SOME NOTES UPON THE GENESIS OF THE POWER LOOM IN WORCESTER COUNTY.

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PRIORITY in the introduction of water-driven machinery for textile manufacture in America has been, and even now often is, claimed for different localities and inventors. Such claims, having local pride and patriotism for their motive power, are commendable so far as they are strictly historic; but a majority of them are only histrionic. Worcester County has not lacked its champions whose patriotic credulity outran their thoroughness of research. Some gleanings from the bookkeeping and business correspondence of one of the pioneer cotton manufactories in the United States may serve to throw a little historic light upon this subject.

It is not easy for a people whose every article of apparel is machine-made, to appreciate the fact that within one hundred years their kin were mostly clad with exclusively home-made goods, in the fabrication of which no mechanism more complex than the simple spinning-wheel ever had part. In the New England village, until near the dawn of the nineteenth century, the every-day wear of both sexes and all ages of humanity was literally grown upon the farm; and whether of wool or flax or cotton, or some combination of them, was the product of domestic toil and skill. The busy wheels droned their monotonous bass in accompaniment to the musical treble of the spinster's songs from daybreak until dark in every rural home. The clack of the hand-loom was the most persistent and familiar note of the industrial symphony in every community.

The loom, being cumbrous, generally had a special room to itself, and was found not only in the cottage of the skilled artisan, but in the lean-to of each prosperous farmer's home. Both wheel and loom were often bequeathed in the wills of the yeomen to their unmarried daughters, although the latter was usually held a true heirloom, not detachable from the real estate. Sir Henry Moore, governor of New York, in a letter to the British Lords of Trade in 1767, wrote that "the custom of making coarse cloths in private families prevails throughout the whole province, and almost in every House a sufficient quantity is manufactured for the use of the Family without the least sign of sending any of it to market . . . Every house swarms with children, who are set to work as soon as they are able to Spin and Card, and as every family is furnished with a Loom, the Itinerant Weavers who travel about the Country, put the finishing hand to the Work."[1] The same might have been said of all New England. The forty-two members of the Harvard class of 1768 voted to appear on Commencement Day clad in goods of home manufacture.[2] In 1775 the Provincial Congress, in ordering 1300 coats for the Massachusetts soldiers, set the price of good plain cloth, seven-eighths yard wide, at five shillings and sixpence per yard, "preference to be given to the manufactures of this country."

The spinster, the webster, the cordwainer, the tailor, the tanner were indispensable factors in every neighborhood. All except the last were commonly as peripatetic as the proverbially devious tinker, carrying their kits and their craftsmanship from farm to farm, and plying their arts at each, until the family from sire to urchin was duly clothed. The leather which the cordwainer sewed with flax thread of his own making was the matured product of a tanning process which exhausted nearly two years'

[1] Documentary History of N. Y., I., 498.
[2] *Massachusetts Gazette*, January 7, 1768.

time, and its wearing properties fully justified this dilatory manipulation. So also the cloth cut by the tailor, whether serge or say, frieze or kersey, linsey woolsey or broadcloth, jeans or corduroy, was slowly wrought by spinster, weaver and fuller, with the definite end in view that the garments made therefrom should outlast the needs of the first wearer, and be left as legacies to sons and daughters; or by a selection of the least worn portions be evolved by some dextrous tailoress into clothing for children. The capable weaver could turn out three or four yards of cloth per day if diligent, and his loom devoured in weft and warp the product of several spinsters. He was paid from six to twenty cents per yard for his work "according to the cloth." The spinster's stint averaged "a skein," perhaps two pounds, of coarse yarn per day. Nowadays her expert, but much less strenuous granddaughter manages from one thousand to twelve hundred spindles, running ten sides of spinning frames for fifty-eight hours weekly. She earns about one dollar and a quarter per ten-hour day, and produces thirty-nine hanks, one and a half pounds, of fine thread per spindle, or 1500 pounds in all, several hundred times the possible output of the old-fashioned wheel.

A skilful weaver of the modern type, managing five high-speeded power-looms, produces in ten hours from three hundred to three hundred and fifty yards of staple ginghams, twenty-seven inches wide, earning about six-tenths of a cent per yard; or managing eight or ten looms in a Fall River mill, turns out from four hundred and fifty to six hundred yards of common sheeting, seven-eighths yard wide, in a day, and is paid less than one-half cent per yard. (We are told that the English weaver never runs more than four looms.)

