

The Financial Role of Merchants in the Development of U. S. Manufacturing, 1815-1860*

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The years after 1815 presented American businessmen with steadily increasing opportunities. The rapid growth of population—it quadrupled between 1815 and 1860—created an ever larger market for manufactures. Much of this market remained accessible (as it had been in the colonial period) to ships that plied the coastal waters and navigable rivers of the seaboard. As territorial expansion drew more and more people farther inland, proliferating transportation networks—turnpikes, inland rivers, canals, and then railroads—tied the new interior settlements to the national commerce.

Ambitious entrepreneurs responded to the challenge of the burgeoning market, and by the outbreak of the Civil War the creation of modern industrial America was well underway. Manufacturing in 1815 was an inconsequential element of the U.S. economy, carried on largely in tiny shops producing small lots; by 1860 manufacturing generated a third of the national income, much of it in a network of factories and mills engaged in large batch or continuous mass production. This growth in the capacity and sophistication of U.S. manufacturing resulted from a fusion of the technological skills of mechanics and artisans with the commercial talents of merchants. Practitioners of the new sciences of machine technology and production designed the factories and devised ways to run them; masters of the ancient arts of trade, commerce, and investment supplied the money to build and operate factories. They also provided the combination of skills needed to market the rising tide of production.

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This union of competencies proved ideally suited to the problems of the early U.S. economy. Consequently, virtually every ante-bellum manufacturing firm which successfully produced for markets outside its local area developed as a partnership between merchants and manufacturers. In almost all such cases the merchants dominated the partnership. Sometimes they did so by virtue of the fact that they perceived the potential of a growing market and established a manufacturing unit to meet the new demand. In these cases merchants controlled the firm from the beginning. In other instances mercantile dominance evolved from a manufacturer's decision to expand into outlying markets. Ambitious producers, no matter how great their technical skills, inevitably encountered problems of finance and commerce that only a partnership (formal or informal) with established merchants could solve.

First among the fledgling manufacturers' quandaries was the need for capital. Fixed (or "long-term") capital was required to buy land, buildings, and machinery, the "fixed assets" necessary for production. Successive moves toward expansion, or the need to replace obsolete plant and equipment, required repeated commitments of long-term capital.

An even more vexing difficulty was the need for short-term ("working") capital to buy raw materials, pay wages, and meet other current operating costs such as taxes, advertising, transportation, loan interest, etc.

Finally, doing business in distant markets with customers whose probity was unknown involved severe risks not encountered in selling locally. These included the dangers of extending credit to distant clients, and in securing payment in funds or notes negotiable at or near par locally.

Surviving records demonstrate conclusively that virtually all ante-bellum manufacturers encountered these problems and turned to merchants for help. The merchants responded, but they did so selectively, thus exercising the power of life or death over individual enterprises. By choosing which firms to support, the merchants turned the rising power of the machine to their own ends. Using the crass force of their capital and the cunning finesse of their craft, they exacted a stiff price for their aid: interest, discounts, commissions, but above all the price of control. They controlled the destiny of the tinkerers: Oliver Evans built a steam wagon and an automated mill; for want of capital his memory rests in the fragile hands of technology buffs. Samuel Colt made a pistol; his mercantile creditors saw him through to commemoration in frontier folklore, malt liquor, and professional baseball.

But merchants controlled not only the fate of individual enterprises; they often dictated policy to the survivors, deciding what was made, where it went, and on what terms it was sold. Control did not endure, of course.

In time the machine devoured the merchants as it devoured everything else. On the eve of the Civil War there were already signs of the deterioration of the merchants' hegemony, but it is a tribute to the merchants' skill that they adapted their ancient craft so readily to the needs of the machine age. Here, in a few brief case studies, is how they did it.

Merchants as Sources of Long Term Investment Capital

Most early manufacturing firms were proprietorships or small partnerships. The owners were usually men of limited means. Assembling the fixed assets to commence production often absorbed all the proprietors' resources. Additional fixed capital was extremely difficult to raise. Equity financing through the mass sale of securities did not begin in the United States until the railroads, and never played a significant role in manufacturing finance before the Civil War.¹

Financial institutions such as banks and insurance companies were of limited utility as sources of long-term capital. Banks would occasionally make long-term loans to manufacturers, but only on the presentation of strong collateral. They did not make unsecured loans on business prospects, however glowing. In the first decade of the nineteenth century, for example, the Bank of New York supplied capital for the construction of a Peterson, New Jersey textile mill, but the entire amount of the loan was secured by U.S. government bonds.²

Mortgages on real estate were another acceptable form of security. In the 1820's and 1830's, Washburn and Godard, a Worcester, Mass. wire and nails producing firm, obtained long-term capital from a Worcester savings bank. The bank in turn held a mortgage on the firm's machine shop, and on the mill owners' real estate.³ In 1856 the Baltimore ironmaster S. S. Keyser got funds to build a warehouse by mortgaging his family's property to a local bank.⁴ Such conservative lending policies seem to have been typical of most sound eastern banks throughout the period. In 1856, for

¹ Thomas R. Navin and Marian V. Sears, "The Rise of a Market for Industrial Securities, 1887-1902," *Business History Review*, 29 (1955), 105-138.

² Joseph J. Klein, "The Development of Mercantile Instruments of Credit in the United States," *Journal of Accountancy*, 12 (1911), 437.

