

The Engineer as Promoter: Charles Tillinghast James and the Gospel of Steam Cotton Mills

ECONOMIC HISTORIANS, in their analyses of American economic growth, devote considerable attention to the crucial role of railroads, population growth, technology, fuel supply, cotton exports, the transportation revolution, and a wide variety of cultural factors. Business historians dutifully hasten to add the role of entrepreneur to the litany. This potpourri of explanations has generally provided sufficient breadth to satisfy most practitioners of the art. Of late, however, there has been an increasing appreciation shown for the man with technical skill, vision, and energy who was far more than an engineer. This paper will explore the early career of Charles Tillinghast James, an engineer and promoter during the ante-bellum period who contributed mightily to the economic growth of a number of towns. Particular attention will be paid to his efforts in Newburyport, Massachusetts, and Lancaster, Pennsylvania.

Charles Tillinghast James was born in 1805 in West Greenwich, Rhode Island, to Silas and Phebe Tillinghast James whose ancestors had settled in Rhode Island as early as the 1640s. Silas was a respected farmer and local judge. Phebe was a Tillinghast and thus gave Charles James one of the most distinguished names in New England, no small asset to someone who later spent several years travelling and preaching an alien gospel. As a young person James spent a limited amount of time

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in school, preferring practical mechanics with particular emphasis on textile machinery.¹ This interest led James to the Slater steam cotton mills in Providence in the late 1820s where he refined his engineering skills and earned the position of superintendent.

James, like many other engineers in his day, mastered his profession apart from the leading engineering schools such as West Point, Rensselaer, and the New York canal system. He believed:

the difference between the mechanic of the school and the mechanic of the workshop is this—The former speculates on mechanical principles . . . , but makes no advance in discovery, and knows nothing of the practice. . . . The practical mechanic makes deductions from one operation which give the clue to further discoveries. His first essay is an invention.²

As Daniel Calhoun in *The American Civil Engineer* has noted, any school training engineers in the 1820s and 1830s was competing against a tradition of practical and nonacademic approaches to the profession. An apprenticeship seemed as acceptable in engineering as it was in so many other occupations.³

In addition to acquiring and honing engineering skills at Slater's, James became an ardent believer in steam-driven cotton mills.⁴ He was persuaded that,

Machinery can be driven by steam with a more equable and uniform motion than by water. The cloth, therefore, is of a more uniform texture. By the use of steam . . . the humidity and temperature of the atmosphere in the mill can be regulated, as to give to the goods a more smooth and even surface, and a more beautiful finish.⁵

These superior goods would bring higher prices on the market and thus steam power would be more economical though admittedly the cost of steam would vary with the cost of anthracite.⁶ James was in no way

¹Harold Underwood Faulkner, "Charles Tillinghast James," *Dictionary of American Biography*, Vol. 9 (New York: Scribner's, 1932), 572-573.

²Charles T. James, "Mechanical Science - The Steam Engine," *American Railroad Journal*, May 19, 1849, 312.

³Daniel Calhoun, *The American Civil Engineer* (Cambridge, 1960), 47.

⁴While the basic issue here involves the substitution of one form of power for another, steam could be put to other uses such as heating a mill or drying yarn.

⁵Charles T. James, "Production and Manufacture of Cotton," *Hunts' Merchants' Magazine*, November, 1849, 500.

⁶*Ibid.*

intimidated by the general concern over boiler explosions. He addressed the issue directly in the *American Railroad Journal* by pointing out that steam engines of and by themselves are blameless. The real problem is human error: either machinists have been careless in building them, or engineers have been careless in operating them.⁷ This naïve argument, the 1849 version of "Guns don't kill people, people kill people," reveals something of how zealous this engineer was in promoting the newer technology. A contemporary described James as a man "full of power, and energy, and enterprise, who had. . . . been among steam engines till he was a perfect steam engine himself."⁸

Armed with these convictions James launched a vigorous and rather successful one man proselytizing campaign that gained national attention during the 1840s and 1850s. He travelled widely through New England, the Mid-Atlantic states, and portions of the Midwest and South lecturing, writing, and promoting the formation of companies to construct steam cotton mills. Rather than invade established New England cotton mill towns and argue the relative merits of steam and water power, James chose to concentrate on towns without mills, especially those experiencing some form of economic misfortune. In this setting mills were proposed as the solution to the town's problems. That is, steam cotton mills would prevent grass from growing in the streets, restore prosperity, double the population, enhance real estate values, etc.⁹ The building of a mill was always presented as a community venture, something the entire town was undertaking even though these enterprises were privately owned and controlled.

