

THE FIRST CENTURY OF THE REPUBLIC.

[Sixth Paper.]

PROGRESS IN MANUFACTURE.

WHAT ARE MANUFACTURES?

IN a general but correct sense all products suitable for use, resulting from the applications, through human hand or brain, of the forces of nature to matter are *manufactures*, and each person who takes part in effecting or directing such applications is a *manufacturer*. Thus the laborer in the field who prepares the soil, scatters the seed, and harvests the grain, the wagoner, the railroad employé, or the sailor who transports it to the mill, are, in truth, as much the makers (*facturers*) of the flour as the men who, standing at the door of the mill, receive the grain, pass it through machinery, and when changed in form pack and deliver it to the consumers. No one of all these intermediaries between the first step in the so-called process of *production*—*i. e.*, the leading or drawing forth (*pro* and *duce*)—and the final use of the product, which we call *consumption*, at any time makes any thing in the sense of creating, but is only the agent, more or less skilled, for directing one or more of a series of movements, each of which differs from the other in degree, but not in kind. For convenience, however, all these movements are economically divided into groups or classes, under such general names as *agriculture*, *mining*, *commerce*, *the fisheries*, and *manufactures*—the last name being more especially applied to designate those movements which have reference to the changing or elaborating, through the aid of machinery, of those forms of product which have been the result of previous movements effected under the departments of agriculture and mining, and to some extent also of the fisheries.

SOURCES OF INFORMATION.

In the sense of the definition, as thus given, there are no available data for making any thing like a complete exhibit of the gradual development of the manufacturing industry of the American people, not only, as might be expected, for so much of the period of their history as is antecedent to the adoption of the Federal Constitution and the full organization and adjustment of the affairs of the new nation, but what is more remarkable, and at the same time not generally known, for so much of the present century also as is antecedent to the year 1850, at which date the government of the United States for the first time, through the census, attempted to ascertain, with even approximative accuracy, the exact industrial statistics of the country. The

requirement of the Federal Constitution (adopted in convention in 1787) that an "enumeration" (of the people) "shall be made within three years after the first meeting of the Congress of the United States, and within every subsequent term of ten years," only contemplated the obtaining of information respecting population for the ulterior purpose of apportioning representation and direct taxation. The returns, accordingly, of the first census, taken in 1790, and of the second census, taken in 1800, afforded no information whatever concerning either the aggregate wealth of the country, the occupations of the people, or the nature and value of their annual product.

In ordering for the third census, that of 1810, Congress, however, for the first time enacted that, in addition to enumerating the people, it should be the duty of the marshals to take also, under the direction of the Secretary of the Treasury, an account of the "several manufacturing establishments and manufactures within their several districts," and set aside for this service the sum of \$30,000, out of an aggregate of \$150,000 previously appropriated for the general purposes of taking the census. This latter sum, although seemingly small, was nevertheless considered to be amply sufficient to cover all the expenses of the *third* census; and in comparison with an expenditure of nearly three and a half millions authorized by Congress in connection with the taking in 1870 of the ninth census, strikingly illustrates the change in all the elements of national development effected between the two periods. As further illustrating the same point, it may be also interesting to note that the report of the first census was comprised in an octavo pamphlet of fifty-two pages, and that of the second census in a folio of seventy-eight pages, while the report of the ninth census required three large quarto volumes of 679, 851, and 806 pages respectively, besides a statistical atlas.

As the first attempt to set forth the condition of American manufacturing industry in detail, the results of the third census were looked for by Congress and the country with no little of interest; but when the industrial returns were sent in they proved so imperfect and discordant that the Committee of Commerce and Manufactures on the part of the House of Representatives, to whom they were referred, reported, through one of its members, that it was impossible to arrange them in any form which would be "alike useful and compendious." In accordance with a joint resolution they were therefore

referred to the Secretary of the Treasury—then Mr. Gallatin—with instructions to place the entire returns in the hands of some person competent to make a digest of them; and for this purpose the Secretary subsequently selected Mr. Tench Coxe, of Philadelphia, who in 1813 submitted a report, which, although from necessity most imperfect, was nevertheless of great interest and value.

In 1820, on the occasion of the taking of the *fourth* census, an effort was again made to obtain statistics of industry; but when the returns came in they were again found so discreditable that the Secretary of State was only constrained by the mandatory character of the law to permit their publication; and the House of Representatives, after debating the propriety of suppressing the entire document, refused to pass a resolution providing for its public distribution.

The result of these two unsuccessful efforts was that in providing for the taking of the *fifth* census the attempt to collect any industrial statistics whatever was wholly abandoned; and although in 1840 schedules for obtaining statistics of industry were issued to the marshals engaged in taking the *sixth* census, the results obtained were regarded as of little or no importance.

The act of 1850, however, under which the *seventh*, *eighth*, and *ninth* censuses of the United States were taken, in the years 1850, 1860, and 1870 respectively, marks an era in the history of American statistics, inasmuch as it not only incorporated provisions of law looking to the obtaining of results of substantial value relative to domestic industry, but also for the first time so insured the official observance of the law that it became possible to recognize the returns to a certain extent as standards for making comparisons and deductions in the future. And for such a result a debt of national gratitude is due, more than to all others, to the Hon. Joseph G. Kennedy, under whose superintendence the work of the censuses of 1850 and of 1860 was chiefly performed.

But commendable as were the returns of the census of 1850, those of 1860 were much more comprehensive and accurate; while the *ninth* census, taken in 1870, under the superintendence of Hon. F. A. Walker, was not only very far superior in every respect to any previous census of the United States, but also compares favorably with any work of the kind previously executed in any country. At the same time it ought to be known that the returns of the ninth census were very far from being as complete and useful as they could and would have been had not personal and partisan spirit, overruling all considerations of national good, mainly on the part of one man, prevented Congress from adopting a new law, carefully prepared by a committee of the House of Representa-

tives (with the assistance of the best statisticians of every department in the country), and subsequently passed by the House almost unanimously, and so compelled the performance of the work under the old law, one of whose provisions required the enumeration and valuation of slaves, when the institution of slavery had for years been abolished.

But in addition to the reports of the census, the materials available for the preparation of a history of American manufacturing industry are exceedingly varied, and if not complete, exact, and accordant, are at least invested with a high degree of interest. For the earlier periods, or for the first one hundred and fifty years of our national history, the few particulars which can now be gathered are to be sought for mainly in colonial statutes and records, private correspondence, minutes of councils and assemblies, local histories, and individual biographies. In 1791 Alexander Hamilton, then Secretary of the Treasury, in obedience to a resolution of Congress, submitted his famous report on domestic manufactures and their relations to the new Federal government, in which, without entering into details, he gave an enumeration of such branches of industry under this head as seemed to him at that time to be permanently established in the country. Hamilton's report was followed in 1813 by the work of Tench Coxe, of Philadelphia, above referred to; while in 1816 Timothy Pitkin, a Representative in Congress from the State of Connecticut from 1808 to 1819, published, under the title of *A Statistical View of the Commerce of the United States, including also an Account of Banks, Manufactures, and Internal Trade*, what at the time of the appearance of the first edition, and long subsequent also to the second edition in 1835, held rank as the most comprehensive and authoritative commercial and statistical work of American origin. At present the most complete repertory of facts concerning the rise and progress of American manufactures is to be found in the work of the late Dr. J. L. Bishop, of Philadelphia, entitled *A History of American Manufactures from 1608 to 1860*—three volumes; in addition to which there have also been from time to time important publications by various authors on specialties of manufactures and the mechanic arts, as Thomas's *History of Printing*, White's *Memoirs of Slater*, Batchelder on the *Cotton Manufacture of the United States*, Munsell's *Chronology of Paper and Paper-making*, as well as numerous statistical reports from special industrial associations, as the American Iron and Steel Association, National Association of American Cotton and Woolen Manufacturers, etc., etc. Within a comparatively recent period, also, many of the States have prepared and published, every five years subsequent to the national cen-

sus, very full details of their local domestic industries; and as the principle that healthy legislation can only flow from an exact knowledge of the condition and wants of the people has gradually obtained public recognition, the establishment of distinct bureaus of statistics, reporting every year with great minuteness of detail the particulars of all important industrial occupations, is beginning to be regarded as an indispensable adjunct of all State governments.

With this brief review of the sources of information available for studying the history of our national industrial progress, attention is next asked to the subject of the origin and development of American manufactures from the period of the first settlement in Virginia, in 1607-8, to the dissolution of the colonial system in 1776.

PROGRESS FROM 1607 TO 1776.

And in reviewing the pertinent facts of this period the circumstance that in the first instance most forcibly arrests attention is the strong natural tendency exhibited from the very outset by the people who colonized and built up the American States to multiply and diversify their industries—a fact in striking contrast with and in opposition to the opinion so assiduously maintained by a school of American economists that such a result, among an intelligent people, inhabiting a country of varied resources, does not tend to occur naturally, but is rather the direct offspring of legislative direction and interference.

Thus, for example, the second vessel dispatched by the London Company, in 1608, to the settlement at Jamestown, Virginia (founded the previous year), brought numbers of persons skilled in manufactures, of whom says the historian (Stith), "No sooner were they landed, but the President dispatched as many as were able, some to make glass, and others for pitch, tar, and soap-ashes;" and the very first manufactory established within the territory now controlled by the United States was a "glass-house" (furnace) in the woods of Virginia, about a mile from the settlement of Jamestown. And it is further interesting to note that, with the exception of a cargo of "sassafras" gathered in the vicinity of Cape Cod in 1608, the first export from the British North American colonies consisted in great part of what in the most technical sense are termed "manufactures;" or, to use the quaint language of Captain John Smith in his letter which accompanied the invoice, "of trials of pitch, tar, glass, frankincense, and soap-ashes, with what wainscot and clapboard as could be forwarded."

From the very first, under the popular impression probably that the country was particularly adapted to the production of silk, special efforts were made in nearly all the

colonies to direct and divert the attention of the people to this particular industry; and it is recorded that the first Assembly that convened in Virginia under a written constitution, in 1621, especially occupied itself with considering "how best to encourage the silk culture." In 1662 also the Virginia Assembly, with a view of encouraging manufactures, offered prizes for the best specimens of linen and woolen cloth, and a special prize of fifty pounds of tobacco for each pound of wound silk produced in the colony; and it was also enjoined that for every hundred acres of land held in fee, the proprietor should be required to plant and fence twelve mulberry-trees. Silk culture in Georgia also so largely occupied the attention of the first colonists that a public seal was adopted bearing as a device silk-worms engaged in their labors; while bounties for the encouragement of the same industry were repeatedly offered by the colonies of Connecticut, New York, New Jersey, North and South Carolina. It is a most interesting and suggestive circumstance that this specialty of employment, which from the first settlement of the country was particularly selected as worthy of attention, and as such did receive for nearly two hundred years from the various colonial and State authorities an amount of encouragement, through special legislation, greater than was bestowed on any other interest, is the only one of the great industries which has never been able to attain to a healthy condition of existence on the North American continent, and to-day only exists in the United States in virtue of a degree of legislative encouragement far in excess of that demanded and received by any other industrial interest.