³ Washburn and Godard Bill Book, Inventory and Record, 1822-1848, American Steel and Wire MSS, Baker Library, Harvard University.

⁴ Credit report on S.S. Keyser & Co., in Baltimore, Md., vol. 8, pp. 12, 397. Dun and Bradstreet MSS, Baker Library, Harvard University. These volumes are hereafter cited "D. and B." MSS, and contain dozens of similar examples.

example, the Savings Bank of Baltimore had \$190,000 outstanding in long-term industrial loans, all of it secured by real estate, bank stock, or U.S. government bonds.⁵

Insurance companies, like savings banks, were in the business of pooling individuals' savings and investing them at a profit. Insurance firms were, however, even less inclined than banks to make manufacturing loans. Refusing a loan request submitted by the Shawmut Fibre Company of Shawmut, Massachusetts an officer of the Union Mutual Life Insurance Company commented that his firm had stopped making such loans "long ago." He added, "It is the custom of our company, which has become practically a law with us, that we do not loan on manufacturing establishments."⁶

Massachusetts Hospital Life Insurance Company, which opened for business in 1818, invested heavily in the stock of New England textile mills and made large loans to individual stockholders in textile firms, but made few other investments in manufacturing. Massachusetts Life's participation in textile financing is doubtless explained by the fact that its list of stockholders consisted of names such as Lawrence, Lowell, Jackson, Cabot, Appleton, and other prominent New England merchants.⁷ These were, of course, the same families that owned controlling interest in the textile mills, and thus the merchants were in effect lending to themselves by siphoning funds from one family enterprise into another. This pattern of a merchant-controlled financial institution underwriting its stockholders' industrial investments, while refusing loans to other manufacturing proprietors and partners, was a commonplace in the period. It was one of the principal ways in which merchants were able to control ante-bellum manufacturing development.

Modern industrial firms secure long-term capital for expansion or modernization by tapping the savings of the general public. They do so through mass sales of securities, or through loans from financial institutions such as banks and insurance companies. Since neither of these methods was open to most pre-Civil War entrepreneurs, growth depended

⁵ Peter L. Payne and Lance E. Davis, *The Savings Bank of Baltimore* (Baltimore: Johns Hopkins University Press, 1956).

⁶ Josiah Drummond to Alexander H. Rice, October 21, 1889. Shawmut Fibre Co. Papers, Baker Library, Harvard University.

⁷ Gerald T. White, *A History of the Massachusetts Hospital Life Insurance Company* (Cambridge, Mass.: Harvard University Press, 1955), pp. 41-55, 85-104. For the most comprehensive discussion of textile mills' financing, see Lance E. Davis, "The New England Textile Mills and the Capital Markets: A Study of Industrial Borrowing, 1840-1860," *Journal of Economic History*, 20 (1967), 1-30.

upon personal resources and retained earnings (both of which were usually inadequate), or upon financial assistance from wealthy merchants. In such circumstances it is not surprising that many of the most successful firms were either those founded by the merchants themselves, or those in which the entrepreneur was able to secure funds for fixed capital assets through an alliance with members of the mercantile community.

Throughout the pre-Civil War period merchants controlled most of the capital available in the United States. Many built large personal fortunes through trade based on the American agricultural economy. Baltimore merchant Robert Oliver, for example, made a net profit of \$775,000 in 1806-07 through trade with Vera Cruz alone.⁸ Merchants also had access to additional funds through credit at home and abroad. Unlike manufacturers, who could obtain bank loans only on tangible collateral, prosperous merchants could borrow extensively from commercial banks, often on their signatures alone. This seeming paradox is explained by the prevailing philosophy of American bankers who, unlike their British counterparts, viewed personal wealth as a security superior to any form of commercial paper,⁹ and by the fact that merchants usually *were* the banks. An analysis of the directors and officers of the banks of New York, Philadelphia, and Baltimore in 1840, 1850, and 1860 reveals that more than two-thirds of the officials were or had been merchants. The same was true of virtually all of the private bankers in those cities.¹⁰ Middlemen therefore had access both to accumulated mercantile profits and the savings deposits of the general public.

Merchants not only had resources, they were also accustomed to seeking profitable ways to keep them employed; they were professional risk-takers. Indeed, as many historians have noted, successful merchants seem perpetually driven to find employment for surplus funds.

In previous centuries this drive had led merchants such as the Fuggers and Rothschilds into banking. Others had poured their profits back into trade, buying and selling more goods, and building more ships to haul

⁸ Stuart Bruchey, *Robert Oliver, Merchant of Baltimore, 1783-1819* (Baltimore: Johns Hopkins Press, 1956), Chapter 6.

⁹ Fritz Redlich, *The Molding of American Banking* (New York: Johnson Reprint, 1968), I, 47-48.

¹⁰ I analyzed the occupational origins of bankers by compiling a list of their names from the appropriate commercial and city directories and checking their backgrounds in city directories, local histories, etc.

Among many biographies of merchants who turned bankers are Richard H. Hart, *Enoch Pratt* (Baltimore: Enoch Pratt Free Library, 1935), and John Bach MacMaster, *The Life and Times of Stephen Girard* (Philadelphia: J. B. Lippincott, 1918).

them in. Expanded trade of necessity required larger markets, and this dynamic led Nicolo Polo and his successors to travel about the world themselves, and to finance explorations searching for trading routes and markets in the Indies.

