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COTTON MANUFACTURING

IN

RHODE ISLAND



1788-1911

The story of cotton manufacture as written in the annals of Rhode Island includes much that is pertinent to the cotton history of the world. It was, moreover, written within a comparatively short period. It is punctuated here and there with failures to make successes of mechanical devices, but these setbacks served only to spur the experimenters and inventors to further efforts, which were eventually productive of enduring successes.

Much that was achieved in the beginning of the experimental work was due to the personal interest taken by Moses Brown, who had an abiding faith in mechanical manipulation of cotton. Through his efforts Rhode Island achieved the proud distinction of having the first cotton mill operated in America, and of establishing the factory system under which immense textile industries have been builded; billions of dollars have been made and steady employment given to vast numbers of wage-workers.



BRINGING THE COTTON TO MARKET.

Whatever is said or written of the cotton industry of America must revert to Pawtucket and reflect upon Providence with no little credit. Born under trying circumstances; nurtured through many vexatious ills and trials, the infant industry of America drew its first breath at Pawtucket and received substantial succor in Providence as it waxed stronger.

Pawtucket might have been greater as a manufacturing center than it now is had not some of its cotton pioneers looked upon the village of Troy in Tiverton, now the great city of Fall River, as a place possessing unusual facilities for cotton factoring. Rhode Island might have been more prominently to the fore as a cotton center had not there been in the early '60's an adjustment of the boundary dispute with Massachusetts. In settling that controversy Rhode Island ceded to Massachusetts that portion of Tiverton now constituting Fall River and took in exchange that portion of Pawtucket which lies east of the Seekonk and Blackstone Rivers. Troy, which had a population of about 300 when Pawtucket enterprise first favored that village, is today an immense cotton goods producing city, with scores of mills and millions of spindles. Pawtucket has, however, developed into a manufacturing center with diversified interests of great monetary values, so that in the end Rhode Island gained by the trade of territory. Pawtucket has under a healthful impetus been transformed from the "biggest town in America" to one of the busiest and most progressive of the younger cities of the world.

The early history of cotton manufacture must necessarily deal with the earnest work of the plodding, patient, never-tiring English and Scotch inventors who dreamed dreams and had visions which they worked into realities. Following these closely were the American inventors, chief among whom was Eli Whitney, who evolved the saw gin and made possible the enormous cotton crops of later years. His invention, with but few modifications, is the backbone of the cotton manufacture of today. Evolution has done but little to change the three essentials of the Whitney gin—the saws, ribs and brushes; these are retained in nearly all modifications intended to meet modern ideas and improve the quality and quantity of staple. No machine has yet been brought out excelling the saw gin in capacity. The McCarthy roller gin was developed as a means of preventing injury to cotton fibre due to the action of saws, but the limited capacity prevented the general introduction of that device.

Under the operations of the Whitney gin and other mechanical devices the cotton production of this country was increased from 5,000 bales in 1790 to 10,000,000 bales in 1890. The bumper crop was that of 1908-9—13,828,846 bales. Ten years after Whitney invented the saw gin, cotton exports aggregated 36,000 bales or 18,000,000 pounds. Since then the exports have grown to enormous proportions.

In presenting the following narrative of cotton manufacture reference is first made to the more prominent European and American inventors and inventions; after that, and chronologically, is given the development of home inventions and the establishing of cotton mills in Rhode Island:

1733-

1738.

1767.

1769.

1771.

1773.

1775.

1779.

1775-87.

1786.

1786.

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THE EARLY INVENTIONS.

1733. Flying shuttle invented by John Kay.
 1738. Roller spinner invented by John Wyatt. It was not a successful machine.
 1767. James Hargreaves produced the spinning jenny, a development of the spinning wheel. It had eight and later eighty spindles.
 1769. Richard Arkwright invented spinning by rollers, producing the first automatic spinning machine, his mill being run by horsepower.
 1771. At Cramford, England, the first cotton mill was operated by water power.
 1773. The first calico made in England, wholly of cotton, was produced by Richard Arkwright, Jedediah Strutt and S. Need.
 1775. Christopher Tully set up at Philadelphia the first spinning jenny in America after a model of Hargreaves'.
 1779. Mule jenny brought out by Samuel Crompton; a combination of Arkwright's spinning frame and Hargreaves' jenny.
 1775-87. Rev. Edmund Cartwright produced a power loom for plain and checked weaving.
 1786. Robert and Alexander Barr at Bridgewater, Mass., built a spinning jenny, stock card and roping machine after Hargreaves' models.
 1786. Thomas Somers constructed an imperfect form of Hargreaves' water frame.
 1787. A cotton factory was operated at Beverly, Mass.
 1790. Arkwright began the use of a James Watts steam engine, the first applied to cotton manufacture.
 1792. William Kelley improved the mule jenny.
 1793. Eli Whitney of Massachusetts invented the cotton gin.
 1803. Thomas Johnson invented the dressing machine.
 1803. H. Horrocks improved the power loom.
 1824. Richard Roberts invented the self-acting mule, which he improved in 1830.