At the close of the eighteenth century there were numerous professional weavers in Massachusetts, and many very expert workmen, as existing samples of their workmanship

attest. Most of these inherited their skill from English or Huguenot ancestors in Lancashire. Notwithstanding the supposed early development of mechanical ingenuity in our Yankee land, there strangely seem to have been no improvements made here in wheel or loom before the close of the Revolution. One Christopher Tully is said to have exhibited in Philadelphia, as early as 1775, a machine on which twenty-four threads could be spun at a time. This was doubtless a plagiarism upon Hargreaves's invention, and it was not put to any practical use until twelve years later. It was past the dawn of the nineteenth century when a Yankee woman, Sarah Babbitt of Harvard, better known as "Sister Tabitha" in the Shaker community of which she was a member, improved the mechanism of the spinning-wheel by the addition of the "patent head"; an invention which was born too late, for the barber Arkwright's frames and Crompton's mule had already revolutionized the making of yarns, practically superseded hand spinning and established the factory system. Sister Tabitha's chief fame will rest upon her much more valuable boon to man, the buzz-saw. The loom upon which her father worked is preserved in the Harvard community and has no features distinguishing it from those of early colonial days, or from those now in use in certain districts of Tennessee and adjoining states, where homespun jeans are to this day commonly worn. Nor in England or France, until just before our war for independence, were the tools of the textile manufacturer in any important respect superior to those familiar when Nick Bottom the weaver first came upon the stage. Then there began attempts to introduce in Lancashire newly-invented, power-driven machinery for carding, roving and spinning cotton and wool; but with limited and slow-growing success, because of the inhospitality with which any new ideas affecting manual labor were received by artisans. While British armies were striving with bullet and brand to put down

the revolution for political liberty in the American colonies, mobs of textile workers in Lancashire were fighting with like blind and futile rage to obstruct a revolution even more far-reaching and beneficent, inspired by the genius of Watt, Hargreaves, Arkwright, Crompton and Cartwright; an industrial revolution, opening to human effort new and boundless fields of employment, broader and easier paths to comfort and advancement; giving the fettered toiler his first glimpse of enfranchisement.

Cotton for more than a century had been used, though sparingly, in domestic manufactures, serving only as weft with linen or woollen warp. In New England it was commonly obtained from Barbados or other parts of the West Indies, being brought thence in exchange for codfish. The culture of the cotton plant, however, began in Virginia early in the seventeenth century. Moreover, in the middle states, as well as those farther south, the cotton raised sufficed for all domestic demands, and it promptly sprang into importance as an article of export after the invention in 1793 of the saw-gin by the Worcester County mechanical genius, Eli Whitney. With the coming of peace it was inevitable that the impulse given to manufactures in the mother land by the increasing use of labor-saving mechanism should become widely known and stimulate emulative enterprise in the United States. Foreseeing and fearing this, the British Parliament, as early as 1774,[1] forbade the exportation of machinery used in textile manufactures; and a little later[2] imposed a fine of £500 upon any one who should attempt to entice out of Great Britain a workman acquainted with novel processes in the manufacture of linen and cotton goods. In 1781 the act of 1774 was extended by an elaborate act, imposing a penalty of £200 fine and twelve months imprisonment for any attempt to export "any machine, engine, tool, press, paper,

[1] 21 George III. c. 37. [2] 22 George III. c. 60.

utensil or implement whatsoever which now is or at any time or times hereafter shall or may be used in or proper for the preparing, working, pressing, completing or finishing of the woollen, cotton, linen or silk manufactures of this kingdom . . . or any part or parts of such machines, etc. . . . by what name or names soever the same shall be called or known, or any model or plan . . of such machines, etc. . . . " An association of Philadelphia capitalists, encouraged by state bounties offered for the introduction of improvements in cotton manufacture, employed in 1787 an English mechanic to revisit Lancashire, procure models of the new textile machines and smuggle them to America *via* France. When his success seemed almost assured, he was detected and imprisoned.[1] But despite acts of Parliament, handicraftsmen in large numbers, Irish, Scotch and English, began to appear in the United States, some of them claiming to possess models or expert knowledge of the new carding and spinning devices.

So early as November 16, 1786, the Massachusetts legislature advanced £200 to Robert and Alexander Barr, two Scotch immigrants, who exhibited models of cotton carding and spinning mechanism "to enable them to compleat three machines and also a roping machine, and to construct such other machines (connected with those already exhibited) as are necessary for the purpose of carding, roping and spinning of sheep's wool as well as of cotton wool." These machines were built in Bridgewater at a cost of £189 12s. A committee was appointed March 8, 1787, to inspect them, and to determine what recompense should be allowed the Barr Brothers "as a reward for their ingenuity, and as an inducement to other ingenious Artists and Manufacturers to bring their arts also into this Commonwealth." May 2, 1787, this committee re-