The first major practical application of "the gospel according to James" took place in Newburyport, Massachusetts, in the 1830s and 1840s. Here was an almost perfect laboratory setting involving a

⁷Charles T. James, "Explosion of Steam Boilers," *American Railroad Journal*, June 9, 1849, 361.

⁸William T. Davis, "Newburyport," in D. Hamilton Hurd, ed., *History of Essex County, Massachusetts, With Biography Sketches of Many of its Pioneers and Prominent Men* (Philadelphia, 1888), II. 1774.

⁹See *Hunts'*, 1849 through March, 1850.

population "whose commercial activities had been absorbed by Boston and who therefore welcomed the new outlet for their energies."¹⁰ Furthermore, the town was a port with a humid climate and depressed wage levels. James became involved with the promotion, design, and construction of five mills in Newburyport between 1834 and 1845.

NEWBURYPORT MILLS BUILT BY JAMES

<i>Mill</i>	<i>Built</i>	<i>Capital</i>	<i>Spindles</i>	<i>Looms</i>
Essex	1834	\$100,000	5,000*	n.a.
Bartlett	1837	350,000	18,080	391
James	1842	250,000	17,000	356
Globe	1845	320,000	13,392	384
Ocean	1845	<u>160,000</u>	<u>8,784</u>	208
		\$1,180,000	62,256	

*Note: According to J. L. Bishop the first Corliss engines to be offered to cotton mills were offered to the James Mill in 1855 and the Ocean Steam Mills in 1856. It is entirely possible that George H. Corliss made these selections because he was impressed with the efficiency of James-designed mills.¹¹

The impact of five substantial mills with 62,000 spindles and a few thousand employees on a town of 6,000 that had been in decline for a third of a century should be obvious;¹² nevertheless, the observations of a resident underscore the point:

a new impetus was given to the whole business of the town, which gradually began to change its outward appearance. . . . State Street . . . doffed its old exterior of small windows, carefully curtained . . . and in their place appeared large plate glass, granite fronts, and a liberal display of colors, in cheerful contrast to the old secretive style of doing business.

The addition of several hundred to the population in so short a time, tended to modify the exclusiveness of old established castes . . . Business was also revived. The 1,500 added to the population are all customers, and brought in

¹⁰Malcolm Keir, *Manufacturing* (New York, 1928), 160. Also, see George Rogers Taylor, *The Transportation Revolution* (New York, 1951), 8.

¹¹James Leander Bishop, *A History of American Manufactures from 1607-1860*, (Philadelphia: Young, 1868), II, 721.

¹²An attempt to measure the particular impact of cotton mills on a town's economy will be made later in the paper for Lancaster, Pennsylvania.

their train an increase of retail traders.¹³

This transformation of Newburyport was not the product of remote economic forces, nor was it inevitable. It came about, rather, as the result of the promotional efforts of a dynamic promoter, Charles T. James.¹⁴

From Newburyport the peripatetic engineer looked to other towns along the New England coast that had suffered from similar ailments and he was successful in promoting the construction of steam cotton mills during the 1840s in Portsmouth, New Hampshire; Newport and Bristol, Rhode Island; and Salem, Massachusetts. At the end of the decade even Amos Adams Lawrence, textile magnate, advocate of water power, and severe critic of James, was to some extent impressed with promoter's latest effort, the Naukeag Steam Cotton Company of Salem:

