker tenders			5 00	7 50	7 50	7 50
Carders			3 75	6 75	7 00	7 25	Carders			7 50	7 50	7 50	9 00
Spinners			5 12	8 67	8 50	9 00	Spinners			5 00	9 50	10 50	10 50
Weavers			4 00	8 00	7 75	7 50	Weavers						
Dresser or slasher tenders			5 62	10 92	9 20	8 70	Dresser or slasher tenders			7 00	10 80	12 00	12 00
Yard and watch			6 00	9 00	8 00	8 00	Yard and watch			7 00	10 00	10 00	10 00
<i>Females.</i>							INDIANA.						
Weaving only			3 05	6 50	6 25	5 75	ESTABLISHMENT No. 1.						
All departments, including weaving			3 00	6 00	5 75	5 20	<i>Males.</i>						
RHODE ISLAND.							Common laborers						
ESTABLISHMENT No. 1.							Mechanics						
<i>Males.</i>							Picker tenders						
Common laborers				7 50	7 25	6 00	Carders						
Mechanics				11 10	10 80	9 00	Spinners						
Picker tenders					5 75	6 00	Weavers						
Carders					5 50	5 00	Dresser or slasher tenders						
Spinners, mule				9 00	8 75	7 95	Yard and watch						
Weavers				9 00	8 80	7 60	<i>Females.</i>						
Dresser or slasher tenders				9 60	9 80	8 50	Weaving only						
Yard and watch					6 50	6 00	All departments, including weaving						
<i>Females.</i>							NORTH CAROLINA.						
Weaving only				6 80	6 55	5 50	ESTABLISHMENT No. 1.						
All departments, including weaving				6 00	4 60	4 75	<i>Males.</i>						
ESTABLISHMENT No. 2.							Common laborers †						
<i>Males.</i>							Mechanics						
Common laborers *		\$8 66			9 00	8 41	Picker tenders						
Mechanics		12 25	10 00	13 34	12 84		Carders						
Picker tenders			6 00	6 12	5 25		Spinners						
Carders			7 58	9 00	8 50		Weavers						
Spinners		9 55	9 30	8 61	7 53		Dresser or slasher tenders						
Dresser or slasher tenders		12 00	11 50	10 00	9 33		Yard and watch						
Yard and watch		9 00	8 62	9 33	8 87		<i>Females.</i>						
<i>Females.</i>							Weaving only						
Weaving only		5 62	6 75	6 05	7 08		All other departments, excluding weaving						
All departments, including weaving		5 39	5 89	5 28	6 67		ESTABLISHMENT No. 2.						
ESTABLISHMENT No. 3.							<i>Males.</i>						
<i>Males.</i>							Common laborers						
Common laborers		6 00	8 50	8 25	7 00		Mechanics						
Mechanics		9 00	13 00	13 00	11 50		Picker tenders						
Picker tenders and carders		5 00	8 25	7 00	5 50		Carders						
Spinners, mule		6 75	10 00	9 75	8 50		Spinners						
Weavers		5 50	8 50	7 00	6 50		Weavers						
Dresser or slasher tenders		11 50	13 50	12 00	12 00		Dresser or slasher tenders						
Watchmen		7 50	9 50	11 00	9 75		Yard and watch						
<i>Females.</i>							<i>Females.</i>						
Weaving only		4 25	7 00	6 25	6 75		Weaving only						
All departments, including weaving		3 75	6 25	5 75	5 87		All departments, including weaving						

* The wages in third column are for 1865.

† Wages of females estimated.

‡ For 1865, in confederate currency.

§ These wages are for 1862.

Occupations.	1840.	1850.	1860.	1870.	1875.	1880.	Occupations.	1840.	1850.	1860.	1870.	1875.	1880.
NORTH CAROLINA—Continued.							GEORGIA.						
ESTABLISHMENT No. 3.							ESTABLISHMENT No. 1.						
<i>Males.</i>							<i>Males.</i>						
Common laborers	\$2 25	\$3 00	\$4 50	\$4 50	\$3 90	\$3 90	Common laborers					\$6 12	\$4 32
Mechanics	6 00	6 00	9 00	10 50	10 50	10 50	Mechanics					10 02	12 42
Picker tenders	3 00	3 00	5 25	5 25	5 25	4 80	Picker tenders					6 48	5 40
Carders	3 00	3 00	5 25	5 25	5 25	4 80	Carders					6 00	5 40
Dresser or slasher tenders				5 25	5 25	5 25	Spinners					3 00	3 12
Yard and watch	3 00	3 00	4 00	4 02	4 02	4 02	Weavers					5 70	7 20
							Dresser or slasher tenders					11 25	9 00
<i>Females.</i>							Yard and watch					7 50	7 00
Weaving only							<i>Females.</i>						
All departments, including weaving	1 50	1 50	1 50	2 40	2 40	2 40	Weaving only					7 20	5 78
							All departments, including weaving						

Last year I published the wages paid in various industries in Massachusetts for the years 1860, 1872, 1878, 1880-'81, giving rates in gold values. From the returns published then I have compiled the following tables, showing average wages in cotton manufactures for the years named. The averages given are drawn from the actual wages paid a large number of operatives of each grade, as shown by the wage-books of the various factories visited :