[1] White's "Memoir of Slater," p. 71, *et seq.*

ported that they had allowed the machinists, besides the £200 originally advanced, "six tickets in the State Land Lottery." The machines were placed in the custody of the Honorable Hugh Orr, the famous gunmaker of revolutionary days, for exhibition, and there is no record of their practical use. Models of similar machines were exhibited the following year at Baltimore and in Boston by Thomas Somers, which also received state reward. He moreover won enthusiastic patrons in the Cabots of Beverly, and in 1789 machinery built by them began producing corduroy and other coarse fabrics for men's wear, at Beverly. Their factory, the nine proprietors of which were incorporated as the Beverly Cotton Company, February 3, 1789, is described at some length by Washington in his Diary, as he saw it on Friday, October 30, 1789, when on his tour through the northern states. In a three-storied brick building he found in operation all the means for converting cotton fibre into cloth, including a carding machine, a warping machine, four spinning-jennies and sixteen looms with flying shuttles. The last were expected to double the output of the ordinary loom of the period, but were worked by hand. Motive power was furnished to most of the other mechanism by a pair of heavy horses in the basement. This brave enterprise of the Beverly capitalists was twice fostered by state subsidies: February 17, 1789, a legislative resolve granted the corporators "£500 lawful money to be paid in Eastern Lands." The preamble to the resolve is as follows, "Whereas it is essential to the true interest of this Commonwealth to encourage within the same the introduction and establishment of such manufactures as will give the most extensive and profitable employment to its citizens, and thereby instead of those emigrations which are ruinous to the state, increase the number of manufacturers who by consuming the productions of the soil will add to the value of it." March 4, 1791, the legislature again came to the aid of the struggling

industry with a grant of seven hundred tickets in the state lotteries. The Beverly factory, however, won no financial success, owing to the extraordinary expenditures and waste attendant upon novel adventure in manufacture, lack of technical skill in its workmen, and defective construction of the mechanism employed. But though its useful career was brief, it is plausibly claimed to have been the earliest in America wherein all the operations of the manufacture of cotton cloth were carried on under one roof, and by the aid of other than manual power.

J. P. Brissot De Warville, in his "New Travels in the United States of America," mentions seeing in 1788 at Beverly a "flourishing manufactory of cotton." But Henry Wansey, a Wiltshire clothier, in "An Excursion to the United States of North America in the summer of 1794," [page 84] states from official information given in Boston, that "the famous cotton manufactory for fustians, corduroy and jeans at Beverly in Massachusetts, of which such favorable hopes were entertained for five years past does not answer." Its proprietors, however, had not acknowledged defeat eight years later, for the Reverend Manasseh Cutler, on December 13, 1802, being then representative to Congress from the Essex district and dining with President Jefferson, presented to him "specimens of wadding for ladies' cloaks, and of bedticks, from the Beverly factory," [1] which examples of American manufactures, he says: "afforded the ladies much satisfaction, especially the wadding which was indeed especially neat. Their fertile imaginations suggested a great number of uses besides that of cloaks and spencers, such as quilts for beds, gentlemen's as well as ladies' weather coats, etc. The specimens were pronounced much preferable and cheaper than that imported from Europe." James Beaumont, the young Englishman who built and ran cotton-

[1] "Life, Journals and Correspondence of Rev. Manasseh Cutler, LL.D." ii., 113-115.

spinning machinery, including a mule with forty-four spindles, at Canton, in 1803, visited Beverly in the closing year of the eighteenth century. In his "Reminiscences," written in his old age, he expresses his lack of respect for the popular estimate of the Essex County enterprise in these words: "There were no Arkwright improvements, the carding and spinning were done by hand labor, and it was but little removed from the old-fashioned hand card and high wheel." Beaumont also visited John Lees's woollen mill at Byfield, and describes it as "the first woollen manufactory worthy of the name established in the United States." Beaumont's recollections of youthful experiences can, however, hardly be accepted as history. We know that the Byfield mill was not built until 1794, and Washington, at his first inauguration as President, April 30, 1789, wore a suit of "dark brown cloth" made by the Hartford Wool Manufacturing Company, a part of whose machinery, though not the looms, was run by water-power. Of the Hartford factory, the output, according to Brissot De Warville, was five thousand yards in the year 1788–89. At the time of Henry Wansey's coming thither in 1794, he reported the company had "two carding machines worked by water," and that the enterprise was decadent.

An important rival to the claim made for the Beverly mill was the Philadelphia Association's manufactory previously mentioned. This was replenished with all the needful apparatus for the making of cotton goods in 1787 or 1788, and gave such promise of success, that the Pennsylvania legislature ordered the state treasurer to invest £1,000 in the stock of the company. The factory with all its contents was destroyed by an incendiary fire in March, 1790, and was not rebuilt. The machinery was run in part by horse-power. Washington's Diary is authority for stating that the factory system had been introduced before 1789, in Boston and Haverhill, for the fabrication of sail-cloth, but the various steps in the process seem to

have all been conducted by manual labor only, and with tools little differing from those familiar in New England farm houses. The Boston factory spinners, by the aid of a girl who twirled the wheel, were enabled to spin a thread with each hand, and in Colonel Samuel Blodgett's mill at Haverhill one girl turning a large wheel gave employment to eight spinners acting independently of each other. The Boston Sail Cloth Manufactory turned out from each of its twenty-eight looms about eight yards per day at the date of the President's visit, which proves that the recently invented spring shuttle was there in use. Brissot De Warville, who visited Boston a year earlier, states that "this single establishment finished two thousand yards per week," a statement probably more truly descriptive of the hopes of the manufacturers than of their actual achievement. In the *Massachusetts Centinel* for April 1, 1789, John Andrews advertises sail-cloth "to be sold at his hardware store on Union street near the Market . . . Which is esteemed by good judges to be equal, if not superiour to any Duck imported from Europe. . N. B. Several strong healthy Lads, of 16 or 17 years of age, are wanted as Apprentices at the Factory, to be instructed in the art of Weaving etc. whose parents and friends will have a reasonable allowance made for their support."