This has 24,000 spindles, and cost, with the appurtenances, \$680,000. This expenditure is very wide from the first estimate, and has consumed the whole capital, requiring a new subscription. The mill is a very fine one; and it has been in operation for two years, but has not paid simple interest on the investment . . . It is in the hands of able and wealthy men, who will bring out its full capacity.¹⁵

James, a prototype of the consulting engineer, directed promotional energies beyond New England to the Midwest and Mid-Atlantic regions, but seemed most concerned with converting the South. He was persuaded that the region had a great deal to gain through industrialization. James argued, as others did, that money spent shipping bales of cotton to the North should be redirected to cover the cost of introducing steam-powered mills, and that these enterprises would revive "many Southern towns and villages, now languishing

¹³E. Vale Smith, *History of Newburyport* (Newburyport, 1854), 228.

¹⁴The emotional climate created by James will be examined later in the paper.

¹⁵Amos Adams Lawrence, *Hunt's*, January, 1850, 30. In the March 1850 issue of *Hunt's*, James responded to Lawrence and noted that Naumkeag Mills had over 31,000 spindles and had really cost only \$564,716 to construct. This meant that the construction cost per spindle was really \$18.22 and not \$28.33 as Lawrence's figures would suggest. Furthermore, early construction cost estimates were exceeded only because the directors changed their minds and decided to build a much larger mill. On the subject of earnings James pointed out that for 1849 the return "above all costs and expenses" was almost 15%.

from the want of business."¹⁶ His persuasive rhetoric was invariably supported by hard data:

A first rate mill . . . would, in 18 months, return to the community an increase in wealth equal to its cost-wealth created by labor and skill. Suppose the members of a community invest \$250,000. . . . The product we have seen to be 4,500,000 yards of cloth in a year, worth \$315,000. The cotton required is 1,8000,000 lbs. Cost, \$108,000. Thus . . . having paid for the cotton and every contingent cost, \$197,000, as the result of labor alone, less the interest on the capital. You thereby add in one year, \$182,000 to the wealth of the place. This operation in five years would increase the capital of \$250,000 to \$1,235,000. ($197,000 \times 5 + 250,000 = 1,235,000$)¹⁷

What was missing in this analysis of lost opportunities in the cotton belt was an appreciation of the dominant southern viewpoint of the period, one that insisted in looking beyond the balance sheet in evaluating industrialization. Thus while the admonitions of James were applauded by southern nationalist J. D. B. DeBow and James was honored in *DeBow's Review*,¹⁸ many southerners maintained an anti-industrial bias based on the conviction that factories would drastically alter or destroy a more civilized and harmonious southern society. The apostle of steam mills countered by arguing that industrialization would uplift society and that, "Motives of philanthropy and humanity enter into the calculation."¹⁹ Mills would provide opportunities that would save the poor white man and thousands of boys and girls from lives of ignorance, poverty, vice, and crime. James warned that, "when a fitting opportunity presents itself to the wealthy men of the South to obviate those evils . . . they can hardly be held guiltless in case of refusal or neglect to apply the remedy."²⁰ There is, however, no reason to believe that southerners were intimidated by this warning. Finally, James contended that the industrialization of the cotton states would better integrate the South into the national economy and thereby ease the bitter sectional strife of the period. Yet to many in the South, James was little

¹⁶Charles T. James, *Hunt's*, November, 1849, 500.

¹⁷*Ibid.*, 500 - 501.

¹⁸"Gallery of Industry and Enterprise," J.D.B. *DeBow's Southern and Western Review*, December, 1850, 328.

¹⁹Charles T. James "The Culture of Cotton and the Cost of its manufacture," Addressed to cotton planters and capitalists of the South, printed privately, 1849, 43.

²⁰*DeBow's Review*, December, 1850, 672.

more than a voice heralding an industrial civilization they despised.