But zealously as did the first settlers of Virginia engage at the outset in manufactures, the characteristics of the territory upon which they located, in respect to fertility of soil and mildness of climate, proved antagonistic; and obeying the promptings of self-interest, which are always a far better and surer guide than legislation for determining what occupations individuals as well as communities can best follow, they in common with the population of all the other Southern colonies early became planters rather than artisans. And from that day to this American manufacturing industry has found its greatest development in other and less fertile localities.

Strenuous efforts were indeed made by the authorities to arrest the tendency of the people of Virginia to engage in agriculture rather than in manufactures or commerce, and in 1689 it was even ordered that all the tobacco grown in the colony in excess of a certain quantity should be destroyed. But this and other efforts, like the offering of prizes for the encouragement of the produc-

tion of textile fabrics, proved of no avail. Tobacco grew most luxuriously, and in 1617 readily commanded three shillings per pound, and the Virginians soon found that it was, at least for the time, more advantageous to buy manufactured articles with the proceeds of their crops than to manufacture for themselves.

On the other hand, in New England the circumstances of a sterile soil and a harsh climate were antagonistic to agriculture and in favor of commerce and manufactures, and from a very early day powerfully contributed to give to this section of country a supremacy in respect to the two last-named branches of industry which no subsequent influences have ever seriously impaired or threatened. The branch of manufacturing industry to which the attention of the New England colonists was first, and as it were naturally, directed, by reason of the inexhaustible wealth of their forests, was the manufacture of lumber, for which there was a constant and remunerative demand in England and throughout the West Indies. Ship-building commenced in the Plymouth Colony within three years after the landing, and the business subsequently received a great impulse by the overthrow of the monarchy under Charles I. and the establishment of the Commonwealth, which led the colonists to apprehend that the incentive to emigration, and the consequent sailing of ships from England, being diminished, they would be thereby left dependent on their own resources for interoceanic communications. "The general fear," says Governor Winthrop, in his journal, "of a want of foreign commodities, now our money was gone, and that things were like to go well in England, set us on work to provide shipping of our own;" and the business was prosecuted with such vigor that in 1676, just a century before the Declaration of Independence, 550 vessels are reported to have been built in Boston and the vicinity, of which 230 ranged from 50 to 250 tons burden; and in 1731 the trade of Massachusetts alone employed 600 sail of ships and sloops, having an aggregate of 38,000 tonnage—one-half of which traded to Europe—in addition to over 1000 sail and from 5000 to 6000 men employed at the same time in the fisheries.

The business of constructing ships for home use and for sale in foreign countries was also extensively followed in nearly all the other colonies, and in Maine and New Hampshire especially the manufacture of spars, masts, and ship timber for export early became a leading and profitable industry.

The first saw-mill in New England is believed to have been erected as early as 1634 or 1635 on the Salmon Falls River, New Hampshire, near to the site of the present city of Portsmouth. The first water-mill in

New England is supposed to have been put up at Dorchester, Massachusetts, as early as 1628; and in 1633 another was erected in the Plymouth Colony by one Stephen Dean, which he engaged should be sufficient to "beat" corn for the whole colony. The first Van Rensselaer sent from Holland to Albany as early as 1631 a master mill-wright and two small millstones for a small grist-mill. The first grist-mill in Pennsylvania was erected by Colonel John Printz, Governor of what was then called New Sweden, in 1643. Virginia as early as 1649 had four windmills and five water-mills, besides many "horse-mills," and for a considerable number of years exported large quantities of breadstuffs to her sister colonies and to the West Indies.

The first printing-press in what is now the United States was set up at Cambridge, Massachusetts, in 1638, only eighteen years subsequent to the landing of the Pilgrims in the wilderness. The first thing printed was *The Freeman's Oath*, a broadside; the second, an almanac, in 1639; and in 1640 the first book, "the Psalms newly turned into metre," or *The Bay Psalm-Book*, as it was called—a work which is said to have gone through seventy editions. William Penn landed in his new territory of Pennsylvania in 1682, and four years later a printing-press—the third in the colonies—was at work in Philadelphia. The first press established in the Province of New York was in 1693, none having been allowed there during the rule of the Dutch. The first printing-press in Connecticut was established at New London in 1709; in Rhode Island, at Newport, in 1713–14; in Delaware, at Annapolis, in 1726; in South Carolina, at Charleston, in 1730; in New Hampshire, at Portsmouth, in 1756; in North Carolina, at Newbern, in 1757; in Georgia, at Savannah, in 1762; and in what is now the State of Maine in 1780. The first printing-press in the territory west of the Alleghanies was set up in Kentucky in 1786; the second, at Knoxville, Tennessee, in 1793; and the third, probably, at Cincinnati, then only a trading post, in 1795.

The number of printing-presses in the colonies at the time of the Revolution is believed to have been about forty. The number of separate works printed in the provinces up to this period can not now be ascertained; but the Philadelphia Library contains as many as 459 works printed in that city alone prior to the Revolution.

The first book-binding in this country appears to have been an edition of 1000 copies of the Bible, published at Cambridge in 1663, which was followed by a second edition of 2000 copies in 1685. The work was performed by one John Ratliffe, who came from England expressly for this purpose. His price was about 3s. 4d. per volume, and one Bible was as much as he could bind in one day.

The manufacture of paper of any description was not established in any of the colonies until full fifty years after the introduction of printing, the first paper mill having been erected in the vicinity of Philadelphia by one William Rittenhousen, a native of Germany, about the year 1690. The first paper mill in New England was established in the town of Milton, near Boston, in 1730. In 1732 the following advertisement appeared in the weekly *Rehearsal*, of Boston:

"Richard Fry, Stationer, Bookseller, Paper-maker, and Rag merchant, from the city of London, keeps at Mr. Thomas Fleet's, printer, at the Heart and Crown, in Cornhill, Boston, where said Fry is ready to accommodate all Gentlemen, Merchants, and Tradesmen with setts of Account books after the most acute manner for twenty per cent. cheaper than they can have them from London. I return the Public Thanks for following the Directions of my former Advertisement for gathering rags, and hope they will continue the like Method, having received upward of Seven thousand weight already."

The early scarcity of paper in the colonies is illustrated by the following curious advertisement, which appeared in the *Boston Evening Post* in 1748:

"Choice Pennsylvania Tobacco paper is to be sold by the publisher of this paper at the Heart and Crown, where may be also had the Bulls or Indulgencies of the present Pope, Urban VIII., either by the single Bull, Quire, or Ream, at a much cheaper rate than they can be purchased of the French or Spanish priests."

The explanation of this was that several bales of "indulgencies," printed upon very good paper and only on one side, had been captured by an English cruiser from a Spanish vessel, and being offered at a very low price, had been purchased by the Boston printer, who saw an opportunity for profit by printing ballads or other matter for his customers upon the backs of the pontifical documents in question. It is also to be noted that about this time Robert Saltonstall was fined five shillings by the General Court of Massachusetts for presenting a petition on a small and bad piece of paper.

In 1768 Colonel Christopher Leffingwell erected at Norwich the first paper mill in the colony of Connecticut, under the promise of a bounty from the General Assembly. Two years after he was accordingly awarded twopence a quire on 4020 quires of writing-paper, and one penny each on 10,600 quires of printing-paper. Having attained such a degree of success, it is recorded that the government patronage was soon afterward withdrawn.

In Pennsylvania the Dunkers, who settled in Lancaster County, very early gave their attention to the manufacture of paper, and also set up a printing-press. During the Revolution, and just previous to the battle of the Brandywine, messengers were sent to their mill for a supply of paper for cartridges. The mill happening to be out of unmanufactured paper, the fraternity, who

held their property in common, sent back as a substitute to the Continental army several wagon loads of an edition of Fox's *Book of Martyrs*, and from the paper supplied by the pages of this work the cartridges used in the battle were in part manufactured.

About the year 1770 the number of paper mills in the provinces of Pennsylvania, New Jersey, and Delaware was reported to be forty, this department of manufacturing industry having especially developed in the vicinity of Philadelphia, which was at that time the centre of literary activity for the colonies. It was a business, moreover, in which Dr. Franklin was greatly interested; and he told De Warville, a French traveler who visited America in 1788, that he had himself established as many as eighteen mills.

The business of the manufacture of "paper-hangings" commenced in the colonies about the year 1760, and in 1791 it was one of the branches of domestic industry, according to the report of the Secretary of the Treasury, which were well established.

The household manufacture of textile fabrics—of cotton-wool, linen, and silk—was almost coeval with the settlement of the continent, and the same circumstances which have been before noted as favoring the building of ships also greatly encouraged the development of these other industries. We are accustomed, and with good reason, to regard the tide and volume of immigration which has flowed from the Old World to the New since 1850 as something most remarkable, but the largest comparative immigration which this country has ever experienced occurred during the first half of the seventeenth century, between 1630 and 1640, when nearly every year added a number of individuals nearly or quite equal to the previously existing population. The result was an extraordinary demand for provisions, and the attention of the colonists, especially in New England and in New York, was largely directed to the raising of cattle, and in the former also to the prosecution of the fisheries. Governor Hutchinson, indeed, records that at one time the price of cattle in the colonies rose as high as £25, and even £28, per head. The cessation of immigration in 1640, consequent upon the cessation of persecution in England for religious non-conformity, caused an immediate and excessive decline in the price of cattle, and as suddenly cut off a leading source of provincial revenue. At the same time, with their thus impaired means of purchase, the diminished intercourse with England also caused great uncertainty in respect to the supply of clothing, for which the colonists had been up to this time almost wholly dependent upon the mother country. What next happened, as told with quaint simplicity by the early his-

torian of New England (Hubbard), strikingly illustrates the state of things in which a resort to manufactures becomes a necessity in a new country. After describing the manner in which their necessity first came upon them, he continues:

"Now the country of New England was to seek of a way to provide themselves with clothing, which they could not obtain by selling cattle as before, which were now fallen from that huge price forementioned to five pounds apiece; nor was there at that rate a ready vent for them neither. Thus the flood which brought in much wealth to many persons, the contrary ebb carried all away out of their reach. To help themselves in this their exigent, for the necessary supply of themselves and their families, the General Court made order for the manufacture of woolen and linen cloth, which with God's blessing upon man's endeavor in a little time stopped this gap in part, and soon after another door was opened by special Providence; for when one hand was shut by way of supply from England, another was opened by way of traffic, first to the West Indies and Wine Islands, whereby, among other goods, much cotton-wool was brought into the country, which the inhabitants, learning to spin and breeding of sheep and sewing of hemp and flax, they soon found out a way to supply themselves of cloth."