On February 5, 1789, the *Massachusetts Spy* published the following news item: "Several gentlemen are about establishing a cotton manufactory in this town. A subscription for defraying the expense of making the spinning machine called a jenny is already filled." The names of the gentlemen therein referred to are discovered by two deeds, conveying lands—situated on Mill River near the meeting of Union and School streets—granted them "so long as they shall make use of any building which may be erected on said land for the purpose of carrying on the Cotton and Linnen Manufactory or the Manufacturing of any other kinds of goods whatsoever." They were "Daniel

Waldo Esq.; Daniel Clap Esq.; Joseph Allen Esq.; Levi Lincoln Esq.; Samuel Flagg Esq.; Samuel Chandler and Charles Chandler, Gentlemen; Abel Stowell, Clockmaker; Peter Stowell, Weaver; Cornelius Stowell, John Stanton, Isaiah Thomas and Thomas Stowell, Gentlemen; Samuel Brazier, Baker; Nathaniel Paine Esq.; Samuel Waldo, jun., Merchant;—all of Worcester,—and John Sprague Esq. of Lancaster." The deeds bear the dates August 11, and October 5, 1789. The location is sufficient indication of the intention to utilize water-power for driving the machinery. But several months before the purchase of this site the association had begun manufacture, as this news item from the *Spy* for April 30, 1789, attests:

"On Tuesday last the first piece of Corduroy made at the manufactory in this town, was taken out of the Loom; to say that it looks well, and equal to any of the same quality imported from a foreign market, might be thought only to be retailing the common prejudices of people in general in their own favour, when they enter into business and view the first product of their labour: But throwing partiality aside, we would only observe, that good judges speak highly of it, and give it a decided preference to that imported from Greatbritain. The carding machine, which is really a great curiosity, has been some time completed, as well as the spinning machine. In a little time it is hoped that the quantity of corduroys, jeans, etc. made in this town will be sufficient to supply the inhabitants of this county, and may be the means of saving a considerable sum of money among ourselves."

The proprietors of the factory at Beverly alleged that the "curious" carding and spinning machinery at Worcester was built from their designs, and by a machinist enticed from their employ; also that the head spinner was a woman educated by them.[1] If water-power had ever any part in operating the little plant, there is no reason to suppose it was attached to the looms. For a few weeks in the

[1] Robert S. Rantoul's "The First Cotton Mill in America," pp. 37, 38.

early summer months of 1789, Samuel Brazer advertised in the *Spy*: "Corduroys, Jeans, Fustians, Federal Rib, and Cotton for the Cash only, at a price which will be satisfactory to the purchasers. The quality of the above-mentioned goods is superiour to those imported, and they have been proved to exceed them in strength, which circumstance alone, it is presumed, will induce every one to give the preference to the Manufactures of their own country." His advertisements close with the statement that the "Cotton Manufactory is in need of an overseer, three or four healthy boys as apprentices and two or three journeymen weavers." From the large amounts of linen yarn advertised for and bought by Samuel Brazer, it seems quite certain that the cotton in the fabrics made, was weft only. After less than eighteen months' experience, the associates were evidently losing confidence in their venture, for we find in the *Spy*, during August, 1790, Samuel Brazer and Daniel Waldo, Jr., requesting the immediate settlement of all accounts with the proprietors of the Worcester Cotton Manufactory. The property perhaps soon after reverted to the original owners, for one of them, Nathan Patch, petitioned for a state loan of £600 as an encouragement to continue the manufacture, alleging that about £1,000 had been sunk in the experiment. The loan was not granted, but a resolve, passed February 20, 1792, exempted the factory and the machinery and cloth therein, from taxation for the term of ten years. It is probable that the mill's wheels ceased to revolve at this time, as no further advertisements of its products are found; but Henry Wansey, who passed through Worcester in 1794, makes mention of "a cotton and carpet factory carried on by Peter Stowell," who appears, being styled a weaver, among the grantees in the deeds before mentioned. He may have utilized the carding and spinning devices of the defunct Worcester Cotton Manufacturing Company.