Many American merchants followed these traditional paths in the early nineteenth century. Stephen Girard of Philadelphia became an enormously wealthy private banker. Merchant families such as the Jacksons and Lees of Boston built world-wide trading networks with branch houses in India and China. The need for greater market coverage made merchants the driving force behind early internal improvements such as the Erie and Chesapeake and Delaware Canals.

Many merchants, however, found an outlet for their surplus capital in manufacturing finance. Some, like Francis Cabot Lowell, did so at first because the Napoleonic Wars and the War of 1812 made reinvestment in foreign trade impractical. Lowell had been to England, and he realized the potential profits in textile manufacturing. Once he and his associates demonstrated the profitability of textile enterprises, other merchants were quick to make similar investments.

Some of these traders turned to manufacturing investment because of the changing American market. Population growth presented greater trading opportunities at home, and the advance of mechanization widened the market for manufacturers. In selecting their investments, merchants used their knowledge of expanding domestic markets, and usually financed those manufacturing fields for which their own trading regions were particularly suited in terms of natural resources, skilled labor, and transportation facilities. For example, Pennsylvania merchants who underwrote the state's iron industry included: the Trotter family of Philadelphia which dealt in tin and copper, but invested heavily in the Lehigh Crane Iron Works; Richard Wood, Charles Wood, and Edward Townsend, Philadelphia dry goods merchants who took over the bankrupt Cambria Iron Works and hired John Fritz to resuscitate it; and, of course, the Pittsburgh pork packer turned iron dealer, James Laughlin, who financed Benjamin Jones' rolling mill.

Many specialized merchants invested in firms that produced the particular types of goods that they sold.¹¹ In effect, this was a loose form

¹¹ For a succinct discussion of the rise of merchants who specialized either in commodity or function, and their significance to the ante-bellum economy, see Alfred D. Chandler, Jr., "The Role of Business in the United States: A Historical Survey," *Daedalus*, 98 (1969), 23-31. The most common types of functionally specialized merchants were "jobbers," who usually took title to the goods they sold, and "commission merchants," who usually did not.

of backward integration which assured continuing supplies in expanding markets, and decreased their dependence on overseas producers. Anson Phelps of New York supplemented his supply of copper and brass wares by supporting factories in the Connecticut Valley. David Reeves of Philadelphia used profits he made importing British rails to start the first integrated American rail mill, Phoenix Iron.

Merchants supplied long-term capital to these and many other enterprises. Some firms they founded themselves, and then engaged technicians to build and operate the factories. In others their involvement resulted from the initiative of an artisan who sought mercantile capital to start a new firm, or to buttress an existing one. The outstanding examples of the first case were the Waltham and Lowell textile mills, and integrated rolling mills such as Cambria and Phoenix—the largest manufacturing enterprises of their times. Merchants created these firms by forming corporations and selling stock privately to a few colleagues. Because many of these firms prospered, and because many of their histories have been written, this type of merchant capitalism is better known, but was in fact the less frequent of the two.¹²

The second case, in which an established craftsman became a manufacturer and financed expansion through an alliance with wealthy merchants, occurred far more often. Sometimes these alliances took the form of a closely held stock corporation; often they were a formal or informal partnership. Whitaker Iron (the forerunner of Wheeling Steel) illustrates the corporate method. In the 1840's George and Joseph Whitaker, the Maryland ironmasters who controlled Principio Furnace, financed their firm's growth by securing capital from the Baltimore merchants Thomas Garrett and William Chandler. The new firm issued 4,000 shares of stock. The Whitakers owned 2400; the merchants 1600.¹³

Firms established or built as partnerships between merchants and mechanics dominated many nineteenth century manufacturing industries. Among these was the railway equipment industry, in which a handful of firms founded before the Civil War survived competition and recession to account for most of the industry's output. Included in this group of major

¹² Victor S. Clark commented, "Commerce supplied capital to manufacturing in two ways: by the direct investment and by credits to industrial companies. The latter way, although less conspicuous, was probably the more important of the two." Clark, *History of Manufactures*, I, 368.

¹³ Minutes of Stockholders Meeting, 1842, 1843, 1844; Statement of Stock, Principio Furnace, 1841, both in Principio Furnace Papers, Maryland Historical Society, Baltimore Md. This collection henceforth cited "Principio MSS."

producers were the Lobdell Car Wheel Company, and Harlan and Hollingsworth (car builders) of Wilmington, Delaware; Rogers Locomotive and Machine Works of Paterson, New Jersey; and Baldwin Locomotive Works and Norris Locomotive Works, both of Philadelphia.

The first three of these firms enjoyed mercantile capital at their inception. The Lobdell Car Wheel Company began in 1830 as a partnership between Jonothan Bonney and Charles Bush. Bonney was a founder and iron worker who learned his trade at the pioneering Mt. Savage Iron Works in Maryland. Bush was a member of one of Wilmington's oldest and wealthiest mercantile families. His father supplied the original capital for the firm, and the Bush family's wealth played a crucial role in the subsequent growth of the firm.¹⁴

Rogers, Ketcham, and Grosvenor, the predecessor firm of Rogers Locomotive Works, produced its first unit in 1837. The firm combined the mechanical talents of the machinist Thomas Rogers with the wealth and mercantile talents of Morris Ketcham, a New York banker and merchant.¹⁵