The first regular or systematic attempt to manufacture cloth, particularly woolen, was made by a company of Yorkshire immigrants who settled at Rowley, Massachusetts, where in 1643 was erected the first fulling-mill in the North American colonies. The manufacture of cordage was entered upon in Boston as early as 1629. In the New Netherlands (New York), although the primary object with the mercantile company which planted and governed that colony was trade with the Indians, yet the characteristic industry of the Dutch prompted to a very extensive household manufacture of linens, woolens, and hosiery; and Denton, the earliest writer in that province, says (1670) of them, "Every one make their own linen and a great part of their woolen cloth for their ordinary wear." Under the auspices of William Penn, the manufacture of (linen and woolen) cloth was one of the first branches of industry undertaken in his new colony; and among the articles mentioned as produced in Pennsylvania as early as 1698 (which daily improved in quality) were druggets, serges, camblets, and a variety of other stuff, giving employment to dyers, fullers, comb-makers, card-makers, weavers, spinners, etc. The general progress made in the manufacture of fabrics during the first century of the existence of the North American colonies is also indicated by a report which Colonel Heathcote, a member of the Council of the Province of New York, made to the English Board of Trade in 1708, in which he says that he had labored to divert the Americans from going on with their woolen and linen manufactures, which are already so far advanced that three-fourths of the linen and woolen used was made among them, "especially the coarse sort; and if some speedy and effectual ways are not

found to put a stop to it, they will carry it on a great deal further, and perhaps in time very much to the prejudice of our manufactures at home."

The smelting of iron ore was one of the industries attempted by the first settlers in Virginia; but both the iron-works and the "glass-house," which had been erected, were early destroyed by the Indians, who, although not versed in any system of political economy, nevertheless ever showed themselves the most persistent enemies of diversified employments. In New England preliminary attempts to establish the manufacture of iron were made in 1630, and in 1645 regular works were established at Lynn. Of these last the old historian (Hubbard) says, contemptuously, "That instead of drawing out bars of iron for the country's use, there was hammered out nothing but contentions and lawsuits;" but, notwithstanding this disparagement, the operations commenced in this locality are believed to have been conducted with a degree of success for a period of more than one hundred years.

One of the first, if not the very first patent granted in this country was by the General Court of Massachusetts, in 1646, to one Joseph Jencks, of Lynn, "for y^e making of Engines for mills to goe with water, for y^e more speedy dispatch of work than formerly, and mills for y^e making of Sithes and other Edged Tooles," the Court having previously passed a law that there "should be no monopolies but of such new inventions as were profitable to the country, and that for a short time only."

Pig-iron began to be exported from the American colonies to England as early as 1718, when a record is made of a small lot of three and one-half tons received from Virginia and Maryland. By 1728, however, pig-iron had become a regular and important article of colonial export, and some years later the exportation of bar-iron also commenced, and from this time both pig and bar iron continued to be annually exported from the North American colonies until after the breaking out of the Revolution.

From the official returns of the British Custom-house (which are still extant, and have been published) the exact amount of such exports received in England at different periods from 1728 to 1776 was as follows:

Years.	Pig-Iron. Tons.	Bar-Iron. Tons.
1728-29	1127
1732-33	2404	11
1745	2274	196
1754	3244	389
1764	2554	1059
1771	5303	2222
1775	2996	916
1776	316	28

Contemporaneously with the manufactures above noticed there were also estab-

lished throughout the provinces manufactures of leather, of bricks, pottery, and glass, of distilled and fermented liquors, of hardware in various forms, of candles, snuff, gunpowder, copperas, and a multitude of other articles, so that at the close of the first century of their existence there was hardly a branch of useful industry common in Europe which was not practiced with more or less of success in the British North American colonies. In fact, so successful had been the attempts of the colonists to manufacture that the jealousy of the mother country began to be awakened at a period considerably anterior to that mentioned, for Sir Josiah Child, although a much more liberal and intelligent politician than many of his countrymen at that day, in a discourse "on trade," published in 1670, describes New England as having come to be the most prejudicial plantation of Great Britain, and gives for this opinion the singular reason that they are a people "whose frugality, industry, and temperance, and the happiness of whose laws and institutions, promise to them a long life and a wonderful increase of people, riches, and power."

TRUE CAUSE OF THE AMERICAN REVOLUTION.

And here we come for the first time upon the true cause of the American Revolution, which is now well understood to have been not so much that the colonists were denied representation in the central government, or that they were unduly restrained in respect to any liberty of their persons, but rather that their rights to property were continually interfered with, that they were denied the privilege of freely buying and selling wherever and whenever they might see fit, and of following the occupations which seemed to them most remunerative. On the other hand, the acts of Great Britain, viewed in the light of the investigations and experiences of another century, are susceptible of a much less harsh interpretation than it has been the custom to put upon them. Thus England, during the whole of the seventeenth and eighteenth centuries, and even later, held, in common with the rest of the civilized world, a most firm belief in the doctrine, which had come down from the Middle Ages, that no one nation or individual could get gain from commerce or trade except at the expense of some other nation or individual, and that therefore the surest way for a nation or individual to prosper and grow rich was to sell as much and buy as little as possible, and to endeavor to obtain gold and silver in exchange for what they did sell in preference to any other products. Stated in the abstract, and in this last third of the nineteenth century, these doctrines seem very strange and most absurd; and yet the United States is the one nation of all others claiming to be en-

lightened which to-day by her commercial system fails to recognize or practically denies the great economic axiom that no nation or community can sell to any great extent except in proportion as it is willing to buy; that all trade and commerce must be mutually advantageous, or it would not exist; and that after every fair mercantile transaction both parties, however varied their nationality and residences, are richer than before.

It is also a mistake to suppose that the American colonies were planted with the least reference to the pecuniary or personal benefit of the colonists themselves. The mode was simply this: The King of England, on payment to himself of a certain sum, granted a tract of land of American territory, together with a charter, to a joint-stock company of English merchants and adventurers, who sent out a colony to cultivate the lands and gather their products for the pecuniary benefit of the stockholders. It was clearly an enterprise for making money—as much so as are the railroad and other corporations of the present day—and the colonists were regarded as merely the hired servants of the company. This was the method after which all the colonies were established, and if the colonists possessed any political privileges it was because they wrenched them from the unwilling hands of the corporators. For proof of the correctness of this position reference is made to the pages of all the American historians, and to the still stronger testimony of the great Adam Smith, of Scotland, who, while the American Revolution was progressing, declared that England had founded an empire on the other side of the Atlantic for the sole purpose of raising up a people of customers—a policy which he denounced as fit only for a nation of shopkeepers.

Entertaining such views respecting the nature of trade and commerce and the use of colonies, nothing, therefore, was more natural and legitimate than that England should regard her transatlantic plantations as instrumentalities for the promotion of her own interests and aggrandizement exclusively, and that when the enterprise of the Americans in respect to certain branches of manufacturing industry seemed likely to be prejudicial to similar industries of her own, she should attempt to shackle and restrain their progress. It ought also to be borne in mind that if Great Britain acted unjustly toward the colonies, she was at least consistent in both her home and her colonial policy, and framed the former, equally with the latter, in strict accordance with the then narrow commercial spirit of the age. Thus, if it was forbidden to the colonists to export woolen goods, or transport wool from one "plantation" to another, there was at the

same time on the statute-book of England a law which made it felony for any Englishman to export any sheep from the kingdom, or to purchase or transport any wool within fifteen miles of the sea without permission of the king, or to load or carry any wool within five miles of the sea, except between sunrise and sunset. And again, if the colonists were not permitted to carry any article of produce on the seas except in British ships, the necessity was about the same time announced in Parliament by the Lord Chancellor, Somers, of going to war with the Dutch, and of destroying their commerce, because "it was impairing ours."

On the other hand, in respect to all those colonial industries which were not regarded as antagonistic to British interests, the action of Parliament was generous and considerate. For example, the cultivation of tobacco was forbidden in England by highly penal enactments, for the sake of securing a monopoly of that product to the Southern colonies. Liberal premiums were also offered and awarded for the cultivation and exportation of colonial silk, indigo, hemp, flax, and for the promotion of the fisheries; and in 1750 an act passed Parliament to encourage the exportation of pig and bar iron from his Majesty's plantations in America, whereby all duties on the import of the same into Great Britain were removed, although maintained in respect to the imports from all other countries. Nevertheless, the one most important fact in connection with this topic is that it was the rapid growth of colonial commerce and manufactures, conjointly with the attempt of Great Britain to interfere with and suppress them, which led to a gradual and increasing alienation and final violent separation of the two countries.

The first important act which operated as a restriction on the industry of the colonists was the so-called "Navigation Act" of 1650, which, although primarily intended, to use the words of Sir William Blackstone, "to clip the wings of our opulent and aspiring neighbors," the Dutch, nevertheless struck a heavy blow at one of the foremost industries of the colonies, namely, ship-building. By this act and its extensions in 1661 and 1663 it was provided that no article of colonial produce or British manufacture should be carried in any but British ships, and that the colonists should not be allowed to purchase in any but British markets any manufactured article which England had to sell. Following the enactment of these purely commercial restrictions, it soon also became a policy on the part of Great Britain to discourage all attempts at manufacturing by the colonists in competition with similar British industries; and it was in pursuance of this policy that in 1696 the management of the affairs of the colonies was by royal order committed to a Board of Trade, under

the title of "The Lords Commissioners for Trade and the Plantations." Henceforth the vigilant nation of shop-keepers would not be content with watching and controlling the shipping and trade of American ports, but must lay its hands on all the manufacturing industries of the colonies. The royal governors were required to report yearly to the board on the state of the provinces, and to do all in their power to divert them from setting up and carrying on manufactures. But reports and recommendations were not sufficient to repress the industrial enterprise of the Americans, and three years after, the board having received complaint that the wool and woolen manufactures of the North American plantations began to be exported to foreign markets formerly supplied by England, an act was passed by Parliament which, after declaring in its preamble "that colonial industry would inevitably sink the value of lands in England," prohibited thereafter the movement of any American wool or woolen manufactures not only to foreign countries, but also as between one colony and another. And in 1731, as complaint of the increasing divergence of trade from its prescribed channels by the action of the colonists continued to be made by British merchants and manufacturers, the House of Commons again took up the subject, and ordered, through the Board of Trade, an inquiry "with respect to laws made, manufactures set up, or trade carried on" (in the colonies) "detrimental to the trade, navigation, and manufacture of Great Britain." The report made in pursuance of this order in 1731-32 furnishes some curious particulars respecting the state of manufactures at that time in America, although it was known to be so incomplete that the concealment practiced was made the subject of complaint in England. The Governor of New Hampshire reported that there were no settled manufactures in that province. The Governors of Connecticut and the Carolinas made no returns, and the Governor of Rhode Island confined his report to matters not connected with manufactures. Massachusetts was reported as having manufactures of cloth, a paper mill, also several forges for making bar-iron, some furnaces for cast and hollow ware, one slitting-mill, and a manufacture of nails. The Surveyor-General of his Majesty's Woods wrote that they have in New England six furnaces and nineteen forges for making iron; that many ships were built for the French and Spaniards; and that great quantities of hats were made and exported to Spain, Portugal, and the West Indies. They also make all kinds of iron for shipping, and have several still-houses and sugar-bakeries.

Immediately after the reception of this report, or in 1732, it was enacted by Parliament that "no hats or felts should be ex-

ported from the colonies;" and in 1750 a bill was introduced into Parliament decreeing that every slitting-mill in America should be demolished; and although this bill failed of passing the House of Commons by only twenty-two votes, a subsequent act did pass, that no new mills of that description should be erected.

