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Philadelphia as an Industrial Power

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From the close of the Civil War up to the third decade of the twentieth century, Philadelphia was an industrial colossus. It had been the nation's first great industrial city, and its Centennial Exhibition of 1876 showcased to the world its new-found manufacturing power. It left a particularly deep impression on the Germans, as sixty-five years later, "while his armies were invading Russia, Adolf Hitler was to lecture his entourage on the Philadelphia fair as an event that turned German production from the bad and the cheap to the qualitatively superior."[1] Philadelphia was the country's greatest manufacturing center in the late nineteenth and early twentieth centuries, a period in which no other city could rival it. After the First World War, however, the dramatic growth of the auto and steel industries in cities along the Great Lakes combined with Philadelphia's older industrial structure helped displace it from its leadership position in manufacturing.

Philadelphia's Chamber of Commerce proclaimed the city as the "Workshop of the World" in 1912, and it had adequate justification. The valued output of its factories in 1909 was greater than that of any other city, excepting New York and Chicago, and was greater than all but six states. The conclusions of the Englishman Arthur Shadwell in 1910 helped city aldermen fill their chests with pride after he conducted an examination of the industrial centers of England, Germany, and the United States:

> "I have just called Philadelphia the greatest manufacturing city in the world and I believe it to be so. True it does not compare with such monstrous aggregations as London and New York, but they are not manufacturing cities in the same sense. They are primarily something else, and the manufactures are mainly accidental or secondary. They are there because the population or traffic is there. That is shown by their miscellaneous character and the small scale on which most of them are conducted. In the aggregate they employ a vast number of people and produce an immense quantity of goods, but individually they.belong to the rather small than gross industries. But Philadelphia is primarily a manufacturing place and industries are carried on in very large establishments on a great scale."[2]

Philadelphia was the largest city and greatest port of Pennsylvania, a state which was frequently compared to the German Ruhr or British Midlands for heavy industry. Indeed, most of the city's prosperity came from the triumvirate that ruled supreme over the state's economy: coal, the railroads, and iron and steel. Yet it was not any of these three that brought the city the greatest distinction as a manufacturing center; it was in the production of textiles that the city was unmatched throughout the world. No other municipality could approach the volume of textiles made in Philadelphia, the diversity of them, or their quality. Even with such laurels, the city's textile industry was constantly overshadowed because no one large firm dominated it, unlike the situation in the primary and secondary metals industries. The facilities and reputations of companies such as Midvale Steel, Baldwin Locomotive, and Disston Saw easily eclipsed those of the largest Kensington knitting mills. Not surprisingly, Russel Weigley, in his book "Philadelphia, A 300 Year History," omits the textile industry as a pillar of the city's economic strength:

> This [iron, coal, and steel] was the tripod on which the city's nineteenth century industrial reputation and a large share of its prosperity rested. If there were to be any single symbol of Philadelphia during this period it would be a steam locomotive: an idol whose temple was, eventually, Broad Street Station; whose priests, wreathed in the incense of steam and soot, ranged from workers at the Baldwin Works or brakemen on the railroad to those almost sacred beings, the directors and presidents, particularly those of the Railroad, the Pennsylvania Railroad.[3]

Railroads played a particularly prominent role in the city's economy. Three of the great continental lines of the country, the Baltimore and Ohio, the Pennsylvania, and the Philadelphia and Reading all had major terminals in the city. The largest and most powerful corporation in the country was the Pennsylvania Railroad[4], which reigned supreme from 1874 to 1910, and was headquartered directly across from City Hall in the heart of the downtown. In 1901, half of the world's oil (for illuminating, not energy purposes) was refined and shipped from the Point Breeze plant of the Atlantic Refining Company[5], all of which was tanked in from western Pennsylvania via the Pennsylvania Railroad. The railroads dictated the directions of the Quaker City's suburbanization, creating the exclusive areas of Chestnut Hill and the Main Line. Finally, the coal shipping facility of the Philadelphia and Reading Railroad on the Delaware River in Port Richmond was the world's largest, permitting the city to retain a virtual monopoly in this highly profitable business.[6]

Another key member of the city's economic base was the iron and steel industry. Although Philadelphia was never a leading producer of these materials in bulk, relying on Pittsburgh, Bethlehem, Cleveland, and Gary, Indiana for their

supply[7], it was a great center for the manufacture of secondary metal products. Two firms that helped Philadelphia establish this position were the Baldwin Locomotive Works and the William Cramp and Sons Ship and Engine Building Corp.