Samuel Pusey, a journeyman machinist, and Samuel Harlan, a cabinet-maker, built their first railroad cars in 1836. They benefited from the financial resources of the third partner, Mahlon Betts. Betts, a member of a Quaker mercantile family, was a director of the Bank of Wilmington and Brandywine and the Savings Bank of Wilmington, as well as of three railroads: the Wilmington and Susquehanna, the Delaware and Maryland, and the Philadelphia, Wilmington, and Baltimore.¹⁶

¹⁴ See Harold C. Livesay, "The Lobdell Car Wheel Co.," *Business History Review*, 42 (1968), 171-194. The Mount Savage Iron Works where Bonney trained pioneered in making iron equipment for railroads. It rolled its first rails in the 1830's, and T rails by 1844. It was also one of the first American furnaces to use coal for fuel. Peter Temin, *Iron and Steel in Nineteenth Century America* (Cambridge Mass.: M.I.T. Press, 1964), p. 48; Edward C. Hungerford, *The Story of the Baltimore and Ohio Railroad* (New York: G. P. Putnam, 1928), I, 72.

¹⁵ *Dictionary of American Biography* (New York: Scribner, 1928-37) VIII, 112-113. Ketcham was an invaluable partner. Not only did his capital spare the firm the financial vicissitudes that beset its chief competitors Baldwin and Norris, but in addition Ketcham became a director of the Illinois Central Railroad in the 1850's, and channeled that road's locomotive orders to Rogers. See John H. White, Jr., *American Locomotives: An Engineering History* (Baltimore: Johns Hopkins Press, 1968), p. 24.

¹⁶ *Semi-Centennial Memoir of the Harlan and Hollingsworth Company* (Wilmington: Harlan and Hollingsworth, 1886), pp. 125-139, 174-175; Philadelphia, Wilmington, and Baltimore Railroad, *Annual Reports, 1840-1866*; *Wilmington City Directory*, 1845, p. 81. *Delaware Gazette*,

Norris and Baldwin belong to the category of firms rescued by the timely infusion of outside capital. William Norris began business in 1832 as the American Steam Carriage Company. By 1842 he was bankrupt and had to be rescued by his brother Richard, who came armed with a fortune made in the family dry goods business.¹⁷ Matthias Baldwin, a jeweler and instrument maker turned machinery builder, constructed his first locomotive in 1832. He avoided bankruptcy in 1837 because mercantile creditors such as Anson Phelps of New York, and Hendricks and Brother of Philadelphia extended his notes for as much as six years. He also secured capital from a succession of partners including the New Jersey industrialist and capitalist Stephen Vail (1839), and Asa Whitney of Philadelphia (1842).¹⁸

Perhaps the most dramatically successful example of this form of industrial finance was Jones and Laughlin of Pittsburgh.¹⁹ The firm began in 1853 as a partnership between Benjamin Lauth, Francis Lauth, Benjamin Jones and Samuel Kier. The Lauths were immigrant German

December 9, 1834; Jack C. Potter, "The Philadelphia, Wilmington, and Baltimore Railroad, 1831-1840" (unpublished master's thesis, University of Delaware, 1960), pp. 73-171.

¹⁷ *DAB*, VII, 555-556.

¹⁸ *DAB*, I, 541-542. Malcolm C. Clark, "The Birth of an Enterprise: Baldwin Locomotive, 1831-1842," *Pennsylvania Magazine of History and Biography*, 90 (1966), 423-444, details Baldwin's financial struggles in his early years. Judge Stephen Vail was the owner of the Speedwell Iron Works in Morristown, New Jersey, the firm that supplied Baldwin with cranks and axles for his locomotives. The Judge took no active part in the locomotive works; he turned his interest over to his sons George and Alfred. Alfred Vail is better known to history as the operator who received Samuel Morse's first message, "What hath God wrought!" in Baltimore on May 24, 1844. He had become Morse's partner in 1837, and designed most of the telegraphic apparatus used in the first transmission. Alfred apparently was a man of acute perceptions, but little faith. He spotted the potential of both Morse and Baldwin, but dropped out of both partnerships too soon, and died broke. See *DAB*, X, 136-137.

Asa Whitney had been Superintendent of the Mohawk and Hudson Railroad, and a New York State Canal Commissioner before joining Baldwin's firm. He was a member of an old Massachusetts mercantile family, and a careful businessman who brought order into Baldwin's chaotic business methods. (*DAB*, X, 156-157.) He left Baldwin in 1846 and opened a car wheel foundry which became Lobdell's chief competitor. He became president of the Philadelphia and Reading Railroad in 1860.

¹⁹ Jones and Laughlin is particularly interesting to study because it is unique among "Big Steel" firms in having grown entirely through internal expansion. It absorbed no other producing firms until 1943.

metalworkers who had built a rolling mill on the south side of the Monongahela River in 1850. Although the Lauths were mechanically ingenious (they perfected a cold-rolling process that produced a very hard iron with a smooth, shiny exterior surface),²⁰ they quickly encountered the financial difficulties that were the bane of all western Pennsylvania ironmasters' existence before the Civil War.²¹ By 1853 they were floundering, and sought added capital in the Pittsburgh mercantile community. This search eventuated in the alliance with Jones and Kier, who contributed \$10,000 cash to the business, paid the Lauths \$2700 for their previous efforts, and became equal partners in the business.²²

Jones and Kier were specialized freight commission brokers who had operated the "Mechanics' Line of Packets" between Philadelphia and Pittsburgh over the Main Line Canal and Portage Railroad. When the Pennsylvania Railroad reached Pittsburgh in 1852, they shrewdly perceived that the heyday of the freight commission broker had passed; therefore, they sold out, opened an iron commission business, and became partners with the Lauths.²³

²⁰ Thomas E. Lloyd, "History of Jones and Laughlin Steel Corporation," mimeographed copy dated 1938, in Old History Papers, Jones and Laughlin Corporation, Gateway Center, Pittsburgh, Pa. (Hereafter cited J and L MSS.) I want to thank Mr. Edward Ford, Secretary of Jones and Laughlin, and his staff for their courtesy and cooperation.