It is most important and instructive to diverge for a moment at this point from tracing the development of American manufactures, and briefly notice the effect of the long-continued restrictive legislation of Great Britain on political and commercial morality. The multitude of arbitrary laws enacted to force the industry and commerce of the colonies and the British people into artificial and unnatural channels created a multitude of new crimes; and transactions which appeared necessary for the general welfare, and were no way repugnant to the moral sense of good men, were forbidden by law under heavy penalties. The colonists became thenceforth a nation of law-breakers. Nine-tenths of the colonial merchants were smugglers. One-quarter of the whole number of the signers of the Declaration of Independence were bred to commerce, to the command of ships, and the contraband trade. John Hancock was the prince of contraband traders, and, with John Adams as his counsel, was on trial before the Admiralty Court in Boston at the exact hour of the shedding of blood at Lexington, to answer for half a million dollars' penalties alleged to have been by him incurred as a smuggler. And if good old Governor Jonathan Trumbull, of Connecticut (Brother Jonathan), did not walk in the same ways as his brother patriot in Massachusetts, then tradition, if not record, has done him very great injustice. There is also on record a letter of Alexander Hamilton, written in 1771, at the time he was in mercantile business, giving instructions to the master of a vessel in his employ how to avoid the customs regulations on entering ports in the West Indies. But men like Hancock and Trumbull had been made to feel that government was their enemy; that it deprived them of their natural rights; that in enacting laws to restrain them from laboring freely, and freely exchanging the fruits of their labors, it at the same time enacted the principle of slavery, and that therefore every evasion of such laws was a gain to liberty.

Furthermore, the continuance of such a policy as was adopted by Great Britain toward the colonies, and the spirit of resistance which was as naturally evoked in turn on the part of the colonists, could tend to but one end, namely, war and revolution; and in 1775 war and revolution came.

The population of the colonies at about the time (1670) that their progress in man-

ufactures began to excite the jealousy of Great Britain was probably a little less than 200,000.

Mr. Bancroft estimates the total population of the colonies in 1750 to have been 1,260,000; and in 1770, five years previous to the outbreak of the Revolution, at 2,312,000; of whom 1,850,000 were white and 462,000 black.

PROGRESS SINCE THE REVOLUTION.

The immediate effect of the war of the Revolution, by cutting off all except casual and uncertain commercial intercourse with Europe and other countries, was to impart a fresh impulse to such manufactures in the colonies as were then established, and to call into existence some new ones. The immediate effect of the return of peace (in 1783), on the contrary, was most disastrous to nearly all business interests, and more especially to the mechanical and manufacturing industries. But such a result could not well have been otherwise. The country had been subjected to a long and impoverishing war; it was exhausted of men as well as of means; labor was scarce and high, and the burden of debt, both public and private, was most onerous. It has been the custom of many writers in treating of this period to attribute the disastrous condition of affairs which was immediately incident to the close of the Revolution to an unrestrained influx of foreign commodities; but that this agency was not in a high degree potential for mischief is proved by the circumstance that the average imports of British manufactures into the country for several years previous to 1789, notwithstanding a great increase to the population of the States, was considerably less than the average of several years preceding the war; and also that when the first tariff on imports came to be enacted under the Constitution, the rate established on all textile fabrics was only five per cent., and on all manufactures of metal but seven and a half per cent. But the manner in which importations were then made was undoubtedly most mischievous. There was no national government, and the division of the powers of government among thirteen petty sovereignties rendered the adoption of uniform laws impossible. Each State accordingly had its own tariff and regulated its own trade. What was binding in Massachusetts had no validity in Rhode Island, and what was subject to duty in New York might be imported free into Connecticut or New Jersey. Practically, therefore, no revenue could be collected on imports. Great Britain, also, seeing that as a nation we were commercially helpless, not only refused to negotiate a commercial treaty with us, but by an Order in Council excluded our ships from their ports in the West Indies, and, as the government of the States was

then constituted, we had no power through retaliation to compel reciprocity. Yet, according to one who participated in the acts of the Revolution, and was one of the most sagacious observers and writers of the period—Peletiah Webster, of Philadelphia—all the sufferings and evils which the country endured from all other agencies were insignificant in comparison with the misery that resulted from the introduction and use of an irredeemable paper money, and the consequent irregularities of the entire American fiscal system, his exact language being as follows: "We have suffered more from this cause than from any other cause of calamity. It has killed more men, perverted and corrupted the choicest interests of our country more, and done more injustice, than even the arms and artifices of our enemies." And again he says, "If it saved the state, it has violated the equity of our laws, corrupted the justice of our public administration, enervated the trade, industry, and manufactures of our country, and gone far to destroy the morality of our people."

But let the causes have been what they may, there is no doubt that for a brief period subsequent to the close of the war the industry of the country was greatly depressed. The establishment of a stable government, however, by the adoption of the Constitution at once gave to affairs a new aspect. The wretched system of distrust, jealousy, and weakness, which had before paralyzed all enterprise, and sunk the revenues and credit of the Confederation to the lowest point, disappeared, and fresh energy was infused into all departments of business. "American labor," says Dr. Bishop, "at this period began steadily to change its form from a general system of isolated and fireside manual operations—though these continued for some time longer its chief characteristic—to the more organized efforts of regular establishments, with associated capital and corporate privileges, employing more or less of the new machinery which was then coming into use in Europe."

The population of the country increased from an estimate of 2,945,000 in 1780 to 3,924,000 in 1790; and it is curious to note that the percentage of decennial increase of thirty-three per cent. thus established in this decade maintained itself with approximate uniformity for each subsequent decade from 1790 to the breaking out of the rebellion in 1860.

In an address before the "Pennsylvania Society for the Encouragement of Manufactures," August, 1787, by Mr. Tench Coxe (afterward Assistant-Secretary of the Treasury under Hamilton), the great progress in agriculture and manufactures "since the late war" was particularly dwelt upon. In Connecticut, at this time, according to this au-

thority, the household manufactures were such as to furnish "a surplus sold out of the State. New England linen had affected the price and importations of that article from New York to Georgia." In Massachusetts the importation of foreign manufactures was less by one-half than it was twenty years before, although population had greatly increased, and considerable quantities of home-made articles were shipped out of the State. In one regular factory of the latter State there were made as much as 10,000 pairs of cotton and wool cards, 100 tons of nails in another, and 150,000 pairs of stuff and silk shoes in the single town of Lynn. In the course of the address, pattern cards, embracing thirty-six specimens of silk lace and edgings from the town of Ipswich, Massachusetts, were exhibited. In Rhode Island the number of factories was stated to be "great in proportion to its population." The sale of spinning-wheel irons from one shop in Philadelphia in 1790 amounted to 1500 sets, an increase of twenty-nine per cent. over the sales of the previous year. In Lancaster, Pennsylvania, then the largest inland town in the United States, there were in 1786 about 700 families, of whom 234 were manufacturers, in which number were included 14 hatters, 36 shoe-makers, 25 tailors, 25 weavers of cloth, and 4 dyers. Within ten miles of the town were four oil mills, five hemp mills, one fulling-mill. Frederick and Elizabeth, towns in Maryland, and Stanton and Winchester, Virginia, were also important centres of domestic industry, the last-named being famous for its manufacture of hats. There was also a manufactory of glass at Alexandria, Virginia, which, according to the French traveler, De Warville, exported in 1787 glass to the amount of 10,000 pounds, and employed 500 hands. In 1789 Mr. Clymer, of Pennsylvania, stated in Congress that there were fifty-three paper mills within range of the Philadelphia market, and that the annual product of the Pennsylvania mills was 70,000 reams, which was sold as cheap as it could be imported, and that, too, in the absence of any duty. The compiler of the *Bibliotheca Americana*, published in London in 1789, states that the people of North America manufactured their own paper in sufficient quantities for home consumption; and the report of Secretary Hamilton the following year also represents the paper manufacture as one of the branches of American industry which had arrived at the greatest perfection, and was "most adequate to national supply." And yet De Warville a few years previous wrote that on account of the scarcity and dearthness of labor and of rags, the Americans could not for many years to come furnish sufficient paper to meet the demand.*

* Bishop's *History of American Manufactures*.

An estimate made by Mr. Coxe in 1790 fixed the annual value of the manufactures of the United States for that year at more than \$20,000,000. It is also curious to note that he took as the basis of his computation the returns of the manufacturing industry of Virginia, which then included Kentucky. As Assistant-Secretary of the Treasury, Mr. Coxe also asserted, about this period, that the manufactures of the United States were certainly greater than double the value of their exports in native commodities, and much greater than the gross value of all their imports, including the value of all the goods exported again.

In January, 1790, President Washington delivered his first annual message to Congress, and it is noted that he was dressed at the time in a full suit of broadcloth, manufactured at the woolen factory of Colonel Jeremiah Wordsworth, at Hartford, Connecticut, "where all parts of the business are performed except spinning." In this message the subject of the promotion of manufactures was commended to the attention of Congress; and acting upon the suggestions of the President, Congress thereupon ordered that the Secretary of the Treasury "prepare and report a proper plan or plans for the encouragement and promotion of manufactories as will tend to render the United States independent of other nations for essential, particularly for military, supplies;" and in accordance with this order Mr. Hamilton in the following year (1791) submitted his famous report, twice printed by order of Congress, on American manufactures.

In this report the Secretary presented a general exhibit, classified under seventeen heads, of the manufacturing industries in the country, which had at that time made such progress as in a great measure to supply the home market, and which were also carried on "as regular trades." Among these the Secretary enumerates manufactures of skins and leather, including under this head leather breeches and glue; flax and hemp, but not cotton; iron, and most implements of iron and steel; bricks and pottery; starch and hair-powder; manufactures of brass and copper, particularly specifying utensils for brewers and distillers, andirons and philosophical apparatus; tinware "for most purposes;" carriages of all kinds; "lamp-black and other painter's colors;" refined sugars, oils, soaps, candles, hats, gunpowder, chocolate, silk shoes, and "women's stuffs;" snuff, chewing tobacco, etc., etc. "Besides these," he continues, "there is a vast scene of household manufacturing, which contributes more largely to the supply of the community than could be imagined without having made it an object of particular inquiry." But as indicating how limited an idea of the actual and future re-

sources of the country was even then possessed by a mind so intelligent and comprehensive as that of Alexander Hamilton, the following memoranda from this report are also exceedingly curious and pertinent. Thus, for example, under the head of coal, he notes "that there are several mines in Virginia now worked, and appearances of their existence are familiar in a number of places." "There is something," also says the Secretary, "in the texture of cotton which adapts it in a peculiar degree to the application of machines," and in a country in which a deficit of hands constitutes the greatest obstacle to success, this circumstance particularly recommends its fabrication. American cotton, he adds, though alleged to be inferior, can be produced in abundance; and "a hope may be reasonably indulged that with due care and attention" its quality will greatly improve.