Occupations.	AVERAGE WEEKLY WAGES; STANDARD, GOLD.				Increase or decrease for 1881, as compared with 1878.	Occupations.	AVERAGE WEEKLY WAGES; STANDARD, GOLD.				Increase or decrease for 1881, as compared with 1878.
	1860.	1872.	1878.	1881.			1860.	1872.	1878.	1881.	
Openers and pickers	\$4 70	\$7 35	\$6 23	\$6 07	+\$0 44	Reeling and warping, young persons	\$2 53	\$4 53	\$3 00	\$5 10	+\$2 10
Openers and pickers, boys	2 57	4 55	3 45	3 45		Beamers	7 35		9 25	5 57	- 3 68
Strippers	4 48	7 00	5 06	6 21	+ 1 15	Warpers	4 22	5 90	5 30	6 23	+ 0 93
Grinders	6 51	7 50	7 34	8 42	+ 1 08	Dressers	8 19	15 47	11 27	10 23	- 1 04
Frame-tenders	3 48	5 05	4 47	4 90	+ 43	Dressers, overseers	21 01	21 33	20 40	18 00	- 2 40
Drawers	2 33		3 70	4 52	+ 82	Slasher tenders		10 00	9 79	7 50	- 2 29
Railway and alley boys	2 70		3 45	4 41	+ 96	Drawers	4 56	5 04	5 55	5 49	- 00
Slubbers	3 50	3 30	4 80	5 90	+ 1 10	Drawers, section hands	6 25	10 07	8 34	6 78	- 1 56
Overseers of carding	16 70	26 67	18 72	17 80	- 92	Drawers, third hands	6 00	8 80	6 90	6 86	- 04
Section hands	12 00		11 40	10 62	- 78	Drawers, room hands	5 00		6 00	8 19	+ 2 19
Second hands	8 00	10 00	10 00	10 18	+ 18	Twisters, women	4 50	5 33	5 00	5 85	+ 85
Overseers of spinning	17 70	26 07	19 45	18 06	- 1 39	Weavers	4 44		5 88	6 44	+ 56
Second hands	7 00	14 67	8 00	11 71	+ 3 71	Weavers, overseers	17 41		20 00	16 39	- 3 61
Section hands	9 00		11 40	10 01	- 1 39	Weavers, second hands	7 00		9 00	10 91	+ 1 01
General hands	6 00		6 44	5 96	- 48	Weavers, section hands	7 74	10 07	9 71	9 18	- 53
Young persons	3 46	4 50	3 72	4 11	+ 39	Weavers, spare hands	4 50	6 01	5 25	6 06	+ 81
Spare hands	3 45	4 53	4 00	3 77	- 23	Weavers, four looms		5 78	3 90	5 64	+ 1 68
Mule spinners	6 33	10 70	7 41	10 09	+ 2 68	Weavers, five looms		7 81	4 50	5 66	+ 1 10
Mule spinners, women		6 30	4 00	8 52	+ 4 52	Weavers, six looms		9 50	5 01	6 74	+ 1 73
Back-boys	2 07	3 68	2 32	2 97	- 65	Weavers, eight looms		11 33	6 30	8 23	+ 1 93
Doffers	3 00		4 05	4 27	- 38	Bobbin-boys	4 00		4 50	3 78	- 72
Frame spinners	3 23		3 96	5 38	+ 1 42	Cloth-room overseers	18 10	14 07	17 25	11 50	- 5 75
Frame spinners, boys and girls *	2 08	4 55	3 34	2 95	- 39	Cloth-room second hands	7 17	8 64	9 30	10 00	+ 70
Frame spinners, girls	2 37		3 52	4 38	+ 86	Cloth room, men	5 44	8 16	6 45	7 69	+ 1 24
Frame spinners, boys			2 79	3 00	+ 30	Cloth room, women and boys	4 00	4 80	4 27	5 20	+ 93
Ring spinners, overseers	11 52		18 00	13 80	- 4 20	Packing room, girls and boys	4 03		4 70	5 59	+ 89
Ring spinners, second hands	7 50		9 00	10 51	+ 1 51	Dyers	5 87	8 93	8 13	6 30	- 1 83
Ring spinners, third hands	4 00		5 50	8 61	+ 3 11	Bundlers	6 00	8 60	8 88	8 27	- 61
Ring spinners, girls	3 60		4 20	4 95	+ 75	Overseers of repairs	17 10	17 33	20 00	18 39	- 1 61
Doffers, boys	2 58	4 00	2 80	2 70	- 10	Mechanics	8 35	12 16	10 72	18 51	+ 2 79
Fly and jack-frame tenders	3 50		5 80	7 05	+ 1 25	Mechanics, laborers	5 47	8 72	6 94	7 09	+ 15
Reeling and warping, overseers	9 00	14 67	15 00	16 05	+ 1 05	Engineers	9 00		11 37	17 75	+ 6 38
Reeling and warping, second hands	4 50	9 33	9 00	9 44	+ 44	Firemen	7 09		8 33	9 33	+ 1 00
Reeling and warping, spare hands, girls	2 40	4 48	4 20	4 33	+ 13	Overseers of yard	11 50		16 05	17 37	+ 1 32
Reeling and warping, spoolers	2 62	4 85	3 96	5 21	+ 1 25	Yard hands	5 22	8 76	6 32	7 60	+ 1 37
						Watchmen	6 83		8 12	9 23	+ 1 11

* Braiders.

Between 1860 and 1878 there was an increase of 19 per cent. in the wages paid in the cotton-mills of Massachusetts; between 1878 and January, 1881, there was an increase of 9.1 per cent. An apparent decrease took place in the wages paid certain overseers. This probably was not as a rule true, but the wages of this class vary very much even in the same locality, rates depending on skill, length of service, etc., and not on market rates.

From an original investigation, conducted in 1880 in the New England states and New York, I am able to give the wages paid in many representative cotton factories, with various collateral facts important in their consideration. This series of tables gives the wages for various grades and kinds of goods. The side numerals indicate the establishment, which by this means can be traced through the tables of products given farther on for the states named, so that wages and products relative to the same factories can be compared.

MAINE.