²¹ Capital shortages in Pittsburg are elaborated in Louis C. Hunter, "Financial Problems of the Early Pittsburgh Iron Manufacturers," *Journal of Economic and Business History*, 2 (1930), 520-544; Willis L. King, "Speech Delivered Before the Aliquippa Engineers Institute on the History of Jones and Laughlin Steel Corporation," November 19, 1930, mimeographed copy in J and L MSS. King was Benjamin Jones' nephew.

²² Agreement between Benjamin Lauth and Francis Lauth with S. M. Kier and B. F. Jones, December 3, 1853. J and L MSS.

²³ Kier was never an active partner in the rolling mill. In 1856 he committed a spectacular error of judgement by trading his one-quarter interest in the firm to Jones in exchange for Jones' share of their commission business. Kier was a fabulous, multi-faceted character. In addition to the freight, iron, and commission businesses, he also owned fire-brick and pottery factories. In a more exotic vein, he drew off the crude oil that seeped into his father's salt wells near Tarentum Pa., and bottled it as a panacea called "Kier's Rock Oil." He developed a following for this wondrous concoction by sending a "medicine road show" around the country in the 1840's. When a steady demand arose, he sold through regular drug channels. In the 1850's he developed a method of distilling crude oil for use as an illuminant, as well as a patent lamp in which to burn it. See Release: Benjamin F. Jones from All Liability to Co-partners in Firms of Grover, Kier and Co., and Kier, Jones and Co., and Samuel M. Kier from All Liability to Co-partners in Jones, Lauth and Co., January 17, 1856, J and L MSS; *DAB V*, 371-372.

Under the terms of the partnership Jones and both Lauths each received \$1500 salaries. The partners agreed to draw no other funds from the business; all profits were to be added to the capital. The Lauths ran the rolling mill; Jones had charge of “warehouses, books, accounts and finances.”²⁴ Jones soon proved a singularly nimble financial manager, and he saved the business, for despite the fresh injection of cash and the agreement to plow profits back into the business, the new firm almost immediately needed additional long-term and working capital. Jones was able to arrange for both; moreover, he did so on extremely favorable terms in a region where dozens of manufacturers competed for the limited quantity of capital available. The “angel” was a Pittsburgh commission merchant, James Laughlin.

Laughlin was an Irish immigrant who had made his fortune as a pork packer and seller of provisions to settlers passing through Pittsburgh on their way west. In the 1850's he operated commission houses dealing in iron and groceries in Pittsburgh and Evansville, Indiana. Laughlin sold iron from the Jones and Lauth works, and apparently had great faith in the future of the firm, for he soon became its financial backer. By March, 1855, he had already contributed \$8200 cash to the firm's capital. In that year he contributed \$40,000 additional and became a partner in the business.²⁵ As a partner Laughlin was a manufacturing entrepreneur's dream. He took no part in the active management of the business,²⁶ but backed the firm with his entire financial resources through the crucial first decade of its existence. He contributed his personal wealth to the firm's long-term capital, and used his personal credit standing to arrange for adequate working capital.

Whether J and L could have survived without Laughlin's all-out support is debatable. It was the only pre-Civil War iron firm, other than integrated rail mills, that survived to become one of “Big Steel,” and one of the few unintegrated, ante-bellum iron firms that succeeded in shifting to the integrated, high-volume structure. Compared to single-stage furnaces or mills, the integrated mill required large sums of capital. The

²⁴ Articles of Partnership between Benjamin Lauth and Francis Lauth with S. M. Kier and B. F. Jones, December 3, 1853, J. and L MSS.

²⁵ Agreement between James Laughlin and Jones, Lauth Co., March 8, 1855; Limited Partnership: Benjamin F. Jones, Bernard Lauth, and James Laughlin (James Laughlin Special Partner), Term Five Years from August 1, 1856, J and L MSS. Francis Lauth had already dropped out of the business. His brother sold out in 1864 for \$10,000, went back to Germany, and made a fortune in iron and steel there.

²⁶ His sons did, however; two of them became partners in 1861. Others joined in 1870. With one or two exceptions a member of the Jones or Laughlin families has headed the firm since its inception.

rail mills obtained theirs from the pooled resources of several merchants.²⁷ In the 1850's, Jones and Laughlin transformed the Lauth's small, single-stage bar mill into a large, integrated unit. By 1857 the firm had its own blast furnaces to furnish pig iron, thirty-one puddling and heating furnaces to refine the iron and prepare it for rolling, five trains of steam driven rolls to produce bar iron and shafting, and twenty-five nailmaking machines.²⁸ As a result of expansion and integration, capital invested rose from \$20,000 in 1853 to \$176,000 in 1861. The increase came entirely from profits and James Laughlin's cash contributions. Retained earnings alone fell far short of supplying the total additions to capital, as Table 1 below shows.