Under the head of "the means proper to be resorted to" by the government for the promotion of manufactures, the Secretary, after enumerating and discussing the various agencies "which have been employed with success in other countries," gave his recommendation in favor of a system of "*pecuniary bounties*," and offered in support of the same the following reasons:

- "1. It is a species of encouragement more positive and direct than any other.
- "2. It avoids the inconvenience of a temporary augmentation of price, which is incident to some other modes.
- "3. Bounties have not, like high protecting duties, a tendency to produce scarcity.
- "4. Bounties are sometimes not only the best but the only proper expedient for uniting the encouragement of a new object of agriculture with that of a new object of manufacture. The true way to conciliate these two interests is to lay a duty on foreign manufactures of the material the growth of which is desired to be encouraged, and apply the produce of that duty, by way of bounty, either upon the production of the material itself, or upon its manufacture at home, or upon both. In this disposition of the theory the manufacturer commences his enterprise under every advantage which is attainable as to quantity and price of the raw material, and the farmer, if the bounty be immediately to him, is enabled by it to enter into a successful competition with the foreign material."

He accordingly recommended the imposition of additional duties on imports, the proceeds of which, after satisfying the national pledges in respect to the public debt, he proposed should constitute a fund for paying the bounties which might be decreed, and for the operations of a board to be established for promoting arts, agriculture, manufactures, and commerce. The bounties thus recommended were not, however, intended by the Secretary to be permanent; for, as he remarks, their "continuance on manufactures long established must always be of questionable policy, because presumption would arise in every such case that there were natural and inherent impediments to success."

He also dwells at considerable length on

a topic too often overlooked, namely, that it "is not merely necessary that the measures of government which have a direct view to manufactures should be calculated to assist and protect them, but also that those which collaterally affect them in the general course of administration should be guarded from any particular tendency to injure them;" and under this head especially asks attention to "the unfriendly aspect of certain species of taxes toward manufactures." Among such he enumerates, *first*, all poll and capitation taxes, which, if levied according to a fixed rule, operate unequally and injuriously on the industrious poor; "*second*, all taxes which proceed according to the amount of capital supposed to be employed in a business, or of profits supposed to be made on it, are unavoidably hurtful to industry: men engaged in any trade or business have commonly weighty reasons to avoid disclosures which would expose with any thing like accuracy the real state of affairs, and allowing to the public officers the most equitable dispositions, yet when they are to exercise a discretion without certain data they can not fail to be often misled by appearances;" and finally, continues the Secretary, in words that deserve to be printed in gold on the walls of every legislative assembly, "arbitrary taxes are as contrary to the genius of liberty as to the maxims of industry."

Although this celebrated report of Alexander Hamilton both at the time it was made and since has been regarded as a model of clear and unanswerable reasoning, and was also unquestionably of great service to the country, yet it is well known that his specific recommendations of bounties in preference to protective or prohibitory duties, and also for the repeal of all duties on imported cotton as a raw material of manufactures, were not complied with; but that, on the contrary, the system of protective duties on imports which then prevailed in Europe was gradually established in its place, and from that day to this has been continued.

The period of the adoption of the Federal Constitution, in 1789, marks also the period of the commencement of the manufacture of cotton in the United States, as a regular and systematic in contradistinction to a domestic and irregular business. Cotton had indeed been grown for many years previous throughout the Southern sections of the country, but its use up to 1789-90 had been almost exclusively domestic, and even for this purpose the quantity produced was inadequate to supply the home demand. In fact, so little suspicion was entertained of the particular adaptability of the soil and climate of the Southern States for the culture of cotton, that when in 1784 an American ship entered Liverpool with eight bags of the fibre as a part of her cargo, the same

was regarded as an unlawful importation, on the assumption that so large a quantity could not have been the produce of the United States. And as late, furthermore, as 1792 the cotton product of the United States was regarded as of so little value commercially that John Jay consented to the incorporation of a provision (afterward rejected by the Senate) in the treaty that he negotiated with Great Britain that "no cotton should be imported from the United States," the design on the part of Great Britain being not to interfere with the cotton culture of the United States, but to secure for her own mercantile marine the exclusive movement of cotton from the West Indies. Mr. Tench Coxe, in common with other members of the "Pennsylvania Society for Encouraging Manufactures," seems, however, to have early foreseen the future importance of cotton to both American agriculture and manufactures, and when the Convention for framing the Constitution assembled in Philadelphia his earnest recommendations to the Southern delegates on the subject induced many of them, on their return home, to make personal efforts to interest their constituents in extending the cultivation of the fibre.

The inventions of Hargreaves, Arkwright, Compton, and Cartwright for carding, spinning, and weaving cotton by machinery were introduced in England between the years 1768 and 1788; and although at first were so much opposed that the inventors were afraid to work openly, and had in some instances their lives threatened and their machinery destroyed, yet Parliament very early appreciated the national importance of the several inventions, and in accordance with the narrow spirit of the age, enacted in 1774, and subsequently, most strict prohibitions of the export of any textile machinery from the kingdom. These statutes, which were vigilantly enforced by the British government, together with a law against enticing artificers to emigrate, for a time proved most serious obstacles in the way of the introduction of the new English textile machinery into the United States, although many most ingenious efforts to evade the law were made by our countrymen. Mr. Tench Coxe, who omitted no opportunity to promote the cotton industry, at one time, for example, succeeded, after no little trouble and expense, in having secretly made in England models of a full set of Arkwright's machinery, but they were unluckily seized and confiscated as they were on the point of shipment. The information sought for was, however, gradually obtained, and in 1786 Hugh Orr, of Bridgewater, Massachusetts, a pioneer in American manufactures, notified the Legislature of Massachusetts that he had in his employ two Scotchmen, brothers, by the name of Barr, who had some

knowledge of the new cotton machinery. Thereupon the Legislature appointed a committee to examine the men and find out what they knew, which committee subsequently reported in favor of a grant of £200 to the Barrs to enable them to complete certain machines, and also as a gratuity for "their public spirit in making them known to the public." Six tickets in a State Land Lottery, which had no blanks, were accordingly voted to the Scotch brothers by the Legislature, and out of the proceeds the first "stock card" and "spinning-jenny" made in the United States were constructed. These machines were deposited by the order of the General Court with Mr. Orr, who was allowed to use them, as some compensation for his exertions in the matter, and was also requested to exhibit them and explain their principles "to any who might wish to be informed of their great use and advantage in carrying on the woolen and cotton manufacture." The subsequent year, 1787, a company to manufacture cotton was organized at Beverly, Massachusetts, with one or more spinning-jennies, imported or made from the State's models, and a carding-machine, imported at a cost of £1100; and about the same time also several other cotton manufactories were projected or started—at Worcester, Massachusetts; Providence, Rhode Island; Paterson, New Jersey, and other places; none of which, however, for want of skill or proper machinery, appear to have been successful.

Meanwhile (1789) there arrived in New York a young Englishman, not twenty-two years of age, whose name, Samuel Slater, was destined to become famous in the manufacturing annals of the United States. He had been apprenticed at an early age to Jedediah Strutt, a partner with Sir Richard Arkwright in the cotton-spinning business, and had afterward served the firm as clerk and general overseer, until he had rendered himself perfectly familiar with the manufacture of cotton as it was then carried on in the model establishments of Great Britain. The reason which has been assigned for his emigration to the United States was a notice in the newspapers of a grant of £100 by the Legislature of Pennsylvania for the introduction of a new machine for carding cotton, and of the establishment of a society for promoting the manufacture of cotton. But be this as it may, the 18th of January, 1790, found him at Providence, Rhode Island, entered into partnership with the firm of Almy and Brown, under an agreement to construct the Arkwright series of machines, and carry on with his partners the manufacture of cotton by the improved methods. In consequence of the restrictions on the emigration of artisans and the exportation of models and machinery from Great Britain, Mr. Slater did not on leaving

home inform his family of his destination, or take with him any patterns, drawings, or memoranda that could betray his occupation, and so lead to his detention. But so thoroughly was he master of his profession that by the 20th of December of the same year, having discarded all the old machinery previously used by Almy and Brown in their attempts to manufacture cotton, he had constructed, chiefly with his own hands, the whole series of machines on the Arkwright plan, and had started three cards, drawing and roving frames, and two frames of seventy-two spindles. The machinery was first set in motion in an old building which had been used as a clothier's establishment; but in 1793 the new firm built a small factory, which may be considered as the first really successful cotton mill in the United States.

The only thing then wanting to insure the rapid development of the cotton manufacture not only in the United States, but throughout Europe, was an abundant supply of the fibre at a cheap rate; and this the invention of the cotton-gin by Eli Whitney in 1793 at once supplied. For some years previous to this the price of cotton in the United States was about forty cents per pound, and it required oftentimes a day's labor to separate a pound of the clean staple from the seed. In 1795 Georgia cotton of good quality was offered in New York at 1s. 6d. (thirty-six cents) per pound; and at that time cotton continued also to be imported. When Slater first began to spin he used Cayenne cotton, but after a few years he began to mix about one-third of Southern cotton, the yarn produced being designated as second quality, and sold accordingly.

In 1799 Mr. Slater built his second cotton mill, on the east side of the Pawtucket River, in the limits of Massachusetts, the first mill ever erected in the State on the Arkwright system; and by act of the Legislature the same, with all its appurtenances, was for a period of seven years exempted from taxation. Until this date the improved methods of manufacture had been confined to Mr. Slater and his associates, but after this men who had been in their employ, and had learned the construction and operation of the machinery, left them, and commenced the erection of mills for themselves or other parties, and before the year 1808 fifteen cotton mills on the Arkwright basis were in successful operation in different sections of the country. The first cotton mill west of Albany was erected in the neighborhood of Utica, Oneida County, New York, in 1807-8. In 1807 the whole number of spindles in the United States was estimated at 4000; in 1808 the estimate was 8000; and in 1809, 31,000. From this time until 1840, apart from the annual estimates of the domestic consumption of cotton for all purposes, the statistics

of the growth of the cotton manufacture in the United States are very deficient and unreliable. In 1815 the three States of Massachusetts, Rhode Island, and Connecticut had 165 factories and 119,510 spindles. In 1831, 795 factories and 1,246,500 spindles were reported for the whole country. In 1840, by the census, 2,285,000 spindles; in 1850 (for New England only), 2,728,000 spindles. After this the data are reliable, and are as follows: 1860, 5,035,798 spindles; 1870, 7,114,000; 1874 (July 1), 9,415,383, of which 8,927,754 were returned for the Northern States, and 487,629 for the Southern. The recent rapid progress of the Southern States in the manufacture of cotton is indicated by the fact that in 1869 this section of the country had 225,063 spindles in operation, and in 1874, 487,629. The progress of the whole country in spinning spindles from 1870 to 1874 was about thirty-three per cent. The aggregate and average *per capita* manufacturing consumption of cotton in the United States since 1827 is shown by the following table:

Years.	Pounds.	Consumption per Capita.
1827.....	49,489,796	4.22
1835.....	79,597,896	5.31
1840.....	113,065,919	6.68
1845.....	161,435,000	8.15
1850.....	263,190,642	11.34
1855.....	306,582,808	11.40
1860.....	450,877,823	14.32
1865.....	145,935,000	5.21
1869.....	447,216,000	11.57
1874.....	567,583,873	13.50

In 1794 the price of Slater's cotton yarn, No. 20, was \$1 21 per pound. In 1808 the price of the same number was \$1 31. Power-

Lowell—had become so popular that they were counterfeited by foreign manufacturers, and in 1827 it is recorded that the demand for American cottons in Brazil was considerably affected by imitations of them made at Manchester, England, and offered there (in Brazil) "at lower prices, although they could be made as cheaply in the United States as the same quality could be produced in Manchester." It is also a noteworthy circumstance that in 1850 in New England the ratio of cotton spindles to population was that of 1008 spindles to each 1000 inhabitants, while in Great Britain for the same year the ratio was 1003 spindles to 1000 inhabitants, so that at this period New England in respect to cotton had comparatively exceeded Great Britain in its manufacturing industry. From 1850 to 1860 and from 1860 to 1870 the number of spindles in New England increased much faster than the population, averaging in 1860 1265 and in 1870 1478 to each 1000 inhabitants.