Goods manufactured.	PROPORTION OF EMPLOYEES IN EACH 100.				AVERAGE PAY OF EACH CLASS PER WEEK.				PAY OF SPINNERS PER WEEK.		PAY OF WEAVERS PER WEEK.		PAY OF PIECE WEAVERS PER WEEK.		HOURS OF LABOR.		
	Men.	Women.	Male children.	Female children.	Men.	Women.	Male children.	Female children.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Five days.	Saturday.	Per week.
1 Cotton cloth	80	60	5	5	\$8 50	\$6 00	\$3 00	\$2 50	\$7 50	\$3 00	.....	.....	\$7 08	\$5 00	11	11	66
2 Cotton cloth	38	55	7	5	7 50	6 00	2 25	2 25	11 00	9 00	.....	.....	8 00	5 50	11	11	66
3 Cotton cloth	34	51	11	4	7 00	5 00	3 00	2 00	11 00	8 00	\$6 00	\$3 00	8 00	3 00	11	11	66
4 Cotton cloth	34	51	11	4	7 00	5 00	3 00	2 00	11 00	8 00	6 00	3 00	8 00	3 00	11	11	66
5 Cotton cloth	29	42	11	18	.....	.....	.....	.....	6 00	2 70	.....	.....	7 15	4 42	11	11	66
6 Cotton cloth and bags	32	56	8	4	7 50	5 00	2 75	2 75	11 00	9 00	4 00	4 00	7 89	5 32	11	11	66
7 Cotton goods	30	55	9	6	7 00	5 50	.....	.....	11 00	9 35	8 50	4 50	.....	.....	11	11	66
8 Cotton goods	40	50	6	4	7 00	5 00	2 75	2 75	10 50	9 00	.....	.....	8 00	5 40	11	11	66
9 Cotton goods, colored	31	64	2	3	7 50	5 50	4 75	3 50	10 50	9 00	6 00	4 50	10 00	5 00	10 $\frac{1}{2}$	10 $\frac{1}{2}$	64 $\frac{1}{2}$
10 Print cloths, silesia, and cambrics.	65	25	7	3	8 00	6 00	3 00	3 00	12 00	10 00	.....	.....	10 00	5 00	11	11	66
11 Sail and overall duck	80	50	15	5	7 50	7 00	3 50	3 00	12 00	10 00	.....	.....	10 00	5 00	11	11	66
12 Sheetings	40	50	7	3	7 25	7 00	3 00	3 00	10 50	9 50	8 00	5 00	8 00	5 00	11	11	66
13 Sheetings	38	55	7	5	7 25	7 00	2 50	2 50	11 00	9 00	8 00	5 50	8 00	5 50	11	11	66
14 Sheetings	32	56	8	4	7 50	7 00	2 25	2 25	11 00	9 00	8 00	5 75	8 00	5 75	11	11	66
15 Sheetings	38	55	7	5	8 00	7 00	2 25	2 25	11 50	10 00	.....	.....	8 00	5 50	11	11	66
16 Sheetings, etc	34	51	11	4	7 00	5 00	3 00	2 00	11 00	9 00	6 00	3 00	8 00	4 00	11	11	66
17 Sheetings and shirtings	32	56	8	4	7 25	7 00	2 25	2 25	11 00	9 00	8 00	5 75	8 00	5 75	11	11	66
18 Warps and grain bags	40	50	5	5	7 50	5 40	3 00	3 00	6 00	4 20	.....	.....	9 00	6 00	11	11	66
19 Warps and grain bags	36	54	6	4	7 50	5 00	3 00	2 90	6 00	4 20	.....	.....	9 00	6 00	11	11	66

NEW HAMPSHIRE.

1 Cotton goods	33	60	7	.....	\$7 50	\$5 40	\$2 40	.....	\$10 00	\$8 00	\$7 50	\$4 00	.....	.....	10 $\frac{1}{2}$	10 $\frac{1}{2}$	64 $\frac{1}{2}$
2 Cotton goods	30	45	12	13	7 50	5 50	3 00	\$3 00	10 00	8 00	.....	.....	\$8 00	\$5 00	11	9 $\frac{1}{2}$	64 $\frac{1}{2}$
3 Cotton goods	31	44	13	12	7 50	5 50	3 00	3 00	10 00	8 00	.....	.....	8 00	5 00	11	9 $\frac{1}{2}$	64 $\frac{1}{2}$
4 Cotton goods	31	55	9	5	7 50	5 30	3 30	3 30	12 00	9 00	8 00	4 25	.....	.....	10 $\frac{1}{2}$	10 $\frac{1}{2}$	64 $\frac{1}{2}$
5 Print cloths	40	40	12	8	7 00	5 50	50	50	11 00	9 00	8 50	4 25	.....	.....	11 $\frac{1}{2}$	11 $\frac{1}{2}$	69
6 Yarns and fine sheetings	33	34	17	16	7 50	5 50	3 00	3 00	6 50	6 50	.....	.....	8 00	5 00	11 $\frac{1}{2}$	11 $\frac{1}{2}$	69

MASSACHUSETTS.