The immediate and tangible results in the South were meager. Though the promoter is credited with establishing a mill in Tennessee, Tennessee was as much western as southern during this period. *DeBow's Review* for September, 1850, mentions that James made a "highly liberal offer to subscribe for half the stock of a \$300,000 cotton mill" that would "insure at an early date the erection of a factory" in Charleston, South Carolina. This new mill with approximately 15,000 spindles would be highly desirable as the existing mill with only 3,000 spindles was simply too small to be efficient.²¹ The *U.S. Manufactures Census* for 1860, however, offers no evidence of a substantial cotton mill in Charleston, nor is there any mention in the manufacturing portion of a report on Charleston for the period 1865 through 1872.²² The citizens of Charleston failed to support the project and, thus, the only result was a small mill that failed by 1852. So James experienced frustration in the South, and yet his proselytizing efforts were not completely in vain as attitudes in the region, would one day change.

There is little evidence that the promoter spent much time or effort in the Midwest though he established the Camelton Cotton Manufactory in Camelton, Indiana, along the southern border of the state. James claimed to see great promise in Camelton: "In one year from this time...the passenger on the Ohio will be saluted with the hum of the spindle, and the clatter of the loom. Camelton will out — rival even Lowell itself."²³ To this he added:

if Camilton in thirty years does not outstrip the present Manchester of the United States, it will be because the people of the Ohio and the Mississippi had rather advance the interests of others than their own. A good cotton manufactory at this place will serve as a beacon light to the people of the South²⁴

The beacon erected by James did indeed shine brightly for the mill prospered, but Camelton never became a great manufacturing center as evidenced by the fact that its population of 2,500 in 1850 fell to 1,834

²¹*Ibid.*, September 1850, 328.

²²*The Trade and Commerce of the City of Charleston, South Carolina, 1865-1872* (Charleston, 1873).

²³Charles T. James, *Hunt's*, November, 1849, 501.

²⁴*Ibid.*

²⁵U.S. Bureau of the Census, *Compendium of the Eleventh Census*.

by 1880.²⁵

In the Mid — Atlantic region James enjoyed his greatest achievement outside of New England. While he constructed at least one mill in the state of New York and several in Pennsylvania (Reading, Lancaster, Harrisburg and Pittsburgh), his greatest success was realized in Lancaster, the focus of the remainder of this article. Lancaster in 1840 was a town of 8,400 residents, once known as the largest inland town in the nation, but by 1840 enjoying only very modest growth within fixed boundaries laid out in 1730. The town's hinterland was renowned for its agricultural boundaries as Lancaster County led the entire nation in dollar value of agricultural output. The hinterland was also part of several contiguous counties that constituted the nation's leading iron producing region. The economy of the town in 1840 was remarkably diverse as there were five substantial farmer's markets, stock yards, tobacco warehouses, department stores, machine shops and foundries, gun manufactories, boot and shoe makers, saddlers, carriage makers, printers and publishers, brewers, and brick manufacturers, ect.²⁶ Most of this manufacturing was small in scale though some of it was evolving in the direction of a factory system.²⁷ Still, there was nothing resembling the massive factories to be found in New England.

Given the impressive diversity of the town's economy, the excellent reputation of Lancaster craftsmen, the wealth of the hinterland, and the modest growth of the town's population over several decades,²⁸ it seems clear that the town was not in a position of economic distress. The establishment of a direct water route to the Susquehanna River and a rail connection to Philadelphia surely enhanced economic prospects. The depression of 1837 — 42 hurt but did not devastate the town. The Lancaster banking structure struggled but held together reasonably well; and, in fact, a new, bank was chartered in 1841. It is unfortunate that the manufactures' manuscript census for 1820 and 1840, and McLane's oft — cited report for 1832 shed no further light on the

²⁶See Carlton Wittlinger, "Early Manufacturing in Lancaster County, Pennsylvania, 1710-1840," Ph.D. dissertation, University of Pennsylvania, 1953.

²⁷*Ibid.*

²⁸Lancaster had a population of 5,405 in 1810, 6,633 in 1820, 7,704 in 1830, and 8,417 in 1840.

town's economy; nevertheless, it seems reasonably clear that Lancaster, was not Newburyport in the sense that it was about to be rescued from "the depths" of prolonged decline by the introduction of cotton mills.