TABLE 1

Year	J&L Total Capital	Capital Added	Capital Added From Profits	Capital Added by Cash From Laughlin
1853	20,000	—	—	—
1853-1856	127,000	107,000	55,000	52,000
1856-1861	176,000	49,000	30,000	19,000
TOTAL		156,000	85,000	71,000

SOURCE: Computed from data in various articles of partnership cited above, as well as the partnership agreement of 1861, and a table of earnings and dividends submitted as an interdepartmental memo from H. S. Geneen, Comptroller of Jones and Laughlin, to W. R. Compton, Assistant Chairman of the Board, dated Dec. 2, 1952. All items are in the J and L MSS.

After 1861 the firm continued its policy of financing expansion through retained earnings. From 1854 to 1908 the firm's profit totalled \$70,000,000. Eighty per cent of it was plowed back into the business.

Great as Laughlin's contributions to the firm's long-term capital were, they were probably less important to its ultimate success than his ability to secure adequate working capital. He was able to do so because his

²⁷ For a discussion of relative capital costs of integrated and unintegrated iron works, see Temin, *Iron and Steel*; the founding and development of the ante-bellum integrated rail mills is described in Harold C. Livesay, "The Production and Distribution of Iron in Ante-Bellum America," forthcoming in *Business History Review*.

²⁸ Lloyd, "History of Jones and Laughlin"; J. P. Lesley, *Iron Manufacturer's Guide* (New York: John Wiley, 1859), pp. 247-248. The mill's capacity rose from fifteen tons per day in 1853 to one hundred tons in 1869, King, "Speech . . . before the Aliquippa Engineers . . .," J and L MSS.

endorsements enabled J & L to discount its own and its customers' short-term notes for cash to meet operating expenses. Working capital was not only far more difficult for most manufacturers to come by; the annual requirements for it greatly exceeded the average annual additions to fixed assets. In 1860, for example, when J and L's fixed assets totalled about \$176,000, it had short-term obligations of \$200,000 to the Pittsburgh Trust Co.²⁹

The firm was able to secure such extensive credit only because its paper carried the endorsement of Laughlin, a merchant and a stockholder in several Pittsburgh banks.³⁰ Jones had previously been unable to obtain such advances on the strength of his own (or his firm's) credit alone. Virtually all antebellum manufacturers had similar requirements for short-term capital relative to total investments; very few had a James Laughlin to obtain it for them. The ability to secure such funds often determined success or failure; the way in which they were obtained often determined the conduct of the business.

Problems of Working Capital

Working capital presented particularly perplexing problems to early manufacturers both because of the large quantity required, and the paucity of agencies, formal or informal, prepared to supply it. The quantity required was primarily a result of high operating costs, and the credit, banking, and monetary systems prevailing in the United States prior to the Civil War.

The Jones and Laughlin case cited above, in which short-term obligations roughly equaled the fixed assets accumulated through the entire life of the business, was not at all unusual in pre-Civil War American manufacturing firms. For example, E. I. du Pont de Nemours, the Wilmington, Delaware powder firm founded in 1802, had capital assets of \$500,000 in 1860. Its current operating expenses the same year were \$440,000. In smaller firms the ratio of current expenses to capital assets was often much

²⁹ Acknowledgement of Obligation of James Laughlin and Benjamin F. Jones to the Pittsburgh Trust Company to the Extent of \$200,000, March 16, 1860, J and L MSS. Laughlin was president of Pittsburgh Trust when he first became interested in the rolling mill.

³⁰ In order to get the Bank of Pittsburgh to discount the firm's notes and bills, Laughlin (in his role as endorser) submitted a statement of his personal wealth. In addition to a 13/32 interest in the iron works, he had \$50,000 in real estate, \$75,000 cash capital in his commission houses, and \$25,000 in bank stock. James Laughlin to President and Cashier, Bank of Pittsburgh, August 26, 1857, J and L MSS.

higher. John Roebling's wire rope factory at Trenton, New Jersey had in 1850 fixed assets of \$20,000; labor and material costs totalled \$42,000.³¹

Similar conditions prevailed in the railway supply industry, as Table 2 shows.

TABLE 2

1860*

Firm	Fixed Capital Assets	Operating Costs		Value of Products
		Wages	Material	
Harlan and Hollings- worth	\$50,000	\$36,000	\$54,000	\$102,000
Lobdell	200,000	76,000	363,000	562,000
Rogers	350,000	225,000	382,000	765,000
Baldwin	350,000	251,000	376,000	750,000
Norris	290,000	214,000	320,000	670,000

SOURCE: Computed from data in White, *American Locomotives*, p.20; *Memoir of . . . Harlan and Hollignsworth*, pp. 535-538; Baldwin Ledgers, Baldwin Locomotive Works Papers, Historical Society of Pennsylvania, Philadelphia, Pa. (Hereafter cited Baldwin MSS); *Census of Manufacturers, 1860*, pp. clxxxviii, clxxxix, 333, 343. Harlan and Hollingsworth figures are for car shops only and do not include the shipbuilding division.