The early attempts at cotton spinning by water-power

in Rhode Island, borrowed the designs of the Barr Brothers at Bridgewater and those of Thomas Somers at Beverly, and mechanics from Beverly aided the work. These attempts were practically fruitless until Samuel Slater arrived from England, caused the abandonment of the crude mechanism employed, and, without the aid of models or patterns, built and operated Arkwright spinning frames. This he accomplished in 1790, his first output of yarn being late in December of that year.[1] His weaving was all done upon hand-looms for many years thereafter. Henry Wansey did not visit Providence in 1794, and makes no mention of Slater. He describes a large undertaking in cotton manufacture at Patterson, New Jersey, as "brought forward at a very heavy expense . . badly conducted, and certain to become a heavy loss to the first undertakers"; a prophecy amply justified soon after. He saw near Hell Gate "the large cotton manufactory belonging to Dickson, Livingston and Company." This was operated by a breast-water wheel twenty feet in diameter, and included two four-storied buildings eighty feet in length. All the machinery was made upon the premises "from models brought from England," and "a vast deal of money" had been sunk in the process. The spinning was by water-driven machinery, "using all the new improvements of Arkwright and others," and employed experienced workmen brought from Manchester, England. Among other machines was one "called a mule." French spinners were paid two dollars per week besides lodging and board. In one of the buildings were "twenty-six looms weaving fustians, calicoes, nankins, nankinets, dimities, etc.," and ten other looms in the neighborhood were employed, all having "the newly invented spring shuttle." These were all run by hand.

The success of Slater's "water frames" was the incen-

[1] George S. White's "Memoir of Samuel Slater."

tive that soon built cotton mills on many a stream in the region round about Providence: as, at Wrentham, in 1792; Warwick, in 1795; Rehoboth, in 1800; Canton, in 1803; Medway, in 1805; Swansea and Taunton, in 1806; Dedham, and Scituate, R. I., in 1807; Mendon, in 1808; Attleborough, in 1809; Uxbridge, in 1810. These were all yarn mills, the weaving for them being done by artisans mostly working in their own homes. The oldest of them, that at Wrentham, was built by Benjamin Shepard, and contained, as his petition for a state loan assures us, "masheans for carding, spinning and weaving of cotton cloaths of all kinds upon the most advantageous construction . . . on a large scale." He obtained, June 20, 1793, a loan of £300 from the state, to be repaid in three years. This was extended in 1796 for three years, when a legislative committee found that he had harnessed a little brook to a carding machine and to three roping and spinning frames; that he used horse-power for calendering; and that his four looms were common hand-looms located in a building by themselves, and turned out 120 yards of cloth per week. The Canton Company, in 1810, adventured upon the trial of a power-loom. After spending a week in setting it up, and a fortnight in experimental weaving, it was thrown out as worse than worthless—another expensive lesson in the ways "how not to do it." The boldest adventure was that at Mendon, now Blackstone, where some wealthy Providence merchants built a stone mill, 200 feet long by 40 wide, six stories in height, with a capacity for ten thousand spindles. Seth Wheaton, one of the proprietors, in a letter dated August 20, 1809, says "more than fifty mills are now erecting in the New England states" for the manufacture of yarns. This might be thought merely a careless estimate, but we may learn from William R. Bagnall's painstaking and exhaustive monograph upon the early textile manufactures of the United States, that there were at that date at least seven

cotton mills then in operation in Connecticut,—at New Haven, Hartford, Suffield, North Bolton, Middletown, Bethlehem and Pomfret; and two in New Hampshire,—at New Ipswich and Manchester. In Massachusetts and Rhode Island capitalists were more abundant and enterprising. Richard Hildreth[1] says that previous to the Embargo—December 22, 1807—"there were in the United States but fifteen cotton mills with 8,000 spindles. By the end of 1809, eighty-seven mills had been built, of which sixty-four were in operation,—forty-eight by water and fourteen by horse-power,—working 30,000 spindles, and many more were in process of erection." Albert Gallatin, in 1810, counted one hundred and sixty-eight cotton factories in the United States, with a capacity of 90,000 spindles. Of these fifty-four were in Massachusetts, twenty-six in Rhode Island and fourteen in Connecticut. Enthusiasts and plausible calculators had excited throughout the country a craze for manufacturing; but technical efficiency was of slow growth, and when the financial depression succeeding the war with England set in, the valleys of New England were strewn with the wreckage of manufacturing establishments. But the era of credulity and bungling soon passed and the day dreams of the most visionary manufacturers were only faint prophecies of subsequent achievement.

To confine our further study to the limits of Worcester County: preceding by more than a year the operations of the Blackstone Manufacturing Company at Mendon, was the building the three-storied brick mill upon the north branch of the Nashua River by the Fitchburg Cotton Manufactory Corporation, chartered June 20, 1807. The charter members were Peter Snow, Jonas Marshall, John Muzzy, Edward Durant, William Brown, Joseph Farwell and Robert Allen. For the annals of this company's brief career, and its feeble accomplishment, I am largely

[1] "History of the United States," VI., 210.

dependent upon the curt statements of an historian who was not a studious investigator. The mill shared the water-power created by the dam of the first saw and grist mills of Fitchburg. It is now standing, forming a part of the large plant of the Parkhill Manufacturing Company. This is locally claimed to be "the third cotton factory erected in the state." But, besides several towns hereinbefore named, Watertown, Andover and Haverhill can honestly dispute Fitchburg's assumption of priority. The first superintendent employed to construct and operate the equipment of the Fitchburg factory was Charles Robbins, a machinist who learned his art in the Slater Mill, and built the first cotton factory of New Hampshire, at New Ipswich in 1804. He was soon dismissed, and a successor named Field was brought from New Ipswich to complete the plant and act as manager. Whatever success the company won, if any, was only attained after many discouraging experiences, and the venture ended in complete failure during the financial troubles of 1816. The building was, however, again utilized as a cotton mill for a time, but in 1822 was converted into a woollen mill, serving as such during sixty-five years.