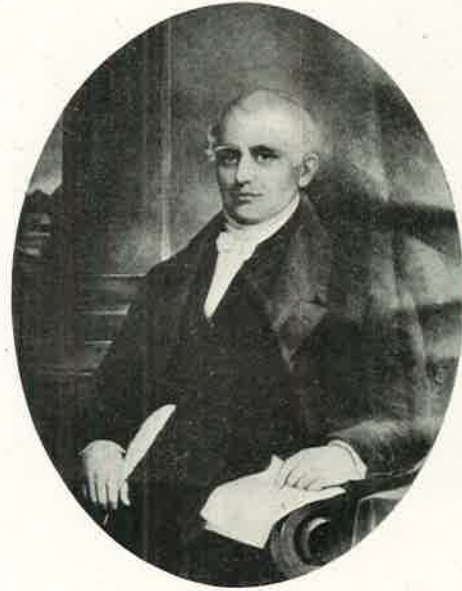
IN RHODE ISLAND.

Cotton manufacture by machinery began in Rhode Island and at Providence, in 1788, when Daniel Anthony, Andrew Dexter and Lewis Peck, after Somers' models, set up a jenny with 28 spindles, a carding machine and a spinning frame of 32 spindles. The jenny was constructed in Providence in 1787 and it was the first made in the United States. This undertaking was not a success and the machines were sold to Moses Brown. The latter also purchased a spinning machine that had recently been set up at East Greenwich. John Fuller of East Greenwich sold to Moses Brown the loom he had set up in that village and which he found was unprofitable.

Moses Brown turned these machines over to his son-in-law, William Almy, and to Smith Brown, who removed them to Pawtucket, where was later to be established the first complete and successful cotton mill in America. June 11, 1789, Almy and Brown began operating by water power. In the first six months they produced 189 pieces of cotton and linen, and in 1790 they made 326 pieces or 7,823 yards of fabrics. All the weaving and most of the spinning, however, was done in the homes of the operatives; spinning by machinery was found too expensive and it was therefore declared a failure.

At this juncture there appeared in the textile world a brilliant genius who was destined to make history at Pawtucket. Samuel Slater, born at Belper, Derbyshire, England, June 9, 1768, had in 1789 completed a six years' apprenticeship under Jedediah Strutt, who was associated with Richard Arkwright in the manufacture of machinery. The indenture set forth that young Slater was to perfect himself in the art of cotton spinning. He was so apt a pupil and gave so much attention

to details that latterly he was given general oversight of the machine shop and the manufacturing department. It was by reason of his close observations that he succeeded in reproducing here and from memory the Arkwright machinery and in laying the foundation of the present magnificent textile business of Rhode Island. Slater sailed for New York, Sept.



SAMUEL SLATER.

13, 1789. On Dec. 2 he wrote to Moses Brown to the effect that he could construct the Arkwright machinery, no models of plans of which were permitted to be taken out of England. Mr. Brown invited Slater to come to Providence, and on Jan. 18, 1790, the two went to Almy & Brown's shop in Pawtucket, where Slater agreed to construct from memory machinery after the Arkwright models. He was to be paid \$1.00 per day and to have the assistance of Sylvanus Brown. By chalk drawings made on boards he outlined the machinery and on these crude lines it was built. Dec. 20, 1792, the devices, consisting of three cards, drawing and roving machines, two spinning frames of 24 and 48 spindles, were started up and worked well. They were set up in a mill at the southwest abutment of the Pawtucket bridge, which had formerly been a fulling mill and had been purchased by Moses Brown; the motive power was derived from a water wheel. After a period of successful operation this mill was destroyed by a freshet on Feb. 15, 1807. It was here, and by Samuel Slater, that the first entire cotton mill in America equipped with Arkwright machinery was



OLD SLATER MILL PAWTUCKET, R. I.

operated. Here, also, Slater established the cotton factory system. He had but nine assistants, and most of these were children. Slater in 1794 made the first cotton sewing thread produced in the world. In 1798 with Oziel Wilkinson,



GATHERING THE CROP.