Wages and raw material costs constituted the bulk of current operating expenses. Both of these were "variable costs," rising and falling with the level of production. When an entrepreneur decided to expand production, he almost immediately encountered increased payroll expenses. Raw material costs also rose, but these could often be deferred to some extent by purchasing on credit. Suppliers, however, had payrolls of their own to meet, and persistently pressed for punctual payment. Transportation costs (another variable) also had to be paid in cash or on short-term (usually thirty days or less) credit. All of these factors combined to present manufacturing entrepreneurs with a critical shortage of operating capital to meet the expenses of production.

Income, on the other hand, came from sales almost invariably made on long-term credit.³² The average term of credit in most manufacturing

³¹ *Census of Manufactures, 1860*, pp. 53, 55, et passim; D. B. Steinman, *Builders of the Bridge: The Story of John Roebling and His Son* (New York: Harcourt, Brace and Co., 1945), p. 147.

³² Cash payment was extremely rare, despite the considerable savings offered through avoidance of discount costs. Manufacturers and merchants

lines was six months, but this often fluctuated. In competitive markets, manufacturers often had to offer more generous terms. The prevalence of long credit terms was not so much a function of the money supply as of the predominantly agricultural nature of the economy. The best available estimates indicate that manufacturing contributed about one-quarter of the total value added in all American industries in 1839. By 1850, manufacturing's share had risen to about one-third.³³ In such an economy, manufacturing credit terms were necessarily tied to agricultural credit terms. The latter, of course, were a function of the harvest cycle. In either case there was considerable delay before suppliers received payment in full.³⁴

Customers paid for their purchases by sending a note—in effect a postdated check payable at the expiration of the credit period. The manufacturer needed immediate cash to meet expenses. If the note came from a local resident of good credit standing, it could sometimes be cashed at a local bank for a fee (discount) which varied according to the prevailing demand for money. The discount of course reduced the profit on sales and added to the cost of doing business.³⁵ To avoid this cost, manufacturers sometimes accepted payment in produce which they foisted off on employees as partial payment of wages.³⁶

These methods broke down as production increased and markets expanded geographically. Banks refused to accept most out-of-town notes, or

usually offered price reductions up to ten per cent for payment in cash. Despite these inducements, the only ante-bellum firm among those whose papers I have seen that habitually paid in cash, in good times and bad, was the Conshohocken, Pa. rolling mill operated by James and John Wood. Not only did the Woods pay cash for supplies; they invariably held their customers' notes to maturity, a remarkable feat at the time. See the correspondence and account books in Alan Wood Steel MSS, Eleutherian Mills Historical Library, Greenville, Del.

³³ U. S. Census Bureau, *Historical Statistics of the United States from Colonial Times to 1957* (Washington: Government Printing Office, 1960), p. 139.

³⁴ Redlich, *Banking*, I, 48.

³⁵ Just how much discount and interest costs amounted to is extremely difficult to estimate. We believe that such costs absorbed, on the average, 10% of the gross revenue in the period 1830-1860. It may well have been a great deal higher. Presumably the most successful entrepreneurs anticipated fluctuations in the money market in setting prices.

³⁶ A questionable practice later outlawed by some states, and institutionalized in "company stores" in others. Payment in produce continued with small firms throughout the period; however, it had pretty well disappeared by 1840 in the firms with which I am concerned here.

would accept them only at prohibitive discount.³⁷ Even if the manufacturer could afford to hold the note until payment date, and even if it did not prove worthless, his troubles were not over, for checks drawn on distant banks, or notes issued by them, also were subject to discount. Manufacturers therefore tried to insist on payment in local funds, or in paper that traded at face value locally.³⁸ All the while of course their suppliers were making similar demands on them. Factory owners generally were ill-equipped to deal with these perplexities; they had neither the time nor the experience. What they needed were financial intermediaries capable of supplying reliable credit information, rationalizing payments so as to minimize discount costs, and furnishing operating cash either by discounting notes, making advances on accounts receivable, or lending on inventories.

In the modern economy a complex network of formal institutions performs all these functions. National and local credit agencies abound. Banks discount reliable manufacturers' notes, and lend on receivables. Two types of companies specialize in industrial finance: commercial credit companies discount notes and lend on receivables; factoring companies buy accounts receivable outright and lend on inventories.³⁹ Before the Civil War no such salubrious conditions obtained. Credit rating agencies existed, but primarily served mercantile clients. Banks grew progressively more reluctant to discount notes bearing a manufacturer's endorsement; they rarely (if ever) lent on receivables. Commercial credit and factoring companies are a twentieth century development; the first of each type probably appeared in 1903 and 1925 respectively.⁴⁰

The late development of formal fiduciary institutions geared to manufacturers' needs, and the enduring reluctance of banks to provide working capital and finance transactions, were, like the prevalence of long-term

³⁷ This was particularly true after the demise of the Second Bank of the United States rendered transfer of funds difficult and diminished the reliability of state bank notes.

³⁸ See George Rogers Taylor, *Transportation Revolution* (New York: Harper and Row, 1968), pp. 312-323 and Chapter 15 for a lucid description of monetary and banking practices, their hazards, and abuses.

³⁹ Terris Moore, "Unsecured Bank Loans as Permanent Working Capital for Industry" (unpublished Ph.D. dissertation, Harvard University, 1936), pp. 116-117; William T. Rhame, "Competitive Advantages and Disadvantages of Agencies Making Short and Medium Term Loans to Industry" (unpublished Ph.D. dissertation, Harvard University, 1940), pp. 5-42.