Baldwin was the world's largest locomotive maker and also the city's largest employer, boasting of a work force between 17,500 and 19,500 men during normal business conditions[8]. Located at Broad and Spring Garden Streets, its shops stretched for blocks all the way to Fairmount Park, covering seventeen acres. It tripled the productivity of its nearest rival, making 1500 engines a year by the turn of the century, and they could be found in every corner of the globe. According to a 1912 Chamber of Commerce report, a Philadelphian could find a Baldwin locomotive in Siberia, Palestine, Argentina, Australia, and even Uganda.[9]

Equally powerful on the Philadelphia industrial scene was Cramp's Shipyard. It had been in business since 1830 and had gracefully converted from wood and sails to iron and steam. It built such famous ships as the U.S.S. *Maine* and J.P. Morgan's yacht *Corsair*. In 1912 it launched the two largest battleships afloat, the *Wyoming* and the *Arkansas*. Like Baldwin it too covered a large amount of land, taking up more than fifty acres of the Kensington waterfront by 1902, and it also carried an international reputation. Cramp built warships for the Russian, Japanese, and Turkish fleets, and one of the sons of the founder, Charles Cramp, was decorated by the czar.[10]

Two other large firms of excellent repute in the metals industry were Midvale Steel and the Disston Saw Works. Disston was located along the Pennsylvania Railroad's main line to New York in the Tacony section of the city, and occupied fifty-eight buildings. It was another firm with a name recognized globally, in this case for the finest saws, as "every imaginable sort of blade for cutting wood was within its sphere of operations."[11] Midvale Steel was situated on fifty-eight acres in the Nicetown section, adjacent to the Philadelphia and Reading's rail yard at Wayne Junction. The company was a basic metals producer, something which, as mentioned earlier, was quite a rarity in the Philadelphia area. Only three other metal-working establishments manufactured their own materials for production during this era: Disston Saws, the Pencoyd Iron Works of Manayunk, and the suburban Alan Wood Steel Company, above the city on the Schuylkill River in Conshohocken.[12]

Midvale Steel also has the distinction of helping to raise industrial engineering to new heights. Frederick W. Taylor, a pioneer in the use of time and motion studies to increase worker productivity, received his start and formed his rudimentary principles at this steel plant. He is also important to North Philadelphia's demographics for his hiring in 1896 of two hundred blacks at the steel mill; these laborers soon formed an African American enclave in a section of the city that was overwhelmingly white at the turn of the century.

The large and well-known firms discussed above were integral parts of the city's economy, but they were atypical of most of Philadelphia's manufacturing

base. Two essential characteristics denoted the city's industry. First, the size of its industrial firms was relatively small. Such firms as Pullman in Chicago, Ford in Detroit, and Carnegie in Pittsburgh were simply unparalleled in Philadelphia. Second, the city was known for the diversity of its products, as is born out by the 1910 Census of Manufactures. Of the 264 articles listed in the federal survey, 211 of them were made in the city.[13] Table 1 on the next page indicates this fact, revealing the wide variety of goods of which it ranked first, second, third, and fourth in production among U.S. cities in 1910.

Table 1

Rank of Philadelphia among U.S. cities for the production of the following goods, 1910.