Timothy Greene and William Wilkinson he established the firm of Samuel Slater & Co., which erected a mill on the east side of the Pawtucket River, the machinery of which was started up in 1801. This was the first spinning mill on Massachusetts (as the dividing State line was then run) in which Arkwright machinery was successfully operated. Slater, as superintendent of both mills, received the aggregate and munificent remuneration of \$3.00 per day. He sold his interest in the new mill in 1810. The mill was burned in 1824 and was rebuilt by Timothy Greene & Son that same year.

John Slater, brother of Samuel, came to America in 1803. He had a thorough knowledge of the Crompton spinning mule, and in 1805 he and Samuel were associated with Almy & Brown. In 1806 a mill was built on the Blackstone River at a point now designated as Slatersville. In 1807 it was placed in operation, and soon after Samuel Slater bought out his partners. In 1811 Bela Tiffany was associated with Slater in operating a mill which had been built at Oxford, now Webster, Mass. This property was subsequently bought by Samuel Slater & Sons.

Turning his face southerly, Slater now came to Providence, where in 1827 he with others built the "Steam Mill," so-called, and for many years so designated, on Eddy, near Ship street. It was operated by steam, the first of its kind in Rhode Island and one of the first in America. It then had the wonderful equipment of 8,000 spindles. Samuel Slater died at Webster, Mass., April 21, 1835. He was 67 years old.

To the earnest efforts of Moses Brown for the promotion of the cotton industry is due the successes which Rhode Island manufacturers have achieved. Born Sept. 23, 1738, he became when 25 years old a partner in the commercial firm of Nicholas Brown & Co., forerunner of the house of Brown & Ives. After the War of the Revolution he fostered manufacturing; his numerous purchases of experimental machinery were made to encourage textile mechanics. It was that same generous, public spirit which led him to bring Samuel Slater to Rhode Island. He died Sept. 6, 1836. Obadiah, his son, was of the firm of Almy, Brown & Slater, in whose mill at Pawtucket Slater set up his Arkwright models. In 1804 Brown & Ives had a controlling interest in a mill at Blackstone, but in 1827 a mill was started at Lonsdale out of which business grew the

Lonsdale Company and the development of the great cotton manufacturing business of Brown & Ives and the successors in that company along the Blackstone River.

Aside from the cotton history of Rhode Island, written in connection with Samuel Slater's great career, there is much of interest. As early as 1790 Herman Vandensen, a German, was printing calico at East Greenwich by the tedious block process. The cloth he used was imported from India, where natives wove it on hand looms. In 1794 William Potter, John Allen and Job Greene built a mill at Centreville in Warwick. The Coventry Company erected a mill at Anthony in 1806. John Gideon Greene built a factory at Centreville in 1807, which was sold to Benedict Lapham in 1852. Another was erected the same year at Robbin's Hollow, Cumberland, on Abbott's Run, by Elisha Waterman and Benjamin S. Walcott. It was burned in 1830. Also in 1807 the Providence Manufacturing Company built a mill above Centreville. This company failed in 1816, and subsequently Seth Wheaton, Edward Carrington and Benjamin Cozzens took it over and formed the Crompton Company. In 1807 William Potter and his associates built a 400-spindle mill at Natick. About this time Christopher and William Rhodes had a cotton and woolen mill at Bellefonte, and there wove the first broadcloth made in America. In 1808 William Sprague began spinning at Cranston, where in 1824 he started bleaching and the printing and dyeing of calicoes. Sprague with Christopher and William Rhodes built a mill at Natick in 1825. He built two mills at Quidnick in 1849 and one at Arctic in 1852, in which latter year William and Amasa Sprague acquired all these properties.

In 1808 Thomas Fletcher, an English cotton weaver, came to Providence, and with his three sons wove lamp wicks, tapes, webbing and fringes. He died in 1824. His sons continued the business as a partnership under the name of Fletcher Brothers, and in 1840 located on the Moshassuck River, where the Fletcher Manufacturing Company's plant now is.

