Pittsburgh Industries That Used To Be*

By MARGARET ELDER

It is almost incredible and beyond one's imagination to comprehend the growth and development of the myriad industries that had existence in Pittsburgh and which added to its wealth and expansion, helped to establish it as the "Gateway of the West" in the latter part of the eighteenth century, but which have in the nineteenth century practically disappeared. Through many vicissitudes they were often almost annihilated, only to rise again courageously into stronger and larger activities, later to be choked by the marvelous growth of those other industries that have made our city the greatest industrial center in the world.

The Virginians, as you know, had (1749, or even earlier) a covetous eye on this fertile Ohio region and not until they and England wrested it from the French, 1758, and converted Fort Duquesne into a trading post, protected by a fort which they named Fort Pitt does its economic history begin.

From this government outpost of 1758 emanates a record that thrills every student of American history; there is a fascination around those early pioneers—less than one hundred forty-nine in 1760 1—that is none the less interesting because it is local. Here we find them engaged in all the activities of pioneer life—erecting log cabins, building boats or barges, establishing small industries, and trading.

The growth of the town from 1758 to 1788 was slow, but as roads were built from the East and river travel was made possible, the town grew and prospered. 2 By 1788 it had a population of 500 which in 1803 had increased to 2400, living in 600 dwellings. 3 The population in 1820 was 9,000, 4 scattered over a large area, and connecting the business centers by two bridges, one over the Monongahela and the other over the Allegheny at a cost averaging $110,000 each. 5 As population increased, industries multiplied until we find in the eighties a population of over 165,000, producing $40,000,000 worth of manufactures. 6

Almost at the very beginning, distinctive manufacturing marked the locality. Artizans, skilled workmen, miners, watch makers, chandlers, tanners, boat builders, car-

*Read before the Society, May 28, 1929.

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penters, foundrymen, smiths, indeed mechanics of all kinds as well as shrewd business men came from the East, and immigrants from Northern Ireland and England found their way here. After the Revolutionary War, Pittsburgh became the center of transportation for the West, as the demand for all kinds of implements increased as well as the demand for food, clothing, glass, iron, wagons, and boats of all kinds. Mills, forges, and factories were started like beehives along the banks of the rivers and by 1793 many industries were fairly established.

In the borough, 1804, among the population of one thousand, there were more than 37 industries. In 1803, there were 1 Comb, 7 Cabinet, 5 Strawbonnet, 4 Plane, and 5 Watch and Clock Makers; 8 Boat, Barge and Ship Builders; 13 Weavers; 2 Potteries of earthenware; 7 Tan and 6 Brick Yards; 1 Spinning Wheel Maker; 21 Shoe and Boot Makers; 4 Hand Wrought Nail Factories; 6 Saddlers; 1 Bell maker; 5 Coopers; 1 Factory for clay smoking pipes; 1 Cutlery and Tool Maker; 1 Rope Walk.

By 1810 many new industries were added: 1 Linen Factory employing 20 hands, value of output $25,000 a year; 1 Grist mill using 60,000 bushels of wheat; 3 Carding and Spinning mills, value of output $14,258; 6 Hand Wrought naileries, producing $49,890 worth of nails and spikes; 10 Hatteries; 1 Button factory, $6,250.

Many of these earlier industries that perhaps are more unique than of great economic value gradually became extinct as they were superseded by inventions and machinery. The comb, the spinning wheel, the bellows, and tallow candle maker disappeared quite early; other industries such as the making of hand wrought nails, farming implements, and tools developed forges, foundries, or mills, losing their identity in mass production; while others as the manufacture of furniture, Windsor chairs, Venetian blinds, boots and shoes, buttons, flour, hats, pianos, violins, watches and clocks have been transferred either to the East or the West.

The great industries such as glass, iron, copper, brass, and tin plate, which have survived, are not under discussion in this paper.