First	hosiery and knit goods
	carpets and rugs other than rag
	hats, fur-felt
	locomotives
	dyeing and finishing textiles
	reupholstering materials
	cars, street railway
	oilcloth and linoleum
	sporting and athletic goods
	sand, emery paper, and cloth
	saws
	shoddy
	surgical appliances and artificial limbs
Second	sugar refining, excluding beet sugar
	clothing, women's
	millinery and lace goods
	fertilizers
	paper goods, not elsewhere specified
	umbrellas and canes
	mineral and soda waters
	petroleum refining
	woolen, worsted, felt goods and woolen hats
	leather, tanned, curried, and finished
Third	printing and publishing
	foundry and machine shop products
	bread and other bakery products

Table 1 (continued)

	chemicals
	paint and varnish
	leather goods
	boxes, fancy and paper
	marble and stonework
Fourth	cotton goods and cotton small wares
	patent medicines, drugs, etc.
	furniture and refrigerators
	copper, tin, and sheet iron products
	soap
	confectionery
	electrical machinery, apparatus, etc.
	furnishing goods, men's
	shipbuilding, including boat building
	food preparations

Source: John J. MacFarlane, *Manufacturing in Philadelphia, 1683-1912*, p. 12.

Philadelphia was also synonymous with high quality products, and consequently possessed a highly skilled work force. The international reputations of Baldwin, Cramp's, and Disston has already been mentioned. Baldwin, despite its size and growth throughout the late nineteenth and early twentieth centuries, held fast to its tradition of custom designing a locomotive to meet a patron's needs; it never had an assembly line nor a standard basic model to offer. Even more striking is the fact it did not have a single time clock in the plant, even though its workforce was approximately eighteen thousand men. Midvale Steel, like other Philadelphia firms, chose to specialize, demanding that it "solve the problems which most other steel makers preferred not to undertake."[14] Other notable manufacturers included the John B. Stetson Company, the world's largest hat maker and fabricator of the hat that won the West; the Allen Company, producer of the Flexible Flyer Sled; and A.J. Reach and Company, maker of footballs, boxing gloves, and the "official" American League baseball, as endorsed by A's manager Connie Mack.

Caroline Golab succinctly describes Philadelphia's economy during this period by contrasting it with the rest of the state of Pennsylvania. "Pennsylvania's economy stressed bigness, required large numbers of unskilled laborers, and was devoted to the more primary forms of industrial activity. Philadelphia's economy relied on old, well-established industries that stressed diversity, precision, smallness, and quality and relied on female, skilled, and semi-skilled labor."[15]

As was mentioned previously, despite the fame of a few large companies in heavy industry, it was textiles that held the foremost position amongst the vast enterprises of Philadelphia, both in the number of employees and establishments as well as the amount of capital invested.[16] In 1904 the city boasted of 229,000 workers, 35% of whom were textile employees, and their mills comprised 19% of the city's 7100 total manufacturers. As Table 2 shows, six of the ten leading industries according to the value of their product in 1909 were textiles, constituting over one-fifth the total value of all industries. Philadelphia produced more textiles than any other American city and was also the world's largest and most diversified textile center.[17] Table 3 reinforces this fact by displaying just how far the city was ahead of its competition, being greater than the combined total of its two nearest challengers.

Table 2

Leading industries in Philadelphia in 1909 ranked by product value (in millions of dollars)

1.	Woolen and worsted goods	54.9
2.	Printing and publishing	45.8
3.	Foundry and machine shop products	38.6
4.	Sugar refining (estimated)	37.6
5.	Clothing, women's	30.1
6.	Clothing, men's	29.0
7.	Hosiery and knit goods	23.9
8.	Leather, tanned, curried, etc.	23.5
9.	Carpets and rugs (other than rag)	22.6
10.	Cotton goods	22.5

Source: John J. MacFarlane, *Manufacturing in Philadelphia*, 1683-1912, p. 9.

Table 3

Leading American textile centers in 1910 ranked by product value (in millions of dollars).

1.	Philadelphia	153
2.	Lawrence, Mass.	70
3.	Fall River, Mass.	56
4.	New York City	52
5.	Paterson, N.J.	50

Table 3 (continued)

6.	New Bedford, Mass.	44
7.	Lowell, Mass.	41
8.	Providence, R.I.	37
9.	Manchester, N.H.	23
9.	Pawtucket, R.I.	23
11.	Woonsocket, R.I.	20
12.	Amersterdam, NY.	17

Source: John J. MacFarlane, *Manufacturing in Philadelphia, 1683-1912*, p. 14.

The organization of Philadelphia's mills contrasted with their competitors and the rest of American business. As most firms were switching to the corporate form of management in the late nineteenth century, the city's mills remained in the hands of one individual or family. This proprietary capitalism was diametrically opposed to the way its chief regional rival, New England, was run; a board of directors oversaw the companies in Massachusetts, New Hampshire, Connecticut, and Rhode Island.