When Charles Tillinghast James came to Lancaster in the spring of 1845 he spoke to a group of leading merchants on his favorite topic and created quite a stir, the greatest since 1838 when Lancastrians believed a national foundry was about to be built in their town.²⁹ Newspapers worked hard at perpetuating the enthusiasm generated by James, and defined support for the cotton mills as a civic duty:

Considerable stir has been caused...growing out of an attempt to introduce cotton factories....Over \$100,000 have been subscribed...A meeting of the stockholders was held...Manufactures are all that are wanted to make Lancaster one of the richest and most thriving inland cities...it is the duty of all citizens..to use every exertion to secure permanent success³⁰

Parenthetically, a gossip column in the same paper two weeks later considered the potential for female liberation with biting sarcasm:

Lancaster, like Lowell, may yet be able to boast of its mile of working girls! . . . What a revolution will be affected in our bedchamber, culinary, and washing affairs. Our young girls will have souls above making beds, filling wash-stand pitchers, cleaning wash stands, scrubbing floors, peeling taters, stewing slops, boiling weak and washy teas and coffee, roasting beef, basting fowls, or diving among pots and kettles. The broom, the scrubbing brush, the wash tub, and Hathaway's patent will be abandoned; and instead of being confined from morning to night to the roasting atmosphere of a kitchen—feet bare, face dirty, calico greasy—coaxed and scolded at the caprice of a capricious mistress—they will be wending their way to and from the factory in neat and tidy dresses, joy in their looks, with their peculiar airy, elastic, wiggle waggle movement which very young girls . . . indulge in when their hearts are light and happy. . . . Instead of being saluted with—"you Jane"—"you Susan"—"you Elizabeth"—"here it's six o'clock and the kettle not on the fire"—they will be able to see their own beaus in their own boarding houses, and will be invariably addressed as "Miss Jones," or whatever other name some admiring swain is wooingly striving to change. Our housekeepers now shudderingly dwell upon the dreary and vexatious prospect before them; and declare that the little cooks and the little chambermaids . . . have raised their tone and their demands in consequence of the probable speedy erection of the much talked of Cotton Factory of Lancaster!³¹

²⁹This grand prospect, of course, never materialized.

³⁰*Lancaster Democrat*, July 16, 1845, 2.

³¹*Ibid.*, July 30, 1845, 2.

The Lancaster *Examiner* and *Herald* played a supporting role by printing the favorable results of inquiries that Hartford, Connecticut, and Utica, New York, had made into the desirability of steam cotton mills.³² Indeed, James had succeeded in generating enthusiasm and excitement in Lancaster.

The Conestoga Steam Mills were formally organized in July of 1845 under the leadership of local entrepreneurs. The stock was held by 75 Lancastrians led by 21 merchants, 11 lawyers, and 9 bankers as well as the Lancaster Bank. James personally held stock valued at \$1,000.³³ The company was run by five managers: President John F. Steinman, David Longenecker, Christopher Hager, James Evans, and Edward Warren, the last being a Bostonian and resident representative of James in the enterprise. Beyond forming a company and raising capital to demonstrate the seriousness of their commitment, Lancaster's prospective mill owners followed Edward Warren on a tour of Lowell, Saco, and Newburyport to learn what they could about cotton mills before officially contracting for the services of James and proceeding to build. David Longenecker revealed the delegation's sense of insecurity by noting in the Minute Book how critical it would be for both Warren and James to meet the delegation in Newburyport in order "to explain to us."³⁴ The visit to New England took place in late July of 1845 and all were duly impressed. By August 2 James was offered "a contract for \$2,000 during the erection and completion of our intended mill,"³⁵ and, of course, he accepted. The services provided by the promoter-engineer were comprehensive:

every engine and boiler, all shafting and machinery, together with the building, foundations, and everything else connected with the mills, are designed and drawn in his office. A scientific adaptation of every machine to every other machine, causing the whole to work in unison, without excess or deficiency... produces a harmony and a perfect effect.³⁶

³²See the *Lancaster Examiner* and *Herald* for July and August 1845.