1 Cottonades	35	45	10	10	\$8 00	\$5 50	\$2 50	\$2 50	\$10 00	\$4 86	.....	.....	\$10 00	\$3 50	10	10	60
2 Cotton cloth	46	30	14	10	10 49	6 92	3 25	4 16	11 41	11 08	\$10 18	\$7 62	23 10	.....	10	10	60
3 Cotton cloth	15	70	10	5	6 00	5 00	2 50	2 50	8 50	3 50	8 50	4 20	.....	.....	10	10	60
4 Cotton cloth	30	60	5	5	7 92	5 25	2 50	2 50	6 00	3 50	8 00	4 00	.....	.....	10	10	60
5 Cotton cloth	35	65	.....	.....	9 00	6 00	4 50	4 00	9 00	3 00	10 00	4 50	.....	.....	10	10	60
6 Cotton cloth	45	44	5	6	.....	.....	.....	.....	11 42	.....	10 62	2 70	.....	.....	10	10	60
7 Cotton goods	24	63	6	7	7 92	4 98	2 28	2 28	11 01	9 00	.....	.....	9 70	3 50	10	10	60
8 Cotton goods	36	44	12	8	7 00	5 00	3 50	3 00	10 00	5 00	7 50	4 50	.....	.....	10	10	60
9 Cotton goods	45	45	5	5	7 00	4 50	4 00	3 00	10 00	5 00	7 00	4 00	.....	.....	10	10	60
10 Cotton goods	33	57	5	5	7 50	5 00	3 00	3 00	9 00	8 00	6 00	4 50	.....	.....	10	10	60
11 Cotton goods	20	30	30	20	9 41	5 84	3 33	3 02	9 50	7 25	10 71	5 81	.....	.....	10 $\frac{1}{2}$	7 $\frac{1}{2}$	60
12 Cotton goods	29	71	.....	.....	7 50	4 86	.....	.....	11 70	10 08	8 00	4 00	.....	.....	10 $\frac{1}{2}$	8 $\frac{1}{2}$	60
13 Cotton goods	36	44	10	10	9 50	6 00	3 50	3 50	12 00	8 00	11 00	7 50	.....	.....	10 $\frac{1}{2}$	7 $\frac{1}{2}$	60
14 Cotton goods	13	38	25	24	7 50	6 00	3 00	2 75	.....	.....	.....	.....	.....	.....	10	10	60
15 Cotton goods	25	50	11	14	7 50	4 50	3 00	3 00	10 00	9 00	7 20	4 50	.....	.....	10	10	60
16 Cotton goods and hosiery	26	40	16	18	7 75	6 00	3 50	3 50	9 00	6 60	.....	.....	9 00	3 60	10	10	60
17 Prints	25	55	12	8	9 00	5 00	2 50	2 50	9 60	8 40	9 00	4 50	9 00	4 50	10	10	60
18 Cotton and worsted goods	43	47	5	5	8 00	6 00	3 00	2 40	12 00	5 40	11 00	7 00	.....	.....	10	10	60
19 Cotton duck and yarn	25	10	30	35	11 00	7 00	4 00	4 50	4 20	3 65	10 00	4 00	.....	.....	10	10	60
20 Cotton flannel	35	45	10	10	7 50	5 50	2 50	2 50	.....	.....	9 00	3 50	9 00	3 50	10	10	60
21 Ginghams	10	70	8	12	.....	.....	.....	.....	10 00	7 50	10 00	6 00	.....	.....	10	10	60
22 Print cloths	35	45	10	10	10 00	7 50	2 67	3 75	13 86	10 25	10 08	5 04	.....	.....	10	10	60
23 Print cloths	35	45	10	10	.....	.....	.....	.....	11 50	9 00	.....	.....	10 08	5 00	10	10	60
24 Print cloths	35	48	12	5	7 00	5 00	2 50	2 50	9 00	7 00	7 00	4 00	.....	.....	10	10	60
25 Print cloths	33	50	12	5	8 00	5 00	2 50	2 50	10 00	7 00	8 00	4 00	.....	.....	10	10	60
26 Print cloths	32	41	13	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	10	60
27 Print cloths	36	44	12	8	10 25	6 50	3 67	4 00	18 25	10 00	.....	.....	11 08	7 62	10 $\frac{1}{2}$	7 $\frac{1}{2}$	60
28 Print cloths	34	49	15	2	.....	.....	.....	.....	10 62	9 70	.....	.....	9 62	6 20	10	10	60
29 Print cloths	35	45	10	10	.....	.....	.....	.....	11 86	10 48	8 00	5 50	.....	.....	10	10	60
30 Sheetings, shirtings, etc .....	.....	.....	.....	.....	.....	.....	.....	.....	9 30	7 20	7 50	5 30	.....	.....	10	10	60
31 Sheetings, silesias, and fancy cottons.	15	75	6	4	8 00	7 00	3 00	3 00	9 00	4 50	8 25	6 00	9 50	7 00	10	10	60
32 Towels and cotton duck	30	60	5	5	9 00	6 00	3 50	3 50	6 00	3 50	7 00	4 00	.....	.....	10	10	60

RHODE ISLAND.

Goods manufactured.	PROPORTION OF EMPLOYÉS IN EACH 100.				AVERAGE PAY OF EACH CLASS PER WEEK.				PAY OF SPINNERS PER WEEK.		PAY OF WEAVERS PER WEEK.		PAY OF PIECE WEAVERS PER WEEK.		HOURS OF LABOR.		
	Men.	Women.	Male children.	Female children.	Men.	Women.	Male children.	Female children.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Five days.	Saturday.	Per week.
1 Cotton goods.....	24	60	10	6	\$9 00	\$6 72	\$4 00	\$3 00	\$3 50	\$3 00	\$5 00	\$6 00	.....	.....	11	11	66
2 Cotton goods.....	24	60	10	6	9 00	6 72	4 00	3 00	3 50	3 00	5 00	6 00	.....	.....	10½	10½	66
3 Cotton goods.....	32	47	9	12	7 50	6 50	3 00	3 00	10 00	8 00	9 00	6 00	\$9 25	\$4 02	11	11	66
4 Cotton goods.....	25	61	9	5	10 00	7 00	3 50	3 00	10 30	8 00	9 00	4 50	.....	.....	11	11	66
5 Cotton goods.....	25	61	9	5	10 00	7 00	3 50	3 00	10 30	8 00	9 00	4 50	.....	.....	11	11	66
6 Yarns.....	30	30	10	30	8 00	5 75	3 00	3 00	9 50	8 50	.....	.....	.....	.....	11	11	66
7 Yarns.....	34	48	9	9	10 00	6 00	3 60	3 00	10 00	9 00	.....	.....	.....	.....	11	11	66
8 Yarns.....	10	80	.....	10	9 00	6 00	.....	2 50	5 50	4 00	.....	.....	.....	.....	11	11	66
9 Spool thread, yarns, etc.....	32	53	8	7	9 00	6 00	3 50	3 00	12 00	12 00	.....	.....	.....	.....	11	11	66
10 Spool thread, yarns, and knitting cotton.....	20	50	10	20	.....	.....	.....	.....	3 00	3 00	.....	.....	.....	.....	11	11	66
11 Wadding, batting, and wiping waste.....	90	5	5	.....	9 00	6 00	5 00	.....	.....	.....	.....	.....	.....	.....	10½	10½	63

CONNECTICUT.