The Philadelphia textile industry also differed from New England in its production format. Large integrated production units typified the New England firms. These companies fabricated the basic cotton and woolen material for the industry, avoiding for the most part specialty items and niche markets. They were bulk output mills which operated on economies of scale and speed and possessed unskilled workforces who put in steady regular shifts throughout the year. When markets contracted, these plants continued to function, building up inventories while at the same time trying to cover their high fixed costs and their need to pay dividends.

The Philadelphia mills, however, were based on economies of scope and timing. They did not have to produce the same item in immense quantities, but rather had to meet the capricious demands of the fashion world. Their products were not homogeneous goods with a long shelf life, but were rather perishable, and they could not dwindle away in stock rooms. These factories employed more skilled workers and men of expertise than their staple counterparts, but they were also highly prone to seasonal shut-downs and lay-offs. Finally, because their production was not fully integrated, these firms relied on other companies for work outside their own capabilities. This was extremely advantageous in that they were flexible to changes in the market, but it necessitated that they concentrate in a dense urban-industrial matrix.

Consequently, most of Philadelphia's textile production was densely concentrated in Kensington, which was an ideal location with its numerous rail lines,

skilled workforce, and abundant factories. So great were their number that the Chamber of Commerce in 1912 proudly wrote, "from the tower of the Bromley Mill at Fourth and Lehigh there are more textile mills within the field of vision than can be found in any other city in the world."[18]

The heavy concentration of textile mills in Kensington helped to give it a very British flavor, causing it to be nicknamed Little England.[19] English immigrant weavers from the neighborhood formed cricket teams to play against gentleman's clubs from the Main Line. Their presence in the textile industry was indeed very strong, as the first textile union in the city was a local in the British International.[20]

The industrial might of Philadelphia had reached its acme with the outbreak of World War I. The Carnegie Endowment for International Peace, upon reviewing government war contracts in 1920, took note of the inordinate amount of military production inside the city:

> Philadelphia's all-round mechanical equipment, its convenient location with regard both to the supply of raw iron and steel and of fuel for manufacturing purposes, its vast population of mechanical talent, and its facilities for domestic and foreign transport, together with its extraordinary variety of skilled industries — these were some of the reasons for the remarkable concentration of ordinance orders and contracts in that district. So extensive had the volume of contract commitments in that district become as to awaken criticism on the part of others along the Atlantic coast and throughout the interior.[21]

One source estimated the city's contribution to the American and Allied war efforts was a forty percent of the entire total[22]. All of the steel helmets worn by U.S. troops were made at the ten-story Ford Motor Company plant at Broad and Lehigh.[23] Three quarters of the leather used in the military's boots, shoes, and saddles came from Philadelphia's tanneries. Twenty percent of the wartime tonnage constructed by the U.S. originated in the city's shipyards, with the facility at Hog Island responsible for the brunt of the production. Hog Island became a city in and of itself during 1917 and 1918, employing over 30,000 men and women in the swampy areas along the Delaware.

The First World War, however, turned out to mark the peak of the city as an industrial juggernaut. Writing about Philadelphia's position of prominence in manufacturing in the late nineteenth century, Russell Weigley accurately saw it as being temporary: "Yet the promise for the future was less, for the city maintained the organizational patterns of the first industrialization; Philadelphia industry for the most part continued to be organized in a multitude of relatively small enterprises. Few individual firms employed large numbers of workers."[24] As early as 1900 it was displaced from second place in the value of its manufactures by the meteoric ascent of Chicago. Twenty years later, another burgeoning factory town

of the Midwest, Detroit, had come to outrank it and push it down to fourth place. Over the course of the first two decades of this century, Philadelphia kept finding itself lagging behind the national averages for industrial growth, primarily due to the more rapid growth of the new manufacturing centers of the Great Lakes region. These municipalities were primary and secondary metals centers and were experiencing fantastic expansion rates. Detroit, for example, tripled in size from 1900 to 1920. Its factories were massive integrated production units which operated on economies of scale, whereas those in Philadelphia became diseconomies of congestion.