³³The names of the stockholders and the amounts of stock held are recorded in the *Journal of the Conestoga Steam Mills*.

³⁴*Minute Book of the Conestoga Steam Mills*, August 5, 1845. *The Journal* and the *Minute Book* are both in the Lancaster County Historical Society.

³⁵*Minute Book*, August 2, 1845.

³⁶*DeBow's Review*, December, 1850, 672.

This is precisely what the Lancaster entrepreneurs sought. The president of the Conestoga Steam Mills admonished James in a letter to make the factory plans "very plain as we may so readily understand as those more experienced."³⁷

The general enthusiasms created by the promoter paid rich dividends in negotiations with the town of Lancaster regarding water supply. It seems that one member of the town council was so impressed with the importance of the mills that he proposed providing water for \$75 a year in perpetuity. Some members of council winced at this proposal and a hearing on the matter was scheduled for the courthouse on a Friday evening in early August. The meeting was packed with spectators who heard a proposal to support the original contract with the exception that the \$75 per year rate would be guaranteed for thirty-five years. Thaddeus Stevens spoke in favor of the thirty-five year guarantee, spectators applauded, and the meeting approved with almost unanimous voice. Aeronaut and inventor John Wise who insisted on speaking in opposition had no impact and the following day a newspaper labeled his effort a "low demagogical appeal."³⁸

The precise capacity of the new cotton mill divided the managers in early September of 1845. For some, a smaller mill implied less risk. They finally resolved the matter by voting 3 — 2 in favor of 5,000 spindles as opposed to 6,000.³⁹ This decision held up for nine days until James stopped off in Lancaster on his way home from Pittsburgh and told the managers he did not want to be confined to 5,000 spindles. So they took another vote and approved 6,000.⁴⁰ Even this was a rather modest size for James who had reputation for building large mills and who, in the same period, was responsible for creating the Naumkeag mill in Salem with 24,000 spindles. Tactically, the modest size made sense for this was Lancaster's first experience with steam mills and capacity could always be increased.

The construction of what became known as Conestoga Steam Mill #1 took place during 1845 and 1846 under the immediate supervision of George D. Clarke, resident engineer, accountable to Charles James, chief engineer. Clarke adamantly resisted pressure to let local founders

³⁷ John F. Steinman to Charles T. James appearing in *Minute Book*, August 22, 1845.

³⁸ This story appears in the *Lancaster Democrat*, August 13, 1845, 2.

³⁹ *Minute Book*, September 6, 1845.

⁴⁰ *Ibid.*, September 15, 1845.

and machinists Cockley and Whitehill build the engine and boilers for the mill, pointing out they were incompetent to do so and that he was not willing to "learn" them.⁴¹ Clarke won out and the contract was withheld from Cockley and Whitehill who ultimately had to settle for the castings and shafting contract. The life of the resident engineer was further complicated by a building contractor John Flick who simply refused to follow orders. Clarke would complain to the managers, the managers would decree that Clarke's orders must be followed, and Flick would ignore everyone and continue to do as he pleased.⁴² Despite these problems and others the mill was completed and began operation in early 1847 on South Prince Street, within walking distance of most everyone in town.

When James returned to Lancaster in early 1847 to inspect mill #1 he immediately made plans for the construction of mill #2 almost directly across the street. Where mill #1 had 6,000 spindles, 216 looms, and steam power rate at 225 H.P., #2 was to have 8,000 spindles, 288 looms, and steam power rate at 300 H.P. The second mill was built and placed in operation by 1849, and by November of that year James sold the mill to the Conestoga Steam Mills for \$240,000.⁴³ Expansion seemed like a reasonable course of action for the local entrepreneurs in 1848 and 1849 as mill #1 was running close to capacity and had paid dividends of 10 percent both years.⁴⁴ By the time of the 1850 census mills #1 and #2 represented a capital investment of \$430,000, employed 100 males and 290 females,⁴⁵ and produced over 3,500,000 yards of cotton cloth annually valued at more than \$290,000.⁴⁶ In the face of all this progress the apostle of steam power had but one piece of advice: build another mill. Conestoga Steam mill #3, constructed next to #1 in 1850, was the largest yet with 10,000 spindles, 264 looms, and steam power rate at 300 H.P.