In the month of August, 1809, gossip in Lancaster grew fervent with the news that two wealthy foreigners were in town, in search of suitable water-power for a proposed cotton spinning mill. The visitors were in fact worthy citizens of Boston, but naturalization papers could not cover from sight and hearing those birthright traits which plainly proclaimed the elder to be a debonair, punctilious and dapper Frenchman, and the younger, his son-in-law, a typical Englishman, energetic, rigid in his convictions, and tenacious of purpose. One hundred and fifty years earlier an Englishman from Lancashire, of like sturdy qualities, the heroic pioneer white settler in the Nashua Valley, John Prescott, had built the first grist-mill in Worcester County, at a natural cascade in a brook where

a short, inexpensive dam governed a fall of nearly thirty feet. It was Prescott's noted mill site, then for sale, that had attracted the strangers to Lancaster. Their resources were by no means so ample as gossips imagined, for they had previously proposed the purchase of the privilege on the River Charles at Waltham, but found its price too great for their capital, which perhaps did not exceed $10,000. The Waltham site, very soon after, fell into the hands of Lowell, Jackson and Appleton, the "Boston Manufacturing Company," who built the first practical power-looms in America. The Prescott water-power suited well the plans and the bank account of the prospectors, and they bought it, together with certain buildings and lands, for $1,300. They also procured from the town promise of partial exemption from taxation for several years, in consideration of their improvements. The time for such venture was propitious. If a village belle in those days needed a fine calico or gingham frock she bought seven or eight yards at the squire's store, paying fifty or sixty cents a yard for an importation from France or England. The embargo and war with Great Britain served all the purposes of a high protective tariff in favor of the infant industry. Common cotton shirting, which at the date of building the factory cost thirty to forty cents per yard, before the close of hostilities commanded nearly double that price. But when peace returned, foreign goods speedily flooded the markets and the cotton manufacturers of New England were only saved from total ruin by protective measures tardily enacted by Congress.

The Poignaud and Plant spinning mill, a three-storied brick structure, fifty-seven feet long by thirty-eight and one-half feet wide, became the theatre of busy industry just before the war of 1812 opened. Its yarns were made, from fibre to the finished thread, by water-driven machinery. It was financially a success from the outset. Possibly the same can be affirmed of one or two cotton factories in

this Commonwealth, the activities of which date a year or two earlier. The mill at Waltham did not go into operation until 1814. The old Poignaud and Plant mill has passed through many vicissitudes during its life of ninety years. It is dwarfed by sundry modern additions. Steam has superseded the power of South Meadow Brook. But the building remains a humming hive of cotton spinners. In 1812 the spinners were generally girls from the families of the towns around. They lived at the boarding-house opened by the firm, paying $1.08 to $1.16 a week for board including washing, and they received from $2.33 to $2.75 per week for their services. Children were employed, some even as young as eight or ten years, and the wheels ran daily twelve hours, for six days in the week. Every two or three weeks a four-horse team carried the finished bales of cloth to Boston and brought back cotton bales and various supplies for the mill and the company's store. The trip of thirty-five miles and back devoured three days' time. The first invoice of cotton was two bales of New Orleans fibre, six hundred and sixty pounds, costing thirteen cents per pound in Boston. This was about half the price then paid by the Lancashire spinners. Later invoices were paid for at ten cents per pound, but in 1814, twenty-seven cents was paid for Georgia upland cotton.

The personal history of the founders of the Lancaster Cotton Factory was not without romantic episodes. When Louis XIV., under Jesuitical domination, drove from France by bloody persecution more than a million of his protestant subjects, to find refuge in other lands, including many thousands of the most cunning artisans in his empire; the ancestors of David Poignaud were among the Huguenot exiles who found an asylum in England. He was the youngest son of Louis Poignaud of Poitiers and Mary Magdalen Roselle, born in the Island of Jersey, January 12, 1759. A family record tells that Madame Roselle, presumably the mother of Mary, a refined and beautiful