1 Fine cotton goods.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2 Cotton duck.....	21	50	11	18	\$7 20	\$5 70	\$3 30	\$3 30	.....	.....	.....	.....	\$5 00	\$4 50	11	5	60
3 Cotton duck.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6 00	4 00	11½	9½	66
4 Duck.....	100	.....	.....	.....	7 50	.....	.....	.....	.....	.....	.....	.....	\$5 40	6 00	12	9	60
5 Cotton duck and sail twine.....	43	47	7	3	7 50	5 00	4 00	4 00	.....	.....	.....	.....	.....	.....	12	9	60
6 Gingham and dress goods.....	44	34	14	8	8 50	6 00	3 60	3 60	\$9 12	\$6 75	.....	.....	10 80	4 68	11½	8½	66
7 Gingham and dress goods.....	44	40	14	2	9 50	7 00	4 08	3 54	12 00	9 00	.....	.....	8 82	6 00	11	11	66
8 Hosiery yarn.....	63	22	15	.....	10 08	6 00	4 00	.....	11 00	9 00	.....	.....	.....	.....	12	9	60
9 Cottons, mosquito nettings, etc.....	33	33	22	12	9 00	6 50	3 00	2 75	12 00	10 00	.....	.....	14 00	7 00	11½	8½	65
10 Print goods.....	50	25	13	12	6 00	5 50	3 00	3 00	11 50	8 00	.....	.....	10 00	4 50	11½	8½	66
11 Print goods.....	30	55	5	10	7 00	5 00	3 00	3 00	8 00	6 00	.....	.....	7 00	4 00	12	9	60
12 Print goods.....	60	25	5	10	7 50	6 36	2 30	2 50	7 02	7 50	.....	.....	8 00	4 00	12	9	60
13 Print cloths.....	45	38	9	8	7 32	6 00	3 25	2 85	7 20	.....	.....	.....	6 55	5 25	12	9	60
14 Print cloths.....	.....	.....	.....	.....	7 02	5 50	2 50	2 50	6 60	.....	.....	.....	9 00	4 00	12	9	60
15 Print cloths.....	33	33	17	17	7 50	6 00	3 00	3 50	8 00	7 50	.....	.....	12 00	4 00	11½	8½	66
16 Prints, sheetings, etc.....	30	60	7	3	8 00	5 50	2 25	3 00	9 00	8 00	.....	.....	6 50	5 40	12	9	60
17 Patent hard-laid twine.....	26	42	10	16	7 00	4 50	3 00	3 00	.....	.....	.....	.....	.....	.....	12	9	60
18 Seine twine.....	41	25	17	17	6 00	4 00	3 00	3 50	.....	.....	.....	.....	.....	.....	12	9	60
19 Seine twine and wetting cord.....	22	72	6	.....	6 00	4 50	3 50	.....	.....	.....	.....	.....	.....	.....	12	9	60
20 Cotton seine twine.....	38	44	9	9	7 62	4 50	4 00	4 00	.....	.....	.....	.....	.....	.....	12	9	60
21 Cotton seine twine and netting.....	35	45	15	5	8 00	5 00	4 14	4 13	5 00	4 25	.....	.....	6 50	5 00	12	9	60
22 Sheetings.....	.....	.....	.....	.....	7 20	4 75	2 50	2 50	8 04	7 50	.....	.....	9 24	3 75	12	9	60
23 Sheetings.....	34	40	15	11	7 00	5 00	2 50	2 00	9 00	4 50	.....	.....	7 00	4 00	11	11	66
24 Sheetings.....	25	25	25	25	7 50	6 00	3 00	3 00	9 00	6 00	.....	.....	9 00	4 50	11	11	66
25 Sheetings.....	53	42	5	.....	7 00	6 00	2 50	.....	8 00	6 50	.....	.....	7 00	5 00	12	9	60
26 Sheetings.....	33	28	25	14	6 30	5 00	2 62	2 50	9 37	7 75	.....	.....	9 00	4 00	12	9	60
27 Light sheetings.....	36	34	17	13	8 10	5 10	3 00	4 00	9 50	8 00	.....	.....	8 00	4 00	11	11	66
28 Sheetings and print goods.....	43	36	11	10	8 52	5 40	3 00	3 60	11 24	9 14	.....	.....	7 58	5 77	11½	9	66½
29 Sheetings and drills.....	31	24	23	22	7 50	5 50	3 00	3 00	8 00	6 00	.....	.....	6 50	4 00	11½	8½	66
30 Cheviot shirtings, and blue and brown denims.....	29	54	11	6	9 00	5 33	4 50	3 75	.....	.....	.....	.....	12 17	7 50	12	9	60
31 Fine shirtings, white vestings, etc.....	29	21	33	17	6 75	5 75	4 25	3 25	9 80	8 10	6 50	\$5 00	7 80	5 50	11	11	66
32 Spool cotton.....	40	50	6	4	9 00	7 00	5 00	4 00	14 00	6 00	.....	.....	.....	.....	10½	6½	60
33 Cotton tickings, blue drills, and shirting stripes.....	28	56	6	10	9 00	5 00	4 00	3 50	10 00	7 50	.....	.....	8 00	3 00	11½	8½	66
34 Various kinds of cotton cloths.....	40	34	15	11	7 25	5 75	2 75	2 50	8 35	7 12	.....	.....	8 50	5 00	12	12	72
35 Various kinds of fine cotton goods.....	40	37	13	10	7 00	6 00	2 26	2 26	8 24	7 50	.....	.....	9 00	4 00	11½	8½	66
36 Cotton warps.....	50	44	3	3	10 50	5 00	3 00	3 60	.....	.....	.....	.....	.....	.....	11½	8½	66
37 Cotton warps.....	27	49	22	2	6 78	5 20	3 22	3 00	6 00	3 00	.....	.....	.....	.....	12	9	60
38 Cotton warps.....	50	25	12	13	9 00	4 80	5 10	4 50	6 00	.....	.....	.....	.....	.....	15	15	90
39 Cotton warps and yarns.....	33	27	20	20	6 00	4 50	4 00	3 00	.....	.....	.....	.....	.....	.....	11½	8½	66
40 Yarns.....	20	50	25	5	7 50	4 50	4 00	4 50	.....	.....	.....	.....	.....	.....	12	9	60
41 Cotton yarns.....	27	24	28	23	7 00	5 00	2 50	3 00	8 00	7 00	.....	.....	.....	.....	12	9	60