The financial difficulties experienced by the firm in the second half of 1850 indicate that General James (Rhode Island militia) was pushing his legion to the brink. During the third and fourth quarters production

⁴¹*Ibid.*, November 10, 1845.

⁴²*Ibid.*, January 12, 1846.

⁴³*Journal*, November, 1849.

⁴⁴See *Journal* for June, 1848 through December, 1849.

⁴⁵These figures include child labor.

⁴⁶U.S. Bureau of the Census, *Seventh Census, Manufactures*, manuscript census for Lancaster County.

levels plummeted to 30 percent of capacity as the Conestoga Steam Mills lacked the operating capital to command greater supplies of labor, raw materials, and fuel. Bills payable soared from \$60,000 in December of 1849 to \$157,000 in November of 1850, and dividends ceased.⁴⁷ The setback was, however, temporary as local banks soon responded to the crisis, enabling the mills to restore earlier production levels. This flow of credit from Lancaster banks to the Conestoga Steam Mills was, to employ a euphemism, "facilitated" by the fact that David Longenecker, Christopher Hager, and James Evans were both managers of the mills and officers of local banks.

The growing pains of 1850 represent but the first in a long series of difficulties the mills encountered, but all three of the promoter's mills survived. Mill #1 ran for 48 years, #2 for 100 years, and #3 for 98 years. Furthermore, in the shadow of the Conestoga Steam Mills three lesser steam cotton mills were created between the years 1865 and 1872.

OTHER STEAM COTTON MILLS ERECTED IN LANCASTER

<i>Mill</i>	<i>Established</i>	<i>Spindles</i>	<i>Looms</i>
Mill #4	1865	3,000	82
Fulton	1865	2,000	60
Allendale	1872	3,000	104

Source: U. S. Bureau of the Census, *Manufactures*, 1870, 1880

As in Newbury, the impact of cotton mills on the economy of Lancaster was highly favorable. The U.S. manufactures' manuscript census for the town of Lancaster 1850 to 1880 provides the best available approximation of what actually took place.⁴⁸ The two most basic questions here concern what happened to manufacturing activity during this period, and what role did the cotton mills play?

⁴⁷See *Journal*, 1850-1855. The problem in the cotton textile industry in 1850 according to Victor S. Clark is that "factory-building outstripped both crops and markets; cotton prices soared while the price of yarn and cloth remained stationary or declined and the margin of manufacturing profit disappeared." See Victor S. Clark, *History of Manufacturing in the United States*, Vol. I (New York, 1949), 552-553. The December 7, 1850 issue of *Scientific American* (p. 93) also cites overproduction as the source of the dislocation.

⁴⁸Since mills #1 and #2 were in operation slightly before 1850 it would be useful to include the 1840 census as well. Unfortunately, the 1840 census does not provide the necessary information.

MANUFACTURING IN LANCASTER						
<i>Year</i>	<i># of Firms</i>	<i>Capital</i>	<i>Value of Material</i>	<i>Employees</i>	<i>Annual Wages</i>	<i>Product</i>
1850	222	\$895,285	\$606,861	1,688	\$389,868	1,221,034
1880	313	3,792,312	2,942,312	4,252	1,177,249	5,404,937

Source: U. S. Bureau of the Census, *Manufactures*, 1850, 1880

The above data suggest that during the three decades in question the number of firms increased by almost half, the amount of capital committed roughly quadrupled, and the value of the product more than quadrupled; however, these data can profit from further refinement.