lady, was driven from her estates by the dragonades of Louis XIV., and escaped to the Island of Jersey from San Malo, in an open boat, disguised as a fisherman's wife. David first came to Boston in 1783, seeking for an opening in trade. He had learned the art of a cabinetmaker, and had acquired in London some knowledge of mercantile business. Pleased with what he saw in the young republic, he returned to England for his *fiancée*, a Huguenot girl, Delicéa Amiraux, was married, and came back to America to build a home. He practised his trade awhile in Roxbury, and beautiful examples of his handiwork are extant. He also, in partnership with a fellow exile, John Bazin, set up a hardware store at number sixteen Cornhill,[1] in Boston. Bazin and Poignaud's advertisements in the *Massachusetts Centinel* for 1789, include with their general assortment of hardware, "Excellent French Brandy." Poignaud was the capitalist of the Lancaster firm, and president of the subsequent corporation. His son-in-law, Samuel Plant, was born in Maresfield, England, in 1777, and came to the United States when but nineteen years of age, as factor for the Leeds Woollen Manufactory, of which his uncle, Samuel Hague, was a proprietor. About nine months before his appearance in Lancaster he had revisited England, sailing from Boston, October 26, and reaching London, November 26, 1808. Having closed his engagement with his uncle, he turned his attention to gaining a thorough acquaintance with the latest improvements in the management of the Lancashire cotton mills, with the secret intent to build a spinning factory in Massachusetts. The British manufacturers, with a jealous secretiveness which continues to characterize their class, then rigidly guarded their doors against all students of their methods, and for years had foiled attempts to smuggle models or working drawings of their novel devices out of

[1] Now on the present Washington street.

Great Britain. It has been claimed that Mr. Plant was more successful than others in securing sketches and patterns of important mechanism, but no evidence of this is found among his papers. He kept notes of his observations in cipher, duplicates of which he forwarded, with tables and columns of figures, in letters to Mr. Poignaud in Roxbury, but he possessed unusual mechanical skill and a remarkable memory for details. He was the business manager of the Lancaster firm and a methodical, resolute and strenuous one he proved. Both he and his father-in-law, though not university bred, were scholarly men, and possessed the largest library in the town.

The partners were fortunate in securing the services of Capt. Thomas W. Lyon, an ingenious mechanic, gifted with rare inventive faculty; and all the machinery for the new mill was built by him upon the premises, under Plant's supervision. The castings had to be brought from South Boston, there being no competent foundry nearer. Both Plant and Lyon introduced from time to time improvements upon the English designs—notably the double-beater picker, and circular spindle boxes,—but the whole system at first was practically a copy of that used in Lancashire. At that date and for many years after, the spinning of cotton in England was always conducted in a separate establishment from the weaving, and although the Cartwright power-loom was invented more than twenty years before, it had been but little used, and its economic success but recently assured. The Lancaster firm contemplated the employment of the hand-looms in the surrounding region for converting its yarns into cloth. In 1811, Francis C. Lowell, following Mr. Plant's example, studied in England the new features of cotton manufacture, and his report upon them resulted in the building of the factory at Waltham, which was completed in 1814, and began the making of cloth late in 1815; turning out over 1,200 yards before February, 1816. This was woven upon

power-looms built by the company, Paul Moody being the master-mechanic. These looms were the first successfully run by water in America, and were not tame duplicates of English patterns. Poignaud and Plant's spinning frames were in successful operation three years before those built by Lowell, Jackson and Appleton at Waltham, but the Lancaster cloths for the first three years were all hand-woven.

The "Weavers' Book" records the fact that thirty looms were employed in 1812, located in at least twelve towns; and over fifty weavers, in 1813, furnished from one to a dozen webs of cloth each. While the chief product was shirting, they turned out to order ginghams of various patterns, chambray, sheeting, stripes, checks, nankeen, tickings, twill and blanketing with cotton warp and wool filling. The first entry in the book is the account of Ivory Wilds, who was the business elder of the Shirley Shaker Community, charging him on May 29, 1812, with ten lbs. of number "16 Warp and Filling" and crediting him on June 17, with thirty-seven yards of seven-eighths yard wide shirting returned. For weaving this he was paid twelve cents per yard, the value of the finished cloth being set down as thirty-nine cents per yard. (At the Baltimore factory about this date, record is found that weavers working thirteen hours made three or four yards of cloth from number fourteen yarn, and were paid fifteen cents per yard.) On the debit side of each weaver's account, after the quality of yarn and the quantity delivered, is also set down the kind, width and fineness of cloth ordered woven. The width is sometimes expressed in the popular terms of measurement, but often in the technical term, "biers," and the technical word "sley" is always used to denote the fineness of the weave. Thus Matilda Lyon is charged with one hundred and fifty-six skeins number twenty-six warp and one hundred and sixty skeins filling for "Shirting 54 Beers, Slay 60," meaning to require a warping of two

thousand one hundred and sixty threads (the bier being forty threads), and a weft, using a reed of sixty dents to the inch. For such fine cloth she was paid seventeen cents per yard. In the "Weavers' Book," a few samples of the ginghams produced by local weavers in 1812, are attached to accounts of the artisans who wove the goods.[1]

On February 13, 1814, there occurred a notable wedding in the factory village. The bride was Louisa Elizabeth, a winsome daughter of David Poignaud. The groom was Colonel Thomas Aspinwall, the gallant soldier who lost an arm in the battle at Fort Erie and was subsequently, for thirty-eight years, United States Consul at London. The bride's wedding garments were all fashioned of fabrics from the factory.