The industries of lesser magnitude as brick, salt, and rope making, while they add historical interest and served among the necessary local industries for a number of years,
were never of great commercial value. General Forbes brought brick layers with the army in 1758; five years later, 1783, James Ormsby built the first brickyard and the first brick house was constructed. The number of yards gradually increased until there were 67 in 1868. Most of the bricks up to this time were made by hand, but since the introduction of machinery this type of manufacture has disappeared.

Rope

Rope making, as river trade increased, kept pace with the river trade. It was quite an industry by 1786, begun by Hugh Ross.

It is a well known fact that the principal part of the cordage used by Commodore Perry for the fleet on Lake Erie was made in Pittsburgh. Two cables, each 4½" in diameter, weighed 4000 pounds.

Smith and Guthrie, 1827, owned the "Eagle Rope Walk" in Lawrenceville. It was 1275 feet long, run by steam, employed 40 men, used 400 tons of hemp, with an output valued at $120,000. The John Irwin & Son's walk established in "Alleghenytown", 1801, employed in 1836, fifty hands. They made 20 tons of Russian or Manilla hemp into $6,000 worth of cordage.

There were seven firms in 1844, but this number decreased. In Caldwell's Pittsburgh Directory—1868, he states that the Pittsburgh Rope Works, Fulton Bollman & Co., was "the only manufacturer in the West of heavy cordage suitable for steamers or coal boats," but gives no statistics.

Salt

Salt was easily obtained by sinking wells at almost any point in and around the city. As early as 1784, Craig & Bayard began salt production, but the main supply came from the East, until James O'Hara, Quarter-Master General during Washington's administration, visited the garrison at Niagara, and the Onondago Salt Works in 1796. He decided that salt could be brought to Pittsburgh by way of Lake Erie and the French Creek more cheaply than from Baltimore. This changed the current of the salt trade and aroused local interest. When it was discovered that salt could be obtained on the Kiskiminetas and Conemaugh, enterprises sprang up at Temperanceville, Tarentum, and Alle-
gheny and also within the city limits. 

George Anshutz had a salt plant on Saw Mill Run, a mile below Pittsburgh very early, for "by 1829, the works were considered old." The output was 50 bushels a day, valued at $5,000.

There was so much competition on the Conemaugh, 1826, that the price fell to $1.25 a bushel which did not pay, and having no transportation facilities, the output diminished, to be revived in the thirties when 24,381 bbls. were obtained, only enough for home consumption.

Owing to the discovery of oil, salt works sprang up in the sixties when Pittsburgh became the center of a large salt trade. In the eighties there were six firms employing 90 hands, producing an output valued at $210,000; in the late eighties, there were three, employing 70 men, producing $175,000 worth. As the cost of production increased—it took 280 bushels of coal to obtain eighty barrels of salt in 24 hours—the industry developed into the production of chemicals.

The other industries that exerted a wider influence and became extinct or nearly so in this period were tanning, boat building, cotton and woolen manuf actures, saddlery, and harness making.

**Tanneries**

In 1788 when the town was little more than a collection of scattered log cabins, there were two tanneries and carriers, three saddlers, and five shoe makers.

The first tannery belonged to William Hays who by 1790 had a well established industry at Liberty and Fifth Street. From this early start, due to the abundance of hemlock and oak available for use in tanning, as well as to the great demand, the leather industry took a firm hold. Many varieties were made ranging from white oak sole to the finest patent leather, the later invented by James Y. McLaughlin in 1826. He employed 40 hands, who used 15,000 hides and 100 barrels of varnish a year at his plant on the Allegheny river near Thirty-first Street.

Although the growth in the number of tanneries was slow, it increased from 7 in 1803 to 13 in 1857 with an output valued at $10,000; to 20 in 1876, when Pittsburgh was recognized as the leading city in the United States for the manufacture of the finest leather used in the making of
harness, as well as being a great leather center. " About this time these factories occupied an area of 30 acres, employed 750 hands whose wages amounted to $400,000 annually. They tanned 900,000 hides. The value of the plans was $750,000, while the output was $3,500,000. " From this time on there was a steady decline in number, although 1884 shows fourteen with a combined capital of $1,230,000, producing $3,400,000."