NEW YORK.

	Goods manufactured.	PROPORTION OF EMPLOYÉS IN EACH 100.				AVERAGE PAY OF EACH CLASS PER WEEK.				PAY OF SPINNERS PER WEEK.		PAY OF WEAVERS PER WEEK.		PAY OF PIECE WEAVERS PER WEEK.		HOURS OF LABOR.		
		Men.	Women.	Male children.	Female children.	Men.	Women.	Male children.	Female children.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Five days.	Saturday.	Per week.
1	Cotton goods.....	23	44	11	22	\$8 16	\$6 30	\$3 42	\$3 30	\$11 02	\$8 25	.....	.....	\$9 08	\$5 00	11	8½	63½
2	Fine shirtings and broad sheetings.	19	57	9	15	8 25	5 16	2 22	2 60	10 08	0 68	.....	.....	6 57	4 91	11½	10½	66
3	Knit underwear.....	40	60	.....	.....	6 50	4 00	.....	.....	5 75	4 00	.....	.....	3 50	3 50	11½	9½	66
4	Knit underwear.....	35	43	10	12	8 00	6 00	3 50	3 00	12 00	8 50	.....	.....	.....	.....	11½	8½	66
5	Knit underwear.....	34	58	5	5	6 00	6 00	3 00	3 00	8 22	5 00	.....	.....	6 00	4 00	11½	0	66½
6	Print cloths.....	26	57	14	3	7 13	4 45	2 80	3 25	9 00	5 64	.....	.....	6 06	3 73	11½	9½	66
7	Print cloths.....	33	38	22	7	5 60	4 00	2 87	3 17	4 50	3 25	.....	.....	5 25	2 66	12½	9½	72
8	Print cloths.....	41	43	10	6	6 76	5 18	2 30	2 63	9 00	6 00	.....	.....	7 44	3 88	12½	8½	66
9	Print cloths.....	21	35	18	26	6 90	4 22	2 23	2 60	6 20	5 00	.....	.....	6 70	4 50	11½	8½	66
10	Print cloths.....	31	41	16	12	6 73	5 03	2 50	2 71	4 68	3 56	.....	.....	6 65	3 60	11½	8½	66
11	Print cloths.....	20	47	18	15	9 75	5 00	2 83	2 50	10 00	5 10	.....	.....	6 75	5 00	11	11	66
12	Print cloths.....	30	46	15	9	7 01	4 95	2 90	3 36	.....	.....	.....	.....	6 78	4 38	11½	9½	66
13	Print cloths and cheese band-ages.	41	46	11	2	4 87	4 22	2 95	4 00	4 80	3 00	.....	.....	5 73	4 25	12½	10	72½
14	Sheetings and denims.....	34	44	15	7	7 00	4 80	2 53	2 72	8 02	7 03	.....	.....	7 23	4 31	11½	9½	66
15	Sheetings.....	36	36	22	6	7 10	4 50	2 80	3 12	8 00	.....	.....	.....	7 10	4 02	11½	9½	66
16	Sheetings.....	33	50	10	7	7 00	4 71	2 26	3 10	7 50	4 15	.....	.....	5 40	4 26	11½	9½	66
17	Sheetings.....	25	49	10	16	7 44	5 21	2 62	2 71	3 36	2 52	.....	.....	6 84	5 70	11½	9½	66
18	Light sheetings.....	45	44	9	2	5 18	3 90	2 30	3 48	4 11	3 30	.....	.....	6 16	2 51	12½	10	72½
19	Light sheetings.....	18	57	17	8	8 24	5 06	2 65	2 02½	8 60	8 10	.....	.....	6 96	4 55	11½	8½	66

These tables complete the wage exhibits for America. With all the facts obtainable for Great Britain and America, as presented herewith, covering the whole period during which the factory system has influenced wages, there seems but little necessity for extended analysis, yet a few points of value may be added. I realize the truth of a saying by Mr. G. R. Porter, one of England's best-known statisticians, that "no one, unless he shall have made the attempt to obtain information as to the rate of wages, can be aware of the difficulties opposed to his success". I am content, therefore, to state the facts, carefully compared and corroborated as far as possible, and leave the general treatment of them to other hands.