In 1809 Gen. Christopher Lippitt, Charles Lippitt and others organized the Lippitt Manufacturing Company, and in 1810 erected a mill at Lippitt, on the Pawtuxet River. Also in 1809 a small mill was erected at Coventry Center by Lowry Arnold; and one was built at Arkwright by James De Wolf and others.

The Roger Williams Mill was built at Phenix by Daniel Baker and his associates in 1810. It was burned in 1821, rebuilt by Timothy and Samuel Greene and Benjamin Harris in 1822, who formed the Phenix Company, and it was then bought by the Hope Company (Brown & Ives). The Social Mill was built at Woonsocket in 1811 by Abner Ballou and others, who erected a second mill in 1827. These were sold to Dexter Ballou in 1841. The Merino Mill with 1,500 spindles was built by Henry P. Franklin and John Waterman at Olneyville in 1812. That same year the Greene Manufacturing Company built at Riverpoint. Dr. Stephen Harris, one of the company, acquired the property in 1817. Also in 1812 the Washington Manufacturing Company built a substantial mill at Washington, which was burned in 1825 and soon after rebuilt. Phillip Allen also built at Allenville in 1812.

The Fiskes built at Fiskeville in 1812, and Charles Jackson erected a mill at Jackson that year. The Washington Manufacturing Company built a 1,500 spindle mill in 1812, which was burned in 1825 and immediately rebuilt.



Dr. WILLIAM GROSVENOR,
of the Grosvenor-Dale Company.

The Grosvenor-Dale Company, a Rhode Island corporation, had its origin in a small factory of 1,600 spindles, built on French River, Connecticut, by John and James B. Mason in 1812. From this Dr. William Grosvenor built up a large business.

Samuel G. Allen, Samuel Nightingale and Thomas Thompson, associated as the Georgia Cotton Manufacturing Company, erected in 1813 a mill at Georgiaville.

The Patent Calender Company, now the Providence Dyeing, Bleaching and Calendering Works, started business in 1814. The investors were among the leading men of the State, including members of the Mason, Hoppin and Dyer families.

William Gilmour, a Scotchman, familiar with the Cartwright loom, came here in 1814 with patterns of loom and dresser. He joined John Slater at Slatersville and later went to Daniel Lyman at Lymansville, where a factory had been built. Here he set in operation, in 1817, twelve looms which he had constructed. He and David Wilkinson made looms for several Rhode Island and Massachusetts cotton factors.

Dexter Ballou built at Ashton in 1817. Elisha and John C. Harris constructed a mill at Harrisville in 1822, which later became the property of the Harris Manufacturing Company.

Zechariah Allen began manufacture at Allendale in 1822. In 1824 Zechariah Allen and others incorporated the Woonasquacket River Company to build large reservoirs at Georgiaville. Thomas Arnold and others as the Globe Manufacturing Company built at Woonsocket in 1827. In the '60's this mill was sold to the Social Manufacturing Company.

Thomas Brown and others organized the Scituate Manufacturing Company at North Scituate in 1826, and later he was interested in the Ashland Company, which had a mill at North Scituate.



JAMES Y. SMITH,
of the firm of A. D. & J. Y. Smith.

Amos D. Smith and Charles H. Franklin operated a mill at Johnston in 1828. The firm of A. D. & J. Y. Smith was formed in 1843, and in 1850 the Union and Merino Mills were consolidated with the original one.

In 1828 John Thorp of Providence invented the ring and traveller, or the ring frame. This was later perfected by William Mason of Taunton. In 1828 Simon H. Greene and Edward Pike began bleaching at Lippitt. Subsequently this plant became known as the Clyde Print Works.

Elisha Dyer began manufacturing at Dyerville, North Providence, in 1835.

The printing business of Rhode Island received a big impulse in 1836, when Philip Allen began operations at Providence, and Crawford Allen at Pawtucket.

William C. Davol set up at Fall River in 1840 (then a part of Rhode Island) the first self-acting mule in America. This machine was purchased in England. Owing to restrictions on shipping textile mechanisms out of that country, the delivery had been delayed for two years. The mule was smuggled here via Havre, but it was necessary to resort to the expediency of cutting the machine into small pieces and shipping each part in a separate box as hardware. Mr. Davol successfully put this puzzle together after considerable trouble.