The city was indeed experiencing a transformation in its economy as revealed by the fate of its two industrial titans, Baldwin and Cramp's. Baldwin was past the golden years of the two decades before World War I and was facing a slow decline due to competition from trucks and automobiles. The increasing size of its engines forced it to abandon its seventeen acre Broad and Spring Garden site in 1920 and move down the Delaware to a 225 acre plant in Eddystone, Pa.

The shipbuilding industry was on the decline even before the Great War began and the fighting was not enough to invigorate business at Cramp's. A worldwide surplus of ocean going vessels combined with the economic slowdown after the war caused the Kensington landmark to close in 1927. Midvale Steel also faced difficulties, contracting its work force from 7,300 men in 1919 to 1,800 in 1928.[25]

Even Philadelphia's mighty textile industry was not impervious to decline. The remaining bulk producers in New England began to encroach upon some of the traditional markets of the Kensington mills by issuing semi-staple goods. These were items such as a navy blazer or a cotton overcoat that seemingly never went out of style. Unionization also enhanced wage differentials with Southern competitors, causing a few mills to relocate. However, the biggest reason for the decline of the industry was the post-war deflation, which hurt department stores holding large inventories. Retailers subsequently developed a hand-to-mouth buying plan that eliminated the need to hold onto any sizable inventories, thereby pushing the burden of cost onto the manufacturers and squeezing the mills' profits. In comparison to the emerging automotive and electrical sectors of the economy, textiles became a sick industry, especially in Philadelphia.

In conclusion, during the late 1800's and the first two decades of the twentieth century Philadelphia was a dynamic metropolis. The city was the workshop of the world, whose factories provided a vast array of products ranging from locomotives to baseballs. It was the leading textile center in the world, with Kensington acting as the city's locus of production. It was also a leader in the secondary metals industry, boasting of such firms as Baldwin Locomotive, Cramp's Shipyard, the Otis Elevator Company, and Disston Saws. World War I helped the city reach even greater industrial heights, stimulating an economy that was responsible for forty percent of the American and Allied war effort.

Despite its initial position of hegemony amongst American manufacturing cen-

ters, it was not able to maintain this status after the First World War ended. Its economic base, diverse products and the small size of its firms, became outmoded as new industrial titans emerged across the Midwest and along the Great Lakes. Cities like Pittsburgh, Detroit, Chicago, and Cleveland based their manufacturing on economies of scale, and their production rates simply dwarfed that of Philadelphia. The locus of the nation's manufacturing began to move away from the east coast to the Midwest, much to the detriment of Philadelphia.

Endnotes

1. Russell F. Weigley (ed.), *Philadelphia: A 300 Year History*, p. 469.
2. John J. MacFarlane, *Manufacturing in Philadelphia*, 1683-1912, p. 11.
3. Weigley, p. 474.
4. *Ibid*, p. 475.
5. *Ibid*, p. 483.
6. *Ibid*, p. 430.
7. Philip Scranton and Walter Licht, *Work Sights: Industrial Philadelphia, 1890-1950*, p. 196.
8. Frederic M. Miller, Morris Vogel, and Allen F. Davis, *Still Philadelphia: A Photographic History, 1890-1940*, p. 77.
9. MacFarlane, p. 43.
10. Weigley, p. 480.
11. Scranton and Licht, p. 173.
12. *Ibid*, p. 196.
13. Miller, Vogel, and Davis, p. 73.
14. Scranton and Licht, p. 202.
15. Caroline Golab, *Immigrant Destinations*, p. 41.
16. Weigley, p. 481.
17. *Ibid*, p. 481-82.
18. MacFarlane, p. 39.
19. Weigley, p. 488.
20. Sam Bass Warner, Jr., *The Private City: Philadelphia in Three Periods of its Growth*, p. 180.
21. The Carnegie Endowment for International Peace, *Government War Contracts*, p. 318.
22. Herman LeRoy Collins, Philadelphia, A Story of Progress, p. 371.
23. Weigley, p. 559.
24. *Ibid*, p. 428-429.
25. Scranton and Licht, p. 199-201.