The most important cotton manufacturing States of the Union, arranged in the order of their consumption of cotton for the year 1874, were as follows: Massachusetts, New Hampshire, Rhode Island, Connecticut, Pennsylvania, Maine, New York, Maryland, Georgia, New Jersey, South Carolina, North Carolina, Alabama, Tennessee, and Virginia. Few or no cotton factories exist in the States of Illinois, Iowa, Michigan, Wisconsin, Kansas, Nebraska, California, or Oregon. The following table exhibits the amount and character of the principal products of the cotton manufactories of the United States for 1874:

STATEMENT OF THE KINDS AND QUANTITIES OF COTTON GOODS MANUFACTURED IN THE UNITED STATES FOR THE YEAR ENDING JULY 1, 1874.

	New England States.	Middle and Western States.	Total Northern States.	Total Southern States.	Total United States.
Threads, yarns, and twines..... lbs.	32,000,000	99,000,000	131,000,000	18,000,000	149,000,000
Sheetings, shirtings, and similar plain goods..... yds.	520,000,000	90,000,000	610,000,000	97,000,000	707,000,000
Twilled and fancy goods, osnaburgs, jeans, etc..... yds.	204,000,000	80,000,000	284,000,000	22,000,000	306,000,000
Print cloths..... yds.	481,000,000	107,000,000	588,000,000	588,000,000
Ginghams..... yds.	30,000,000	3,000,000	33,000,000	33,000,000
Ducks..... yds.	14,000,000	16,000,000	30,000,000	30,000,000
Bags.....	5,000,000	1,000,000	6,000,000	6,000,000

loom weaving was first successfully introduced into Great Britain in 1806, previous to which time all weaving had been performed upon hand-looms. The first power-looms in the United States were put in operation at Waltham, Massachusetts, in 1814, and it was at the mills of the company at this place, also, that the spinning and weaving of cotton were for the first time combined in any large establishment. In this same year the price of cotton yarn was reduced by the operations of the Waltham Company to less than one dollar per pound. In 1823 the "domestics" of the Waltham Company—which at about this time extended its operations and built the first mill at

Besides the above, there is a large production of articles, like hosiery, etc., composed of mixed cotton and wool, for the details of which there are no satisfactory statistics.

Among other notable improvements which were invented and brought into use about the time of the adoption of the Federal Constitution were those of Oliver Evans, of Pennsylvania, in respect to the manufacture of flour, the importance of which may perhaps be sufficiently indicated by saying that in all the subsequent progress of invention no radical change has ever been made in the system of "milling" machinery as Mr. Evans devised it, and that it constitutes today the mechanical basis upon which all the

extensive flour mills of the United States and Europe are operated. The more special results of the invention were a saving of one-half the labor of attendance, a better product of manufacture, and an increase of about twenty-eight pounds of flour to each barrel above the method previously in use.

As has been already stated, the value of the product of American manufactures for the year 1790, as estimated by Mr. Tench Coxe, was about \$20,000,000.

The census of 1810 fixed the total value of the manufactured products of the country for that year at \$127,000,000, but Mr. Coxe, to whom the returns were referred by resolution of Congress for revision, was of the opinion that the aggregate, exclusive of all products closely allied to agriculture, such as lumber, sugar, ashes, wine, bricks, indigo, hemp, and the products of the fisheries, was at least \$172,000,000, or including products of the nature specified, \$198,000,000. In 1810, also, Mr. Gallatin, then Secretary of the Treasury, reported to the House of Representatives that the following manufactures were carried on to an extent which might be considered adequate to the requirements of the United States for consumption, as the value of these products annually exported exceeded that of the foreign articles of the same general class annually imported, viz., manufactures of wood, leather and manufactures of leather, soap and tallow-candles, spermaceti oil and candles, flaxseed oil, refined sugar, coarse earthenware, snuff, hair-powder, chocolate,* and mustard. The following branches were also reported as so firmly established as to supply in several instances the greater and in all a considerable part of the consumption of the country, viz., iron and manufactures of iron, manufactures of cotton, wool, and flax, hats, paper, printing types, printed books, and playing-cards, spirituous and malt liquors, gunpowder, window glass, jewelry and clocks, several manufactures of hemp and of lead, straw bonnets and hats, and wax-candles.*

Accepting the estimates of Mr. Coxe, it also appears that the annual value of the manufactured products of the 8,500,000 population of the United States in 1810, less than thirty years after the close of the Revolution, was in excess of that of Great Britain, with her accumulated capital and experience, in 1787, when the population of the United Kingdom closely approximated to the same figure.

The immediate effect of the war of 1812, by increasing demand for all necessary products, and at the same time cutting off all foreign imports and competition, was to impart a most unnatural and unhealthy stimulus to American manufacturing industry.

Capital, especially under the form of joint-stock companies, and often without the exercise of the most ordinary prudence or forethought, hastened to inaugurate a host of new industrial enterprises. Mill privileges readily commanded most extravagant figures, wages rose from 30 to 50 per cent., and raw materials and manufactured goods from 50 to 200 per cent. Cottons which had sold before the war at from 17 to 25 cents per yard, found purchasers by the package at 75 cents per yard; and salt, which was, in 1812, 55 cents per bushel, commanded in October, 1814, \$3 per bushel. The number of cotton mills in Rhode Island and in Massachusetts within thirty miles of Providence, at the commencement of the war in 1812, was about seventy; at the close of the war, in 1815, this number had increased to ninety-six.

So long as the war continued there was for nearly all these enterprises an apparent great prosperity, to magnify and inflate which an almost unlimited issue of paper money also powerfully contributed. All the banks in the country, save those in New England, suspended specie payments in 1814; and the Federal government, finding itself short of revenue, early in the course of the war commenced the issue of Treasury paper. But as specie disappeared and redemption was abrogated, not only public and private banking associations, but manufacturing and bridge-building associations, and even individuals, issued paper notes, which rapidly passed into circulation, and were largely taken by the public. In one session, that of 1813-14, the Legislature of Pennsylvania chartered forty-one new banks, with \$17,000,000 of capital; and according to one writer of the time, "the plenty of money was so profuse that the managers of the banks were fearful that they could not find a demand for all they could fabricate, and it was no infrequent occurrence to hear solicitations urged to individuals to become borrowers, under promises of indulgences the most tempting." The result was that the money of the country in a great degree lost its value, and its depreciation, enhancing the prices of every species of property and commodity, appeared like a real rise in value, and induced all manner of speculations and extravagance. The editor of *Niles's Register* characterized "the prodigality and waste as almost beyond belief," and speaks of the furniture of a single private parlor in one of the Eastern cities as costing upward of \$40,000. On the other hand, Mr. Mathew Carey, of Philadelphia, writing in 1816, called this period "the golden age of Philadelphia," and says, "The rapid circulation of property, the immensity of business done, and the profits made on that business produced a degree of prosperity which she had perhaps never

* Bishop's *History of American Manufactures*.

before witnessed." And in another portion of the pamphlet from which the above language is quoted he further declared "that never was the country in a more enviable state."

With the return of peace, and the consequent cessation of demand for commodities on the part of the government, the fall of prices, and the resumption of importations, all this bubble of prosperity, however, collapsed with great rapidity, and the country entered upon a period of prostration and stagnation of all industrial effort which has had no parallel in all its history except possibly during the darkest hours of the Revolution. Expecting large demands and high prices for commodities, English and American merchants imported enormously as soon as practicable after the ports had been opened; but the markets becoming soon overstocked, prices, under forced sales, declined to such an extent as to prove ruinous not only to the importers, but also to a large proportion of the injudicious or high-cost manufacturing establishments which the war had stimulated into existence. To remedy this state of things, Congress in 1816 enacted the first strong protective tariff, although the average rate of duty imposed by it on all imports was only about twenty-five per cent., and on only a few articles was in excess of thirty per cent. It is interesting also to note that this measure was proposed and mainly supported by Southern members of Congress—especially on the ground of encouraging the manufacture of our own cotton—and met with decided opposition from the people and Representatives of the North, whose capital and labor were at that time largely interested in commerce and navigation.

But whatever may have been the ultimate effect of this tariff, its immediate beneficial influence in restoring prosperity to the manufacturing and other interests of the country proved far less than what was anticipated. On the contrary, the stagnation of every kind of trade and industry, instead of diminishing, continued to increase, and did not reach its maximum until four years after the war, or in 1819. Specie payments were resumed in 1817; and as a legitimate consequence no small proportion of the paper promises to pay, which had been so recklessly issued and so profusely circulated as money, without security behind them for their payment, rapidly became worthless in the hands of the holders. The United States Bank, which at that time was the great financial regulator of the exchanges of the country, became also involved, through imprudent or dishonest management—losing through its Baltimore branch alone \$1,671,000—and in attempting to save itself wrought such new mischief that the previous financial and industrial disasters

of the country became almost insignificant in comparison. Rents and values of all real estate and merchandise were enormously depreciated. The population of Philadelphia decreased 10,000 between 1815 and 1820. At Pittsburg flour was one dollar per barrel, boards twenty cents per hundred, and sheep one dollar per head. Farms were mortgaged and sold every where for one-half to one-third of their value. Factories and workshops were every where closed; and in August, 1819, it was estimated by some authorities that as many as 260,000 persons, formerly dependent on manufactures, were absolutely without means of support.

After 1819, although the depression of prices continued through 1820, affairs began to improve. In this latter year the site for the city of Lowell was purchased, and between 1821 and 1827 it is noted that *thirty* new cotton factories were erected in the State of New York alone. But from the epoch of the great financial and industrial revulsion following the war of 1812 down to the year 1850 there are no reliable data for exhibiting by decades, or for shorter periods, the aggregate progress and results of American manufacturing industry. Some specific details of interest may, however, be mentioned.

Thus, in 1821 the value of the manufactured products of the United States exported was equal to 28 cents per head of the entire population. In 1825 this value had risen to 51 cents, from which it declined in 1830 to 41 cents. In 1835 it was again 51 cents; in 1840, 58 cents; in 1845, 53 cents; in 1850, 60 cents; and in the period from 1851 to 1861 it attained the highest figures in our industrial history, namely, \$1 40 in 1854 and \$1 53 in 1860. Since the outbreak of the war, however, this representative value of exports of manufactures has not in any one year risen as high as \$1 *per capita* for our entire population.