Fall River, now a great cotton manufacturing center, set off to Massachusetts in 1862, felt its first impulse in textiles in 1813. It was then a village in the town of Tiverton of 300 inhabitants and was called Troy. The pioneers were David Anthony, Dexter Wheeler and Abraham Bowen, who had acquired a knowledge of the cotton business in the Slater mill at Pawtucket. They formed the Fall River Manufacturing Company. At the same time Oliver Chace established the Troy Manufacturing Company. Chace in 1839 established his sons, Harvey and Samuel B., in the cotton business at Valley Falls. From this line came the Chace Mills at Valley Falls and Albion.

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The Fall River Company's mill was 40 by 80 feet and three stories high, and was equipped with 1,500 spindles. The Bordens, Buffintons and Durfees were identified with Oliver Chace, Nathaniel Wheeler and Eben Slade in the erection of the Troy Cotton and Woolen Manufactory in 1814. The mill was 108 by 37 feet, four stories high and had 2,000 spindles. The capitalization was \$66,000. Here the power loom was introduced in 1820. The Pocasset Manufacturing Company and the Fall River Iron Works were developed in 1821, both becoming potent factors in the cotton business of that place. The Massasoit Mill was built in 1826 and the Wetuppa Mill in 1827. Holder Borden now became a central figure in Fall River's textile history. Andrew Robeson of New Bedford had in 1826 set up in one part of the Fall River Iron Works' Satinet Mill a cloth printing machine, one of the first in this country. In 1827 he erected special buildings for his work, his two sons being associated with him. The panic of 1848 caused the firm to fail, and the business was reorganized as the Fall River Print Works. The plant was taken over by the American Printing Company in 1858, and was sold soon after to the Globe Yarn Mills and used for spinning. Holder Borden organized the American Print Works in 1835. He died two years later.

The American Linen Company started to make linen fabrics directly after its incorporation in 1852, but its plant was con-



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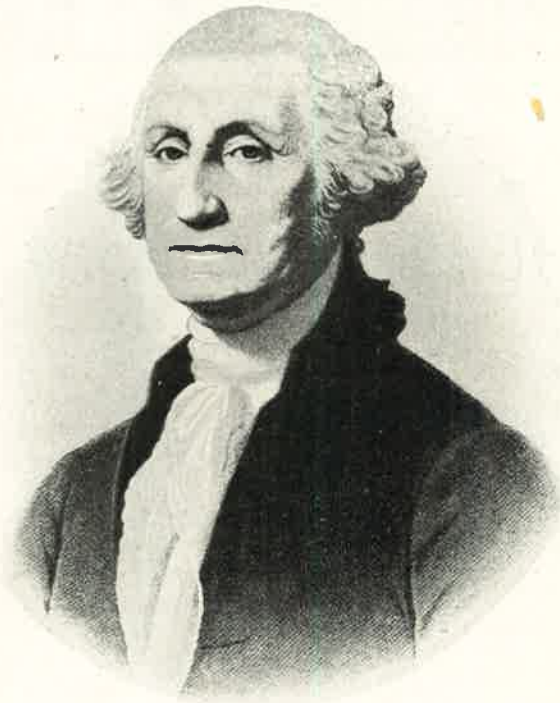
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verted into a cotton print works in 1858. No other important building or changes were made until after 1862, when the Massachusetts and Rhode Island boundary line dispute was adjusted, and Rhode Island ceased to have any interest in Fall River, save that it rejoiced in the constantly increasing manufacture and consequent prosperity of the people of that Spindle City.

A digression from the chronological order takes one back to 1820, when Henry Arnold erected a mill at Pontiac. This was purchased by Rice A. Brown, Jonathan Knowles and Samuel Fessenden in 1827. The concern failed in 1829, not having succeeded in making its 1,000 spindles pay. The plant was