Mr. P. W. Siebert in an article on "Old Bayardstown" observes "George A. Bayard had a tan yard at 1309-1311 Penn Avenue. Some of the old vats may be still found in the yards." They probably are almost the last vestige of this great industry.

Saddlery and harness making naturally followed tanning. It increased from three makers in 1793 producing $10,000 worth, to six firms employing 60 hands in 1814, producing $86,000. " " " It experienced a steady growth from 1823 to 1857, when there were seven firms producing $146,500, besides many smaller shops which produced an output valued at $35,000."

By the eighties there were 43 firms employing 170 hands producing $850,000 worth. " One of the best known manufacturers was James Matthews who had an establishment on Wood Street in 1800 and continued in business for many years."

The boot and shoe industry was pretty well established by 1799. " Hammond & Well were doing a thriving business in 1810, turning out 4,500 pairs of men's shoes and 1,500 pairs of boots." In 1804, the prices ranged from 75c for a pair of coarse shoes to 80c for fine ones. Long boots were $2.50. In 1814, there were 14 factories producing over $120,000 worth of shoes mostly men's. " Women's shoes were not made to any great extent until S. Marshall & Son arrived from Philadelphia with the latest fashions and opened a factory, 17 Fifth Avenue, in the late thirties."

In the Mercury, Apr. 8, 1822, appears this quaint advertisement: "Removal. The subscriber, thankful for past favors, takes the liberty of informing his friends and the public in general that he has removed to Liberty Street opposite the round church and next to the sign of the Half Moon and Seven Stars where he intends to manufacture Ladies' Morocco and Leather Boots and Shoes, Gentlemen's Fine and
Coarse Boots and Shoes, and Misses', Boys', and Children's, do. He hopes by strict attention to business still to merit an equal share of public patronage. Walter Glass."

This industry remained local and never developed extensively, although it is responsible for the first labor strike in the city, December 1804. The employers who boarded their apprentices raised the board from $1 1/2 to $2 1/4 a week. The employees asked for more money and struck. Nothing is known of the outcome. 61

Cotton

Weaving had been carried on extensively by hand before 1800. In that year there were five looms in the city; by 1809 there were 44 weavers, producing 52,800 yards of cotton and woolen cloth worth $88,848, besides large quantities of carpets, rugs, tablecloths, and coverlets. 62 Spinning wheels found an active producer in Matthew Colhoun, of Mifflintown, who turned out in one year 140 wheels at $2 1/2 each and "a number of the patent kind at $2.75". 63 These evidently kept the spinners busy in 1807 when there was brought into the city over 80,000 yards of linen which sold from 68 to 75 cents a yard. 64

It was not until 1804 that the first factory was established by Peter Eltonhead, a cotton manufacturer of Manchester, England. The business men and citizens liberally subscribed to this enterprise. The factory carded, spun, and wove an immense quantity of cotton yarns and materials. Kerwin's Cotton Factory and Scott & Armitage quickly followed, manufacturing dimities, checks and cambrics. The power was furnished by horses. 65

As the river trade increased and the War of 1812 continued, cotton manufacture flourished. In the report of Committee on Manufactures, 1819, we find cotton manufacturing in the lead, 1814-1816, employing 1761 in 1814, and 2325 hands in 1816, earning from $3.75 to $4.65 a week. 66

In 1810 there were two cotton mills paying 20c a pound for raw cotton, and producing from 294 spindles, $20,000 worth of chambrays, ticking, jeans, etc. 67 One of these evidently belonged to Hugh and James Kelly. It was located in Northern Liberties, now Lawrenceville, and was an outgrowth of his carding and spinning business. In 1815, they began to manufacture but the War being practically over, the country was flooded with European textiles which sold
cheaper than our manufacturers could produce. The factory closed and did not begin operation again until 1822 when it was purchased by Allen and Grant, two commission merchants, who united with John Adams and James L. Craft and formed the Phoenix Steam Cotton Factory, the first to use steam power. They brought many skilled workmen from England who carded, spun, and wove successively for the first time in Pittsburgh, 1824. They also made their own machinery. Two hundred employees produced 700 pounds of yarn and 450 yards of all kinds of cotton fabrics daily with an output amounting to $100,000 a year. The success of this factory and the new Tariff Act of 1824, laying 30% duty on cotton goods, encouraged others. By 1825 there were six factories employing more than 500 hands, producing 1,000,000 yards of cotton material valued at $200,000.