MANUFACTURING IN LANCASTER			
<i>Year</i>	<i>Value Added</i>	<i>Value Added Per Capita</i>	<i>Value Added Per Capita in 1850 Dollars</i>
1850	\$614,173	\$49.65	\$49.65
1880	2,462,625	95.57	77.32

Note: The conversion to 1850 dollars was based on Warren and Pearson Wholesale Price Index reproduced in *Historical Statistics of the U. S.*, Part 1, 201.

Refinement still produces a convincing story of growth as value added quadrupled, value added per capita almost doubled, and value added per capita in constant dollars, the most conservative indicator of all, increased by more than half.

Cotton mills played a substantial role in the growth of Lancaster manufacturing:

LANCASTER COTTON MILLS, 1850-1880					
<i>Year</i>	<i>Capital</i>	<i>Spindles</i>	<i>Looms</i>	<i>Employees</i>	<i>Value Added</i>
1850	\$430,000	14,208	503	390	\$107,842
1860	533,500	29,856	800	765	301,847
1870	1,353,000	39,298	1,033	1,305	673,305
1880	1,382,000	40,508	1,066	1,461	796,627

Source: U. S. Bureau of the Census, *Manufactures*, 1850-1880

Comparing data on the growth of the mills with data on manufacturing leads to several conclusions regarding the importance of cotton goods production in Lancaster. First, it provided jobs for 23.1 percent of the labor force in manufacturing in 1850 and 34.4 percent in 1880.⁴⁹ Second, cotton goods production generated 17.6 percent of value added in 1850 and 32.4 percent in 1880. Third, it accounted for 37.3 percent of the *increase* in value added over three decades.

The overwhelming importance of the steam cotton mills can be seen most vividly in the relative contribution of the town's ten leading industries to value added in manufacture in 1880.

TEN LEADING CONTRIBUTORS TO VALUE ADDED IN
MANUFACTURING, LANCASTER, 1880

<i>Rank</i>	<i>Industry</i>	<i>Percentage of Total</i>
1	Cotton goods	32.4
2	Carriages and Wagons	7.3
3	Cigars and Cigarettes	7.0
4	Foundry & Machine Shop	5.1
5	Printing and Publishing	4.3
6	Men's Clothing	3.3
7	Leather tanned & curried	2.7
8	Malt Liquors	2.2
9	Sashes, Doors, & Blinds	2.0
10	Tinware & Copperware	1.9

Source: U. S. Bureau of the Census, *Tenth Census, Social Statistics of Cities*, Part 1

Particularly striking is the fact that industries ranked second through tenth generated only 35.8 percent of value added, thereby barely surpassing the contribution of cotton goods. In short, when Lancaster manufacturing flourished, cotton goods production contributed mightily to this phenomenon.

In conclusion, Charles Tillinghast James was the dynamic personality responsible for successfully promulgating the gospel of, and building, large-scale, steam-powered cotton mills in Newburyport,

⁴⁹In both cases it provided employment for slightly better than two-thirds of all females employed in manufacturing.

Lancaster, and a host of other communities in the 1830s and 40s. Hardly the stereotype of the engineer as a passive, introverted technician, this mover and shaker of the first order aggressively presented the same message year after year, in town after town, for almost two decades before becoming a United States Senator from Rhode Island in 1851. While his efforts as a promoter won for him a certain amount of public acclaim, James never acquired great personal wealth. Indeed, financial setbacks forced him to leave the Senate in 1857, and he spent much of the remainder of his life concentrating on the perfection of a rifled cannon.⁵⁰ His importance to the American experience resides in his vision as an engineer regarding the merits of steam-driven mills, but also in his energy as promoter and entrepreneur altering the history of towns and contributing to the growth of the American economy. While it is easy to imagine that without James someone else would have played a similar role and that cotton mills were somehow "inevitable" in Lancaster, such an argument ignores the distinct possibility that local capital and energy would have been committed to simply expanding what was already being done. The revolution brought to Lancaster by the cotton mills in the 1840s was the result of human effort and not remote or substract economic "forces."

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⁵⁰The explosion of a special shell for this cannon resulted in his death in 1862.