In England, in 1832, the men employed in the cotton trade constituted 29 per cent. of the whole number of persons employed; the women, 31 per cent.; the children, 40 per cent. In 1850 the proportion of men was 36 per cent.; of women, 56 per cent.; of children, 8 per cent. In 1868, of men, 30 per cent.; of women, 58 per cent.; of children, 12 per cent. I believe these last proportions hold very nearly the same at the present time. The proportion of men employed has not changed much since 1832; that of women has increased from 31 to 56 per cent.; while for children it has decreased from 40 to 12 per cent. The hours of labor have been reduced from twelve and one-half and thirteen per day to nine and one-half. An examination of the British tables will convince one that for most divisions of labor in cotton factories wages have very nearly doubled during the past half century.

For America, the proportions of men, women, and children employed cannot be stated for periods prior to 1870. For 1850 the males employed were 36 per cent. of the whole number, and the females 64 per cent.; for 1860 the males were 38+ per cent. and the females 61+ per cent. of the whole number. In 1870 the men constituted 31+ per cent., the women 51+ per cent., and the children 17+ per cent. of the whole number employed. In 1880 the men (males fifteen years of age and over) constituted 34 per cent., women (females sixteen years of age and over) 49 per cent., and children 17 per cent. of the whole. The proportions for 1870 and 1880 were very nearly alike. It is gratifying to know that the number of children employed does not increase in either country considered. The hours of labor have been reduced in this country, but not uniformly in all the states; but where they were formerly thirteen or fourteen hours per day they are now ten or eleven. The last table shows the difference in working time for New England and New York. It is true that, where ten hours prevail, not only wages but production per person equal if they do not exceed the rates and quantities in states where longer hours constitute a day's work.

The factory system has reduced the hours of labor; wages have about doubled in the United States during the past fifty years. In 1828 the average weekly wages of girls (women), as shown, were \$2 62; now they are \$4 84. The consideration of most of the specific divisions of labor which can be compared will demonstrate the truth of this conclusion. In many cases wages have more than doubled, but from the data no general average can be deduced.

In 1860 the average yearly wages for all, men, women, and children, was \$196+; in 1880 it was \$244-. The average for 1880 varies for different parts of the United States, it being \$258 42 in Massachusetts, \$255 77 for the

eastern states generally, \$235 19 for the middle states, \$168 59 for the southern states, and \$216 91 for the western states. A brief consideration of the effect the factory system has had upon prices and production, so far as this country is concerned, will answer all the purpose of a wider study. While wages have doubled during the real factory period, the past fifty years, the prices of goods have been decreased in greater proportion, as will be seen by the following table:

Year.	Price of heavy sheetings, per yard, in cents.	Price of printed calicoes, per yard, in cents.	Price of raw cotton, per pound, in cents.
1816.....	30	.....	30
1819.....	21	.....	22½
1826.....	13	22	13½
1829.....	8½	17	10½
1843.....	6½	12	7½
1845.....	7	11	6
1850.....	7	9½	12½
1855.....	7½	.....	10½
1860.....	8½	.....	13½
1870.....	10½	13	14½
1872.....	13½	15	19
1878.....	7½	6	11
1880.....	7½	7	12½

It will be observed that the prices of cloth fell faster than the price of cotton. The above table illustrates in a simple way the course of all prices under the factory system.

As to cost of production, a single illustration will suffice: The ratio of cost per pound, for labor, of common cotton cloth for the years 1828 and 1880, was as 6.77 to 3.31; wages being as 2.62 to 4.84. As to production, many facts can be given, although the data relative to hand work is fast passing from the region of positive personal knowledge. For this reason I have taken great pains to verify the statements which have been made to me.

A fair adult hand-loom weaver can weave from 42 to 48 yards of common shirting per week; from the six power-looms which the weaver in a factory would attend the product would be about 1,500 yards. On the hand-wheel (one spindle) a spinner can turn off 8 ounces of No. 10 cloth yarn in ten hours, or 3 pounds per week; the mule spinner about 3,000 pounds. The increase in the production of the most approved kind of spindles in 1880 over the production of those of ten or fifteen years ago is estimated by many careful manufacturers to be at least 20 per cent., and the estimate is usually the same for the production of the best looms of to-day over those of a score of years ago. I know of no systematic attempt to classify the production of looms and spindles on any extensive scale in the past. The results, therefore, of an original investigation in 1880 will be of value to the statistician. The following series of tables shows the product of looms and spindles in 1880 in the eastern states and New York:

MAINE.

	Goods manufactured.	Product of one hundred looms per week.	Number of looms attended by each weaver.	Steam or water power.	Product of one hundred spinners per week.	Hours of labor per week.
1	Cotton cloth	16,500 yards.	4 to 6	Steam	60,000 pounds.	66
2	Cotton cloth	20,000 yards.	Mostly 5	Water	No. 33 yarn, 180,000 pounds.	66
3	Cotton cloth	18,000 yards.	4 to 6	Water .....	.....	66
4	Cotton cloth	18,000 yards.	4 to 6	Water .....	.....	66
5	Cotton cloth	21,194 yards.	6	Water	48,737 pounds.	66
6	Cotton cloth and bags.....	40 inches, 17,346 yards.	4 to 6	Water .....	.....	66
7	Cotton goods	17,000 yards.	4 to 6	Water	No. 39 yarn, 87,500 pounds.	66
8	Cotton goods	16,000 yards.	4 to 5	Water	90,000 pounds.	66
9	Cotton goods, colored	22,500 yards.	2, 3, and 4	Both .....	.....	64½
10	Print cloths and silesia cambrics.....	11,406 to 23,400 yards.	Average, 5	Water	110,000 pounds.	66
11	Sail and overall duck	{ Sail cloth, 35,000 yards. Overall duck, 25,000 yards.	2 to 4	Water	50,000 pounds.	66
12	Sheetings	No. 33 yarn, 15,600 yards.	4 to 6	Both	No. 38 yarn, 90,000 pounds.	66
13	Sheetings	18,000 yards.	4 to 6	Water	160,000 pounds.	66
14	Sheetings	20,000 to 24,000 yards.	5 to 6	Water	No. 23 yarn, 200,000 pounds.	66
15	Sheetings	15,000 yards.	4 to 6	Water	No. 33 yarn, 160,000 pounds.	66
16	Sheetings, etc.....	18,000 yards.	4 to 6	Water .....	.....	66
17	Sheetings and shirtings.....	21,000 yards.	4 to 6	Water	No. 23 yarn, 200,000 pounds.	66
18	Warps and grain bags	30,000 bags.	4	Water .....	.....	66
19	Warps and grain bags	30,000 bags.	4	Water .....	.....	66

THE FACTORY SYSTEM OF THE UNITED STATES

NEW HAMPSHIRE.