Raw cotton came back on the Ohio and Mississippi boats in supplies to last six months. The factories used 13,000 bales a year which was not sufficient to warrant commission merchants in establishing a constant market or exchange, though the importance of such a market seemed patent. The uncertainty of the supply greatly hindered the factories. However, from 1826 there was a gradual increase in production from $300,000 to $770,000 in 1837. Again they had to face a tariff reduction, nevertheless by industry and economy the industry not only survived but increased until 1847 when there were seven large factories located mainly in Allegheny on or near Robinson Street. They employed 1,405 hands, used 12,900 bales of cotton, and produced $4,759,000 worth of all kinds of cotton materials.

In 1850 the exports amounted to $1,084,000 and in 1854 to $703,080. Various economic changes greatly affected the cotton industry; first, the aftermath of the War of 1812, then the Tariff Acts of 1832 and 1842, the Strike of 1849 and keen competition with New England Manufacturers, the Civil War, and last, but perhaps the greatest factor, the decline in river transportation.

The industry struggled through the eighties producing sheetings, cotton, yarns, battings, tickings, seamless bags, candle wick, and carpet chains, which were used chiefly for local consumption. The last trace of this industry passed away when the old building which housed the last factory was torn down last March.
Woolens

Connected closely with the cotton industry was the woolen industry, perhaps due to the use of similar machinery and process. James Cummings, 1810, made 12 wool carding machines. Later, 1815, James Arthur was using the improved inventions of his son for wool carding and spinning. James Kelly was also using steam. Cramer mentions two woolen mills in 1802 but gives no other data.

James Arthur & Son's industry expanded in 1815 into manufacturing broadcloths, cassinette, and country cloth, producing in one year 12,800 yards.

The Fleecedale Woolen Factory, Chartiers Creek, owned by A. & J. Murphy, produced (1826) 1,500 yards of fine broadcloth, and 9,600 yards of cassinette, valued at $20,000.

Hadrick & Gibb at Liberty Street and Diamond Alley made (1826) 42,000 yards of cassinette, a mixture of cotton or linen and wool.

The woolen industry was never as thriving as the cotton, and while it increased in the eighties to an output of $100,000, there were only three firms producing satinetts, blankets, flannels, and yarns. Another firm, "Allegheny Woolen Mills", S. Bradley & Son, made "Soft finished woolen goods on the French principle," employing one hundred hands. In 1884 this firm was converted into "The Woolen & Worsted Factory"

Boat-building

James Kenney, a trader, wrote in his diary, 1761, an account of one William Rumsey who had constructed some sort of a double-keeled boat which was run by an engine, but as Rumsey never perfected his invention, the practical steamboat was left for another generation. However, boats of every other variety were constructed in that early period due to the abundance of suitable lumber and three navigable rivers.

In 1777, a large number of barges was constructed "for the army, to be used at a point above Turtle Creek," and from this time on a great number of barges, arks, rafts, flat-boats, "broadhorns", and keel boats was constructed.

Twenty years later, 1797, ship building became active. The Government ordered two armed galleys to be built for use against the Spaniards on the lower Mississippi.
Sea-going vessels were built by Tarascon Bros. of Philadelphia. About 1801 they made a survey of the Ohio River possibilities; in 1803 they organized the firm of John A. Tarascon Bros. James Berthoud & Co. and began ship building on a large scale. 87

Two schooners, the Amity and Pittsburgh, 270 tons each, were launched, February 11, 1803. They cleared with a cargo of flour for St. Thomas, West Indies, and Lisbon, Portugal. 88 Between 1802 and 1805 three more schooners, three brigs, and four ships were constructed. 89 This industry was short-lived owing to the misfortunes and accidents in getting these vessels down the Ohio, "which most probably arose more from bad management by persons entrusted with them", 90 although Mr. William B. Rodgers in his article published in Pittsburgh and the Pittsburgh Spirit, p. 411, remarks: "After three years of free navigation, Spain put an embargo in 1807 on goods from the United States and the building of ships ceased".