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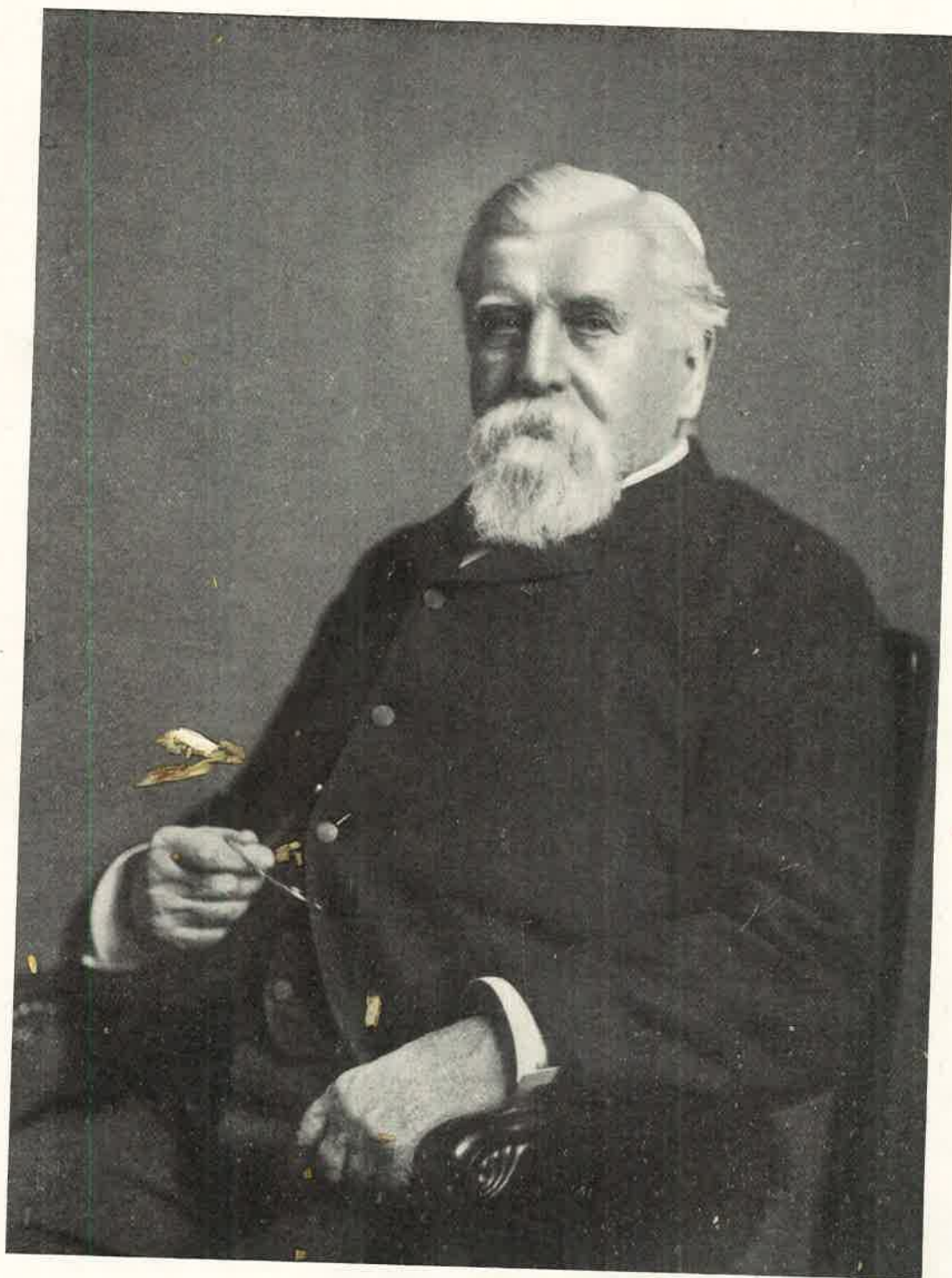
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ROBERT KNIGHT OF B. B. & R. KNIGHT.

purchased in 1830 by John H. Clark, who in 1834 started in bleaching. He later leased the mill to Zechariah Parker and Robert Knight, who bought the property in 1850. In the following year Mr. Knight bought his partner's interest and then sold a half interest to Benjamin B. Knight. B. B. & R. Knight in 1853 purchased a mill at Hebronville and in 1854 acquired one at Dodgeville; in 1871 the Grant Mill, Providence; 1872, the Manchaug (Mass.) Mill; 1874, the White Rock (Westerly) Mill; 1876, the Clinton (Woonsocket) Mill; 1877, the Fiskeville Mill, and the Natick, Arctic and Riverpoint mills when the Sprague properties were disposed of by Trustee Chafee.

Thomas J. Hill was another familiar figure in connection with Rhode Island cotton manufacture. He was born in Pawtucket in 1805 and learned his trade of Pitcher & Gay, builders of cotton machinery. He was made foreman of the machine shop at the "Steam Mill" in Providence, and in 1834 was a partner of Samuel Slater, as the Providence Machine Company. The latter is just going out of business, its plant having been sold and its available machinery shipped to Whitinsville, Mass. Mr. Hill built the Elizabeth Mill at Hillsgrove in 1875.