In 1820 the total value of the books published in the United States was estimated at \$2,500,000, and the relative proportion of British and American books consumed was estimated by S. C. Goodrich (Peter Parley) at *seventy* per cent. of the former to *thirty* of the latter; but before 1850 the proportion of foreign books to American consumed in the country had become very inconsiderable.

The mechanical inventions by which the cost of the manufacture of paper was greatly reduced, through the substitution of machinery producing a continuous sheet, in place of the old hand process by which single sheets were made successively and slowly, had their inception unquestionably in Europe at about the commencement of the present century, but the credit of so simplifying and enlarging the machinery as to make it practical and thoroughly efficient

undoubtedly belongs to American paper-makers, John Ames, of Springfield, having been especially noted for his useful inventions. In 1800, "by the hand process, it took three months to complete the paper, ready for delivery, from the time of receiving the rags into the mill."* At the present day twenty-four hours are amply sufficient. In 1820 the annual value of the product of the paper manufacturing industry of the United States was estimated at \$3,000,000; in 1829, \$7,000,000; in 1844, \$16,000,000, by 600 mills; in 1854, \$27,000,000, by 750 mills; in 1860, \$39,428,000; and in 1870 (exclusive of paper-hangings), \$48,675,000.

The iron industry of the United States divides itself into two periods, one dating from the first settlement of the country to the end of the year 1862; the other extending from 1863 to the end of 1873. The first period was one of gradual but continuous growth; the second was that in which the iron industry was stimulated into an extraordinary growth and activity, first by the war, and then by railroad building on the most extensive scale.

The fact that both pig and bar iron were included among the regular exports of the country for many years prior to the Revolution has been already noticed. After the war the progress of this industry was for a time very rapid, and in 1791 Mr. Hamilton in his report says, "Iron-works have greatly increased in the United States, and are prosecuted with much more advantage than formerly." We find it also recorded at about this time that "a dangerous rivalry to British iron interests was apprehended in the American States, not only in the production of rough iron, from the cheapness of fuel and the quality of the iron, but also in articles of steel cutlery and other finished products, from the dexterity of the Americans in the manufacture of scythes, axes, nails, etc." In 1810 Mr. Gallatin, Secretary of the Treasury, in a report on manufactures, classed that of iron as firmly established, and estimated the quantity of bar-iron produced to be 40,000 tons, against about 9000 imported. According to the census of 1810, there were 153 furnaces in the United States, producing 53,908 tons of iron, and four steel furnaces, producing 917 tons of steel, the importation of steel for the same year being reported at only 550 tons. The commercial and financial revulsions which followed the war of 1812-15 affected disastrously the iron manufacture in common with all other industries; but that it did not entirely interrupt it is shown by the fact that some new establishments of great importance went into operation at the time of the greatest depression; and in 1816 the total import of pig-iron was but 329 tons.

By 1824 the iron production and manufacture were both very active, and the pig-iron product of this year undoubtedly exceeded 100,000 tons. For 1832 it was reported at 200,000 tons. The first furnace for smelting with anthracite coal was built in 1837, but at the close of 1843 there were twenty anthracite furnaces in successful operation. The first important demand for iron in the United States for railroad purposes commenced in 1835, during which year 465 miles of road were constructed, followed by 416 in 1838, 516 in 1840, and 717 in 1841. In regard to the production of pig-iron in the United States during the decade from 1840 to 1850, a period characterized by extreme variations in the tariff policy of the government, there has been no little of controversy; but the most careful investigation yet made into the subject (that of Hon. W. M. Grosvenor) leads to the conclusion that the product of 1840 was about 347,000 tons, and that it increased from that figure to an aggregate of not more than 551,000 tons in 1846, and 570,000 in 1848. Subsequent to this date the progress of the pig-iron industry may be accurately indicated as follows: 1850, 564,755 tons; 1855, 784,178; 1860, 919,770; 1865, 931,582; 1870, 1,865,000; 1873, 2,695,000.

In 1865 the production of cast steel in the United States was 15,262 tons; in 1873, 28,000 tons.

In 1863 the production of pneumatic or Bessemer steel was 8500 tons; in 1873 (estimated), 140,000 tons. The recent progress of that department of the iron industry of the United States engaged in the manufacture of rails for railroads is also indicated by the following statistics of annual product: 1849, 24,314 tons; 1855, 138,674; 1860, 205,038; 1865, 356,292; 1870, 620,000; 1872, 941,000; 1873, 850,000.

In 1840 the consumption of iron in the United States for all purposes was estimated at about 40 pounds *per capita*; in 1846, at about 60 pounds; in 1856, at 64; and in 1867, at (approximately) 100 pounds. The *per capita* consumption of Great Britain and Belgium alike for this latter year was 189 pounds; and of France, 69½ pounds. For the years 1872-73 the *per capita* consumption of iron in the United States has been estimated as high as 150 pounds; and that of Great Britain, at 200 pounds.

It is more difficult to present the details of the growth and development of the woolen manufacture of the United States than those of almost any other great domestic industry; and this, in a great degree, for the reason that no other industry has been subjected to such violent and radical disturbances by reason of financial and commercial revulsions, and by the frequent changes in the fiscal policy of the government in respect to the tariff. Previous to the Revolution this branch of manufacturing was so

* Munsell's *Chronology of Paper and Paper-Making*.

successfully established that its progress was regarded with probably more of jealousy and apprehension by Great Britain than that of any other colonial industry, and most stringent efforts were made by Parliament to check or suppress it. After the war the business generally changed its "home" or "domestic" character, and became more and more of a "factory" enterprise, and developed rapidly, down to the period of the "embargo" of 1808. It is recorded that Arthur Schofield about this time established a mill in Pittsfield, Massachusetts, from which goods were soon sent to New York, sold for British broadcloths, and brought back for sale by a dealer of that same town in which they were manufactured. Other mills were equally successful, and before the "embargo" American woolens were made for \$1 06 per yard, equal in fineness and quality with British goods of double the width, costing \$3 50 per yard.

The immediate effect of the embargo and of the subsequent war was to greatly stimulate the manufacture of woolens; but wool was so high and scarce as to command in 1815 \$4 per pound, while broadcloths were as high as \$18 per yard. The detailed accounts of one factory established at Goshen, Connecticut, in 1813, which have been preserved, show that the proprietors purchased wool at \$1 50 per pound, and sold cloth of a quality which at the present time would not command over \$1 per yard, for \$10; and, further, that the ultimate end of that factory after the war was an entire loss of the original capital, and three times as much more in addition.

coarsest hair to the finest and most glossy silk; and that in order that the manufacture of woolens may be conducted successfully, it is absolutely essential that the manufacturer should be allowed to freely select his raw material from the peculiar products of every climate and soil, and at prices common to all competitors. But such a condition of things, through legislative interference, has not been given to American woolen manufacturers in one single year since 1827; added to which there has been no stability in the duties imposed on imported fabrics of wool, the tariff on the single article of blankets, for example, having been subjected to five radical and sudden changes during the period from 1857 to 1867 inclusive. The extreme and rapid variations in the price of American wool (upon which the American manufacturer has been obliged to mainly rely) since the year 1827 also strikingly illustrate how unstable have been what may be regarded as the fundamental elements of the business. Thus the average price per pound of common "fleece" in New York for the year 1825 was 33 cents; in 1830, 22 cents; in 1835, 33½ cents; in 1839, 38 cents; in 1842, 19 cents; in 1850, 35 cents; in 1853, 41 cents; in 1858, 30 cents; in 1863, 67 cents; and in 1873, 40 to 30 cents.

By the census of 1840 the capital invested in the manufacture of woolens in the United States was returned as in excess of \$15,000,000, employing 21,000 persons, and producing goods to the value of \$20,696,000. Since 1850 the progress and condition of this industry as returned by the census are shown by the following table:

	1850.	1860.	1870.
Number of establishments.....	1,559	1,260	2,891
Hands employed.....	39,252	41,360	93,103
Capital invested.....	\$28,118,000	\$30,862,000	\$108,998,000
Value of product.....	\$43,207,000	\$61,894,000	\$177,963,000

In the prostration of all business interests that followed the war the woolen industry participated, but yet not more largely than did that of cotton; and it recovered so vigorously that the capital invested in it was reported to Congress to have more than doubled between 1815-16 and 1827. From this time, although the woolen manufacture has continued to increase, and at the present time has attained to a large development in almost every department, its record on the whole has been one of disaster rather than of success; and the annals of Congress from 1827 onward are filled with applications by representatives of the woolen interests for legislative relief, and with most pitiful statements of lack of profit, loss of capital, and abandonment of business. The explanation of this curious result in great part is that no one country produces all the different kinds of wool, which in variety of character may be said to range from the

In 1850 the Federal government for the first time attempted to ascertain through the machinery of the census with any approach to accuracy the exact condition and annual product of all the various industries of the country, not, however, including any establishment the value of whose annual product was not in excess of \$500. The amount of capital at that time invested in manufactures in the whole country was returned at \$553,123,822, and the value of the annual product (including fisheries and the products of the mines) at \$1,019,106,616.

By the census of 1860 the aggregate capital employed in manufacturing for the whole country was returned at \$1,009,855,715, and the gross value of the total annual product at \$1,885,861,676, an increase as compared with the aggregate of 1850 of about eighty-eight per cent. By the census of 1870 the aggregate manufacturing capital returned was \$2,118,208,000, and the gross value of

the total annual product of manufactures \$4,232,325,442. Reducing the census statements of these values of the annual product to equal terms respectively, the increase in the reported values of the products of manufacturing industry for the decade from 1860 to 1870 was *one hundred and eight* per cent. But of this increase *fifty-six* per cent. was computed to represent merely the enhancement of prices in 1870 over those of 1860 by reason of the inflation of the currency and other general causes, leaving *fifty-two* per cent. as the actual increase in the value of production. Of this latter increase it was further estimated that about *twenty-eight* per cent. was due to increase during the decade in the amount of labor employed, and *twenty-four* per cent. to the application of steam or water power, the introduction of machinery, and the perfecting of processes.

But the evidence is unquestionable that the returns of both the census of 1860 and that of 1870 in respect to the aggregate value of the annual product of our manufacturing industries were much less than the actual facts warranted, and that if proper account had been taken of the omissions and deficiencies in the estimates of the periods above given, the true value of the annual manufacturing product for 1860 would have been about \$2,325,000,000 in place of \$1,885,000,000, and for 1870 \$4,839,000,000 in place of \$4,232,000,000.

Careful investigation has also shown that the data upon which the amount of capital invested in manufactures in the United States has from time to time been estimated under the census have been too unreliable and imperfect to authorize any but the most general conclusions; and furthermore that the results of any inquiry by Federal or State officials looking to the obtaining of accurate information respecting invested capital must, from the almost universal unwillingness of persons interested to give information, be ever most unsatisfactory, if not wholly worthless. Thus the estimate under this head, based on the official returns of the census for 1870, was, as before shown, \$2,118,000,000; but this sum, in the opinion of the Superintendent of the Census, Hon. F. A. Walker, did not in fact truly represent more than one-fourth of the capital which actually contributed to make up the gross annual value of the manufactured product returned for the year 1870.