From March 1 to May 31, 1800, the Commandant at Fort Massac, near the mouth of the Ohio, reports 276 boats laden with produce and manufactured articles passed the fort. 91 This type of river craft continued to be built, until Robert Fulton's invention revolutionized the industry and steamboat building commenced.

He organized a company of influential financiers for the purpose of monopolizing the river trade of the country 92 and very early recognized the possibilities of navigation on the Ohio and the Mississippi. Under the direct management of Nicholas Roosevelt, great uncle to President Roosevelt, the Ohio Steamboat Company was organized, December 10, 1810. 93, 94

There were many misgivings as to the feasibility of the plan 95. however, the enterprise was carried through and the first steamboat launched at Pittsburgh was The New Orleans. About March 1, 1811, she descended the rivers to Natchez, Miss., where she received her first cargo, March 11, 1811. Two days later she arrived at New Orleans. 96

This success was followed by a period of building activity. The Mississippi Steamboat Company, 1810, established a plant on the Monongahela and turned out (1813) three large steamboats, 340 tons each, and five others carrying 25 to 125 tons. 97
Still the practicability of river navigation seemed doubtful, but in 1817 Capt. Shrieve discovered a means for destroying snags. He brought *The Enterprise* back from New Orleans to Louisville in twenty-five days, May 6 to May 31, 1817. *The Washington* shortly afterwards did the same. Confidence in the project was restored and the industry revived and increased amazingly. From 1811 to 1835, 197 boats were built; 1835 was the banner year leading with 173 boats, followed by 1836 with 61 more; the value of construction reaching $960,000.

There were in 1826 six large firms well established on the banks of the three rivers. For the next forty years Pittsburgh led all northern cities. Boats carried down the river our manufactured articles, flour, whiskey, lumber, and coal, returning with wool, dry hides, tobacco, and cotton.

From 1852 to 1857 there were built 446 vessels of various kinds valued at $6,890,700 and in addition 49 barges and keel boats valued at $1,610,000. This increased in 1874 to 649 boats valued at $23,000,000.

Another type soon appeared. In 1839 the first iron boat, *Valley Forge*, was built by Robinson, Rea and Co. From this time until 1865, 18 iron boats were made, 9 of which were war vessels. *The Bibb*, 1845, cost $250,000. Then came the first iron steamer *The Allegheny* constructed by Tomlinson and Tomlinson for the United States Navy.

James Reese & Son built the first steel plate steamboat in the United States. This vessel was built for the Magdalena Steam Navigation Company of Brazil, 1879. Many of this type were also built for the Great Lakes. Some were launched while others were built, taken apart, shipped, and reassembled at their destination. The fame of the "stern wheeler" of Pittsburgh attracted wide attention. In the eighties many of these boats were afloat on the Volga River, Russia.

There can be no doubt that the boat building industry was a great factor in the development of Pittsburgh industries. Foundries, forges, engines, lumber mills, tanneries, leather, cotton, and tobacco factories can trace their origin to the demands of boat construction and river navigation.
The introduction of railroads, competing in time and surety of delivery, caused the slackening in river transportation. From this time on the industry has narrowed almost to steamer-towing of coal barges.

It may be suggested that with the new interest aroused in our inland waterways it would be possible to revive some of these departed industries. The following editorial, Post Gazette, May 1, 1929 deserves citation: "Clear indication of the manner in which river interests are preparing for the completion of the canalization of the Ohio, now measurably in sight, is offered by the activity of the boat-building wharves of the Pittsburgh harbor. One large company is rushing a number of barges to completion to make room on the ways for work still in the fabricating shops. Another is launching a barge every second day. New business is in sight through inquiries which are in the market. The indication is that the industry, once one of the most thriving in the district is coming back steadily and consistently.