But for the prudent conservatism of the manager and the limited means available, there is little doubt that this Worcester County firm would have anticipated that of Waltham in adventuring upon a trial of the power-loom. The proposition was not one unfamiliar in its councils. Among the local weavers was Samuel Rugg of Lancaster, an ingenious mechanic of strong common sense. Of home-keeping habits, he was a reader of books, could quote from the poets, but it is doubtful if he had ever heard of the Reverend Edmund Cartwright or his loom, in 1809. He died in 1850, firm in the belief that he was the first man in America to create and use a loom adapted to weaving by water-power. The "Weavers' Book" of the firm records the first web delivered by him to the factory as "striped cambray," in March, 1813. As a town

[1] The regular prices for weaving plain cloth three-fourths yard wide was at this date, in Massachusetts, as follows:

Nos. 10 to 13	yarn,	8	cents per yard.
14 to 15	"	9	do.
16 to 17	"	11	do.
18 to 19	"	12	do.
20 to 22	"	14	do.
23 to 26	"	16	do.
27 to 30	"	18	do.

For checks and plaids one cent extra per yard was allowed.

meeting orator, Rugg was always entertaining, though digressive and egotistic; for he did his own thinking, and expressed his thoughts in quaint language. One of his speeches, which I heard in 1848, was in opposition to the establishment of a central high school, and it was effective in defeating the scheme. It was faithfully reported in a local paper at the time and I cull the following paragraph from it: "It has been a question in my mind whether I invented a blessing or a curse to the country, when I set up the power-loom, and wove 50 yards of good shirting cloth from yarn spun in Clintonville. It was done by turning a crank as it was calculated to go by water. This was about 39 years ago. That loom has become the mother of villages and one entire city: and is in exercise for giving laws for Lancaster and the country. If I had the money which I might have made by that invention I would give money to every town in the state to educate their children in the outside districts . . ." Rugg was a poor man, procrastinating in business matters, and although a little mill stood upon the brook running through his farm, he did not harness its force to his loom. He had rivals who made similar claims to his, and some of them patented their ideas. Ichabod Washburn, in his "Autobiography" [page 24], tells of his being engaged with a Mr. Sugden, an Englishman, at Kingston, R. I., in the winter of 1813, "in running a power-loom, so crude and primitive that all the cog wheels were made of wood," which he supposes "probably the first power loom ever made in this country." Thomas R. Williams of South Kingston, R. I., patented a power-loom in 1813; but when put to use in 1814, it could only weave narrow webbing. The Gilmour power-loom was the first that proved a practical rival to the Waltham loom, and its inventor did not reach America until 1817. His loom was a formidable competitor only because its cost was but seventy-five dollars, while the early Waltham machines cost double that price.

The voluminous Poignaud and Plant papers fail to give any evidence tending to show that Rugg's loom or that of any rival inventor won serious attention from the firm before 1816. Nor is there found any hint that their machinist, Lyon, was at any time engaged in constructing a loom upon the Cartwright or any other design, although frequent record exists of his contracting to build spinning-frames, pickers, breakers, calendering machines, *etc.* But there is more positive proof of the very conservative character of the managers. Under date of November 13, 1814, David Greenough, then a junior partner and selling agent of the company, wrote from Boston: "I have seen a loom which I have no doubt will go by water. The person who invented the loom is desirous of making a trial by water and I will engage a Right very low. As I am not a judge of Machinery, perhaps it might be well if Mr. Plant could come here." To this, on November 21, the reply was sent: ". . . . With regard to the Loom you mention, it would be attended with serious inconvenience for Plant to leave Lancaster at present. As our means for extending our works are limited, we must make the most of the Frames we have in motion. . . . So that altogether we think we have enough upon our hands at present without taking hold of new machinery; besides most if not all of the attempts to make Looms go by water in this country have failed, and we think with such limited means as we possess it will not be prudent to embark in an undertaking of that kind until we have undoubted evidence that there can be no doubt of its practicability."

Little more than a year passed when we find Mr. Plant ordering four looms, for trial, of Patrick T. Jackson, the Waltham manager; and Jackson sent notice, October 2, 1816, that "The 4 looms will be ready in four weeks." In December, 1816, eight more looms were ordered from Waltham, and David Greenough writes that he has con-

tracted for them at $105 each. At about the same date Seth Bemis, a prosperous manufacturer of duck, introduced power-looms into his factory in Watertown. From 1803 he had been spinning Sea Island cotton yarns by water-power, and paying English weavers fourteen cents per yard for weaving sail-cloth, for which he received one dollar per yard. With the power-looms, the cost of weaving was reduced to one cent per yard. His use of the power-loom doubtless preceded the experimental trial of the four Waltham machines of Poignaud and Plant by a few weeks or months, and therefore the Watertown mill, it may justly be claimed, ranks next to that of Waltham as to priority in the utilization of water-power for weaving, in America. But, so far as any records are discovered, the power-looms of Poignaud and Plant were the first successfully operated in Worcester County.