RELATIVE IMPORTANCE OF THE MANUFACTURING INDUSTRIES OF THE UNITED STATES.

The following detailed statements, compiled from the returns of the census of 1870, indicate the relative importance of the great manufacturing industries of the country:

Leather (including the dressing and tanning of skins, the manufacture of boots and shoes, saddlery, harnesses, belting, hose,

pocket-books, trunks, bags, and valises, but excluding all other manufactures).—

Hands employed, 202,613; capital invested, \$133,902,000; value of annual product, exclusive of value of material used, \$162,872,000.

Lumber (planed and sawed).—Hands employed, 163,511; capital invested, \$161,406,000; value of annual product, exclusive of value of material used, \$120,201,000.

Flouring and Grist Mill Products.—Hands employed, 58,448; capital invested, \$151,565,000; value of annual product, exclusive of value of material used, \$77,593,000.

Pig and Bar Iron Manufacture (including pigs, blooms, and iron forged and rolled).—Hands employed, 78,347; capital invested, \$119,860,000; value of annual product, exclusive of value of raw material used, \$70,272,000.

Clothing (ready-made).—Hands employed, 118,824; capital invested, \$52,743,000; value of annual product, exclusive of value of material used, \$69,600,000.

Manufactures of Cotton (including batting and wadding, thread, twine, and yarns).—Hands employed, 136,763; capital invested, \$140,906,000; value of annual product, exclusive of value of raw material used, \$64,828,000.

Manufactures of Wool (including woollen and worsted goods, wool carding, and cloth dressing).—Hands employed, 93,108; capital invested, \$108,998,000; value of annual product, exclusive of value of material used, \$66,745,000.

Machinery.—Hands employed, 83,514; capital invested, \$101,181,000; value of annual product, exclusive of value of material used, \$57,597,000.

Carriages and Wagons (including building and repairing of railroad cars, children's wagons, and sleds).—Hands employed, 71,772; capital invested, \$53,941,000; value of annual product, exclusive of value of material used, \$56,565,000.

Agricultural Implements.—Hands employed, 25,279; capital invested, \$34,834,000; value of annual product, exclusive of value of material used, \$30,593,000.

Paper (exclusive of paper-hangings).—Hands employed, 17,910; capital invested, \$39,362,000; value of annual product, exclusive of value of material used, \$18,648,000.

Stoves, Heaters, and Hollow Ware.—Hands employed, 13,325; capital invested, \$19,833,000; value of annual product, exclusive of value of material used, \$14,345,000.

Hats and Caps.—Hands employed, 16,173; capital invested, \$6,409,000; value of annual product, exclusive of value of material used, \$12,587,000.

Silk (including sewing and twist).—Hands employed, 6699; capital invested, \$6,242,000; value of annual product, exclusive of value of material used, \$4,415,000.

It thus appears that the preparation and

manufacture of leather ranks *first* in importance of the various manufacturing industries of the United States, and that the industries represented by the planing and sawing of lumber, and by the "milling" of cereals, take precedence over the primary manufactures of iron, as well as over the great textile industries of cotton and of wool.

NUMBER OF PERSONS EMPLOYED.

By the census of 1870, 11,155,240 persons, twenty years of age and upward, were returned according to occupations. Of this number 2,500,189 were engaged in manufactures and mining, being a gain of *twenty-eight* per cent. since 1860, or *five and one-half* per cent. more than the ratio of decennial increase in population. The number employed in agriculture was at the same time returned at 5,151,767, and in trade and transportation at 1,117,928.

SOCIAL CONDITION OF LABORERS.

The data and material for describing the condition of laborers engaged in the manufacturing industries of the United States at different periods are very meagre. During the colonial period and the early days of the republic there was but little accumulated national wealth, but what there was was probably distributed with more of equality than has ever prevailed in any other large community of which we have a correct history for any lengthened period. At the commencement of the present century there were probably a smaller number of individuals in the country, in proportion to the whole population, who possessed an accumulated capital of \$5000 than there are at the present time who possess \$100,000. But if there was but little accumulated wealth in the early days of our national history, there was but little poverty, and consequently but few social distinctions, and the natural resources of the country then as now afforded remarkable facilities to all who were willing and able to work for earning a comfortable livelihood. With the gradual accumulation of wealth, the utilization of natural forces through the agency of machinery, and the great improvements in the means of transportation, the consuming power of the masses has also greatly increased, and many things which were once regarded as luxuries have come to be considered by even the humblest in the light of necessities. But it can not, at the same time, be doubted that the general tendency of events during the last quarter of a century of our national history has been to more unequally distribute the results of industrial effort, to accumulate great fortunes in a few hands—in short, to cause the rich to grow richer and the poor poorer. Such results, however, can not be referred to any

one cause, but they are primarily due to an abandonment of that spirit of economy which so pre-eminently characterized our ancestors; to a marked decrease in the efficiency of labor; to a continual, if not increasing, use of artificial stimulants; to the crowding of population in large industrial and commercial centres; to war; to the interference of legislation with the freedom of trade; and latterly, to the use of an unstable, fluctuating medium of exchange, which all experience shows is one of the greatest curses that can befall the laboring population of any country.

As elements for estimating the social condition of laborers in the manufacturing industries of the United States, the statistics of the wages paid in different occupations are most important; and from the great mass of information on this subject which has recently been collected and published the following general items have been selected. Thus in Pennsylvania, the leading State in the production and fabrication of iron, the average earnings per annum in the different manufacturing establishments of the State for the years 1872-73 (as reported by the State Bureau of Statistics of Labor) were as follows: foremen, \$638 per annum; skilled workmen, \$536; laborers, first-class, \$402; laborers, second-class, \$332; females above sixteen, \$228; youths, apprentices, etc., \$150.

In Massachusetts for about the same period the average wages reported in the cotton-manufacturing industry were, for men, \$403 per annum; women, \$268; children, \$134.

In the silk industry the average earnings per hand in the most prosperous establishments probably approximate \$335 per annum as a maximum.

In the woolen industry the average daily wages of 5500 operatives in the mills of Massachusetts were reported for the year 1871 as follows: men, \$1 62 per day; women, \$1 12; young persons, 94 cents; children, 64 cents.

In any limited review of the progress of a great nation for a period of one hundred years, in respect to any one of its leading departments of industry, much that is interesting and suggestive must of necessity be wholly omitted, and many things treated most superficially. But a general conclusion to which a study of all the facts connected with our national development from the time of the founding the first colonies in the wilderness to the epoch of the Declaration of Independence, and from the establishment of peace and the adoption of the Federal Constitution to the present hour, is that the progress of the country, especially in respect to its manufacturing industry, and through what may be termed its ele-

ment of vitality, is independent of legislation, and even of the impoverishment and waste of a great war. Like one of our mighty rivers, its movement is beyond control. Successive years, like successive affluents, only add to and increase its volume, while legislative enactments and conflicting commercial and fiscal policies, like the construction of piers and the deposits of sunken wrecks, simply deflect the current or constitute temporary obstructions. In fact, if the nation in all respects has not yet been lifted to a full comprehension of its own work, it builds steadily and determinately, and, as it were, by instinct. DAVID A. WELLS.

NORWICH, CONNECTICUT, 1875.

A LION IN THE WAY.

A LITTLE headstrong piece, a pretty little headstrong piece, every old woman in the neighborhood called Bessie Allan; and when she and Georgie Knight, her mate in most of her frolics and adventures, were together, any thing, the same authorities declared, might be expected. Nevertheless, all the neighborhood were Bessie Allan's friends; they all loved the little bright head, the dimpled mischief of the rosy face, the glistening of the brown eyes, with their long, bright, half-curved lashes that knew so well the demure trick of veiling the lustre underneath them at the auspicious moment, and making the face too tempting for any thing but forgiveness and kisses.

She was seventeen, and though all the neighborhood might in some way be called her lover, yet she had never had that single and individual lover who belongs to young girls' dreams; for with all her gay spirit there was a certain shyness—almost like that of the little wild-wood animals, which allures you and then escapes you—and no admirer had ever approached the lovely, frolicsome, piquant thing near enough to become a lover. That is to say, until this present epoch, of which we are about to speak; and then one day the new minister—yes, the new minister, young, heart-whole, handsome, and believed by some of the old women of whom mention has been made, and some of the young ones too, to be nothing less than an angel in disguise, for if such things had happened once, they reasoned, then they might happen again—just as he rose in the pulpit, saw Mistress Bessie come walking into church, and it was all over with him.

Pray don't think ill of the young minister. It was no earthly love of which he was conscious during the brief hour of the pulpit. Only to him, that early summer day, the sky was bluer, the rose was rosier, the sunshine seemed more than ever to be flowing out of heaven itself, like the shimmer of the river of life. He was not exactly

aware that he had even seen Bessie Allan; all that he was entirely conscious of was that suddenly, as if he were in an ecstasy, the whole world had brightened and lifted itself, and he prayed and read and preached after a manner that made the congregation talk, during all the intermission, of Tobit and the angel; and then he went home to dine with Mr. Allan.

As for Bessie, she sat very still between her father and mother in church, and forgot all about her roguish glances hither and yon, all about this body's ribbons and that body's hat, and heard the preaching and the praying with a new light in her eyes and a new comprehension in her mind; joined in the singing of the hymn with her whole soul, and a voice like a bird's; and perfectly agreed for the time being with the old women and the young women that this was no common minister, but more likely to be a spirit in mortal guise than any mere graduate of theology.

Yet Mr. Beckwith was not of such immaterial form as might lead to such opinion. He was a deep-chested, broad-shouldered fellow, with short brown curls clustering in thick rings upon a head of antique outline, with a steely glance in a pair of great blue eyes, and was by no means any more ethereal in appearance than a man of proper proportions and natural emotions should be, except in such moments as those when his excited aspiration lent a singularly pure and holy expression to the face that was usually rather severe than otherwise.

But if this young gentleman had not been self-conscious of Bessie's presence in church, he became very conscious of it in her father's house. Not immediately, to be sure, for the awe in which she had been half spell-bound did not wear off at once. But when she found that the minister liked plenty of gravy, when she had helped him twice to dumplings, when she had discovered that he had a good hearty heathen appetite, then the mischief in her began to get the upper hand, and almost before she knew what she was about, the eyelashes were doing their wonted execution. Mr. Beckwith saw the rosy roguish face before him on the darkness as he walked home that night; it made a picture in the sunrise clouds when he woke in the morning; and after he had known her a fortnight, there was not a day or an hour in which that face did not seem to be lurking somewhere about him—on his sermon paper, between the leaves of his commentary, in the very sunshine that fell across him. Mr. Beckwith was not the man to consider this a mawkish sentimentality, or a thing to be checked by flagellations and mortifications of flesh and spirit. He knew, in fact, that his hour had come. He sat down and reasoned the matter out with himself. A child, indeed, she