"When the year round navigation to the Mississippi is established and freight is going out constantly, as will be the case before long, there naturally will be a further increase in the building trade. But the present activity is the forerunner, the shadow which is proverbially cast by a coming event. It is well to know that the marine constructors are prepared for the trade that is to come." In this matter, there seems to be room for optimism about the revival of these almost forgotten industries."

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1. Pennsylvania Archives. Second Series. VII. 422; Pennsylvania Magazine of History and Biography II 303-5.
2. The Pittsburgh Gazette, August 26, 1786. "This town must in future time be a place of great manufactory; indeed the greatest on the continent, or perhaps in the world."
3. Cramer's Almanac, 1809, p. 29.
5. Ibid.
7. Pittsburgh History 1908 Pittsburgh Sesqui Centennial, Article by Edward White, Chamber of Commerce.
12. Ibid.
14. *Know Pittsburgh* Chamber of Commerce, 1926. It has been absorbed by the new industry. Brick—Terra Cotta and Fire-Clay.
19. Harris *op. cit.*, p. 43.
20. The John Flocker & Co. Ltd. established a manufactory in 1822 which they continued for many years, but it is now a commercial concern. Information from the manager.
22. Bishop's *American Manufactures*—p. 293-4. A communication by Judge Wilkins to the *American Pioneer*: "Among others whose attention was drawn to the new field of enterprise opened on the lakes after Wayne's treaty was Gen. O'Hara a distinguished citizen of Pittsburgh. He entered into a contract with the government to supply Oswego with provisions which could then be furnished from Pittsburgh cheaper than from settlements on the Mohawk. Gen. O'Hara was a far-sighted calculator, he had obtained correct information as to the manufacture of Salt at Salina and in his contract for provisioning the garrison, he had in view the supplying of the Western Country with Salt from Onondago—The means of transportation had to be created over the whole line; boats and teams had to be provided to get the salt from the works at Oswego—a vessel built to transport it to the landing below the falls; wagons procured to carry it to Schlosser, there boats were constructed to carry it to Black Lick. There another vessel was required to transport it to Erie. The road to the head of French Creek had to be improved, and the Salt carried in wagons across the portage, and, finally, boats provided to float it to Pittsburgh—He packed his provisions in barrels suitable for salt. They were reserved in his contract. Two vessels were built one on Lake Erie and one on Lake Ontario. The plan fully succeeded and Salt, delivered at Pittsburgh, sold at four dollars a bushel, just half the price as that brought over the mountains."
23. "The plan succeeded and salt was delivered at Pittsburgh—it sold at four dollars a bushel, just half the price of that brought over the mountains." Bishop's *American Manufactures*, p. 240.
25. Ibid., p. 542.
28. Lyford's *op. cit.*, 1834.
34. *Mercury*—May 6, 1826.
37. Thurston, op. cit., p. 176.
39. Ibid.
40. Western Pennsylvania Historical Magazine, IX (1926), 80.
42. In 1884 there were following tanneries employing 460 hands, capital $1,230,000 were: A. & J. Groetzinger; James Callery & Co.; D. Chestnut & Co.; Wm. Flaccus & Son; Franz Conrad; Hartley Bros.; A. Holstein; Charles Lappe; James Watson; C. C. Hax; Kiefer, Steifel & Co.; A. Weisse Co.; Woelfel & Sucks, Wettach & Co.; John G. Brant.—Pittsburgh Chamber of Commerce Report, 1884.
43. Classfield Directory of Tanneries in United States—1925
44. Bishop, op. cit., p. 462.
45. Thurston, op. cit., p. 176.
47. Cramer, op. cit., 1810.
49. Advocate and Advertiser—September 18, 1840.
52. Ibid.
53. Ibid., p. 50.
57. Boucher, John N., Pittsburgh and Her People, p. 507.
58. Ibid.