	Goods manufactured.	Product of one hundred looms per week.	Number of looms attended by each weaver.	Steam or water power.	Product of one hundred spinners per week.	Hours of labor per week.
1	Cotton goods	13,000 to 14,000 yards.	4 to 5	Water		64½
2	Cotton goods	19,500 yards.	6	Water		64½
3	Cotton goods	19,500 yards.	Average, 6	Water		64½
4	Cotton goods	17,000 to 21,000 yards.	4 to 6	Water		64½
5	Print cloths	27,000 yards.	4 to 8	Both	No. 37.30, 87,000 pounds.	69
6	Yarns and fine sheetings	18,000 yards.	4 to 6	Water		60

MASSACHUSETTS.

1	Cottonades	¾ goods, 18,000 yards.	3 to 4	Both		60
2	Cotton cloth	64 × 64, 24,887 yards.	6 to 8	Steam	No. 33 yarn, av. 100,000 pounds.	60
3	Cotton cloth	17,850 yards.	4 to 8	Steam	No. 39 yarn, 70,000 pounds.	60
4	Cotton cloth	23,800 yards.	4 to 8	Steam	No. 39 yarn, 70,000 pounds.	60
5	Cotton cloth	20,250 yards.	2 to 4	Both		60
6	Cotton cloth		4 to 6	Steam	No. 64 yarn, 31,840 pounds.	60
7	Cotton goods		3 to 8	Both		60
8	Cotton goods			Steam		60
9	Cotton goods	27.50 yarn, 19,500 yards.	4 to 6	Steam	27.50 yarn, 120,000 pounds.	60
10	Cotton goods	From 19,800 to 27,000 yards.	4 to 6	Both	{ No. 5 to 36, 70,000 to 200,000 } pounds; very coarse, 400,000 } pounds.	60
11	Cotton goods	20,745 yards.	4 to 8	Both	77,100 pounds.	60
12	Cotton goods	17½ yarn, 24,000 yards.	4 to 6	Both	17½ yarn, 140,000 pounds.	60
13	Cotton goods		6 to 8	Steam		60
14	Cotton goods	20,000 yards.	4 to 8	Both		60
15	Cotton goods	28 inches, 19,000 yards.	4 to 8	Both	29½ yarn, 25,000 pounds.	60
16	Cotton goods and hosiery	30-inch sheeting, 17,000 yards.	4 to 6	Both	24 yarn, 200,000 pounds.	60
17	Cotton prints	23,000 yards.	4 to 6	Both	115,000 pounds.	60
18	Cotton and worsted goods	{ Cotton, 32,800 yards. Worsted, 18,000 yards. }	2, 3, and 4	Both		60
19	Duck and yarn	47,120 yards.	Average, 3	Steam		60
20	Flannels, cotton	From ¾ to ¾, 19,000 yards.	Average, 4	Steam		60
21	Ginghams	17,800 yards.	3	Both		60
22	Print cloths	23,756 yards.	Average, 6	Steam	120,000 pounds.	60
23	Print cloths	26,245 yards.	Average, 6	Steam	110,000 pounds.	60
24	Print cloths		Average, 6	Both		60
25	Print cloths	22,500 yards.	4 to 8; mostly 6	Both		60
26	Print cloths	3,500 pounds.	6 to 8	Steam	113,000 pounds.	60
27	Print cloths	26,700 yards.	6 to 8	Steam	100,000 pounds.	60
28	Print cloths		6 to 8	Steam	100,000 pounds.	60
29	Print cloths	24,500 yards.	Average, 6	Steam	110,000 pounds.	60
30	Sheetings, shirtings, etc	26,400 yards.	5 to 6	Both	No. 5 to 20 coarse, 250,000 pounds.	60
31	Sheetings, silesias, and fancy cottons	3,300 pounds.	3 to 6	Steam	{ Mule spinners, 78,600 pounds; frame or ring spinners, 72,222 } pounds.	60
32	Towels and duck	Duck, 30,000 yards.	5	Both		60

RHODE ISLAND.

1	Cotton goods	No. 34 yarn, 18,000 yards.	4 to 6	Both	No. 34 yarn, 118,000 pounds.	66
2	Cotton goods	No. 14 yarn, 18,000 yards.	Average, 5	Both	No. 34 yarn, 118,000 pounds.	63
3	Cotton goods	24,700 yards.	4 to 8	Mostly water	No. 38 yarn, 95,000 pounds.	66
4	Cotton goods	No. 36 yarn, 17,700 yards.	4 to 6	Both	No. 34 yarn, 117,900 pounds.	66
5	Cotton goods	No. 36 yarn, 17,700 yards.	4 to 6	Both	No. 34 yarn, 117,900 pounds.	66
6	Yarns			Both	Estimate, 160,000 pounds.	66
7	Yarns			Both		66
8	Yarns			Water		66
9	Yarns and spool thread			Steam	No. 40 yarn, 92,200 pounds.	66
10	Yarns, spool thread, and knitting cotton			Steam	115,000 pounds.	66
11	Wadding, batting, and wiping waste			Steam		63