59. Ibid.
60. Ibid.
61. Ibid.
62. In 1826, there were six factories: James Arthur & Son, Strawberry and Cherry Alleys, 228 spindles; “Phoenix”, Allen, Grant & Co., 200 hands; John McLlroy, 80 hand looms. 150 men, Wood Street James Shaw, Market Street; Tilford & Son, 8 looms. Boucher, op. cit., p. 356.
63. Harris, op. cit., p. 147.
64. Boucher, op. cit., p. 507.
68. The Pittsburgh Press—March 28, 1929.
69. Other factories in existence later were, “Phoenix Steam Cotton Factory”, Allen & Grant (1815), later known as Adams, Allen & Craft, (1823); Hope Cotton Factory, Pollard & McCormick (1841); Eagle Cotton Factory, King Pennock & Co. (1847); Anchor Cotton Works, Arbuckle & Co. (1854), succeeded by Holmes, Bell, & Co. (1868); Pittsburgh Cotton Factory, Blackstock, Bell & Co. (1843); Banner Cotton Mill, Moorhead & Co.; Penn Cotton Factory, Kennedy, Childs & Co. (1847), succeeded by Logan, Kennedy, Strong and Childs (1854).
70. Cramer, op. cit., p. 65.
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71. Ibid.
72. Ibid.
73. *Mercury*—July 11, 1820. Advertisement: “All customers are to be particular in having the wool properly cleansed and either to grease their own wool at home or bring one pound of hog’s lard or butter for eight pounds of wool.”
75. Ibid., p. 507.
76. Ibid., p. 356.
79. In *Pittsburgh First*, 1921, Complete Table of Industries Statistics notes the following: Woolen & Worsted Yarns, 1 factory, 352 hands, Capital: $1,116,000. Value of production $3,391,000.
80. Two wool carding factories still exist, 1929: P. McGrath Wool Co., making yarns; the Pittsburgh Wool Company, simply “pulling”, that is taking the wool from the skins. Information from the manager of P. McGrath Wool Co.
82. Ibid.
83. “Keel-boats were long with a narrow run way just inside the gunwale for the use of boatmen, poling or warping the boat upstream.”—Killikelly, *op. cit.*, 139.
84. “The Keel-boats were commonly manned by five to ten hands and carried twenty to thirty tons of freight. The barges were vessels similar to keel-boats, but of greater capacity, provided with oars, masts, and sails, and coils of cordage. They carried a crew of fifty men, and like the flat boats were not intended to be brought back.”—A Warner, *op. cit.*, p. 542.
86. Gen. Wilkinson, Commander-in-Chief, embarked here on the *President Adams* for the lower Mississippi, June 8, 1798.—A. Warner, *op. cit.*
89. Lyford, *op. cit.*, p. 60.
90. Ibid.
93. Ibid.
95. “The plan if it succeeds must open up new flattering prospects to an immense country and an interior of not less than 2000 miles of as fine soil and climate as the world can produce and to a people worthy of all advantages that nature can give them.”—Zadoc Cramer, *The Navigator*, 1810.
96. The New Orleans measured keel 138 feet, carried 350 tons, made eight miles an hour. Her expenses the first year were $6,906, net gain $25,294.—Boucher, *op. cit.*, p. 371.
99. Ibid.
100. Lyford, *op. cit.*, p. 60.
102. “To a stranger nothing is more imposing than to stand on
bank of the Monongahela above the point and survey the steamboats as they depart on their long way down the Ohio, or when they arrive upon their return. There is something grand in seeing the large boats . . . Thousands of travelers embark here for the far West."—Hazard's Register of Pennsylvania, X (1832), 62.

104. Thurston, op. cit., p. 133.
105. Ibid., p. 141.
107. It was named The Allegheny by President Tyler's daughter who was visiting in Pittsburgh at the time.—Johnson, William G., Life and Reminiscences, p. 35.
108. Thurston, op. cit., p. 42.
109. Built at Pittsburgh 1857-1874: 518 barges; 497 keel-boats; 113 canal boats; 26 ferry boats; 20 schooners; 3 steam canal boats; 4 dredge boats; 7 propellers; aggregate tonnage 285,000 tons; value $23,000,000.—Thurston, op. cit., p. 139.

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