⁴⁰ Moore, "Bank Loans as Working Capital," pp. 116-117; Joseph E. Hedges, *Commercial Banking and the Stock Market Before 1863* (Baltimore: Johns Hopkins Press, 1938), p. 86.

credit, largely attributable to the pre-eminence of the agricultural sector of the economy. Not until the 1880's did the total annual value of manufacturing production exceed the total value of agricultural output.⁴¹ Credit institutions (particularly commercial banks) were, therefore, oriented to financing the movement of crops to market at home and abroad. They tended to remain so for two reasons.

The first reason was a philosophical conservatism that deeply influenced banking policies. Early nineteenth century banks were not in business to take "risks" in the sense that we understand the term today. Savings banks were in business to accept deposits, pool them, and use the resulting fund of capital to invest in mortgages, or government bonds. The value of the property, or the credit of the U.S. government eliminated the element of risk.

Most commercial banks had been founded by merchants to service the needs of the agricultural and commercial economy. They facilitated commerce at home and abroad by discounting notes and serving as clearing houses for bills of exchange. These transactions were not considered hazardous because the value of the goods for which notes and bills were issued, together with the personal assets of the merchants involved in the transaction, protected the bank against losses. Because banks were not accustomed to extending these services to manufacturers, and because most early producers were men of limited means, bankers tended to regard manufacturing finance as unknown and risky. It was, therefore, beyond the scope of sound banking practice. It took decades of manufacturing growth to alter this conservative philosophy.

The second reason for the delayed entry of formal institutions into manufacturing finance was the fact that early manufacturers, finding no formal agencies willing or able to assume the financial risks of expanding production and markets, turned to merchants for help. Merchants supplied the needed capital and expertise, and in the process became deeply entrenched in the manufacturing sector.

Merchants as Financial Agents and Suppliers of Short-Term Capital

Merchants became involved in the day-to-day financial and business affairs of manufacturers as a logical outgrowth of their role as distributors of manufactured products. Few manufacturers had the time or talents to market their goods in outlying areas. Instead, they turned distribution over to specialized urban merchants whose knowledge of markets and trading

⁴¹ U.S. Census, *Historical Statistics*, pp. 139-140.

practises enabled them to manage the growing flow of goods throughout the economy.

In so doing they brought their experience and skill to bear on the assortment of capital, credit, banking, and monetary woes that beset ambitious manufacturers. Problems which defied solution by manufacturing entrepreneurs were routinely resolved by merchants using traditional techniques. Traders since the middle ages had had to assemble capital, evaluate investment risks, maintain a flow of credit information, function as investment and commercial bankers, and master the art of doing business over long distances with a polyglot assortment of currencies and commercial paper. In short, merchants routinely performed all the functions later institutionalized in formal agencies such as banks, credit bureaus and factoring companies. Their financial versatility, developed through the centuries in the pre-industrial economy, proved readily adaptable to manufacturing. Entrepreneurs who sought outlying markets were pioneers in American manufacturing; however, the commission merchants and jobbers who distributed their products functioned as they and their predecessors always had in arranging and financing transactions.

In the process they naturally kept current on the credit standing of clients, and further relieved manufacturers of credit risks by guaranteeing payment on all sales they arranged—usually charging 2 1/2% commission for the service. They also brought some order to the chaos of notes and currency. Through widespread connections in the trading and banking community, they were able to absorb and dispose of commercial paper with much less loss than manufacturers. For example, Bonney and Bush, who had many customers in the South, sold southern notes and drafts to a Philadelphia cotton broker, C.H. Abbott. Abbott in turn sent the notes South to pay for his cotton purchases. On at least one occasion, Bush, on Abbott's advice, instructed his New Orleans agent to purchase cotton with funds due them from Louisiana and Alabama. The cotton was shipped to Philadelphia and sold by Abbott, who then paid Bush with notes redeemable in Philadelphia.⁴²

Commission merchants customarily rendered payment in their own

⁴² Abbott to Bonney and Bush, March 7, 1838; Seamans and Shackelford to Bonney and Bush, April 13, 1838, Lobdell Car Wheel Co. MSS, Historical Society of Pennsylvania, Philadelphia. (Hereafter cited Lobdell MSS.)

Similar problems beset Baldwin. After 1837 he demanded payment in Philadelphia funds, or in paper that traded at par in the East. He often refused to make delivery until such payment was guaranteed. See Letterbooks, Baldwin MSS; Clark, "Baldwin Locomotive," pp. 431-432, 436-437.

notes. In the case of such prosperous individuals as Enoch Pratt of Baltimore, or Robert Cabeen of Philadelphia, these notes discounted so readily in most northeastern cities that they circulated much like banknotes, adding appreciably to the money supply, accelerating the cash flow, and easing the pressure for working capital. Merchants also supplied short-term funds in other ways. Some, like Laughlin, endorsed notes so that banks would accept them. Unlike Laughlin, most middlemen were not partners in the business and, therefore, charged a fee for the service.

Other merchants acted as note brokers, using their own funds to discount manufacturers' paper. The risks in such dealings were high, but so were the returns. Merchants' discount rates were often not subject to usury laws, or the laws were evaded. In a period when six per cent or less was the normal bank interest rate to preferred borrowers, note brokers often charged as high as thirty per cent, and rarely less than twelve per cent.⁴³ In such circumstances it is not surprising to find that many merchants borrowed heavily from banks to underwrite their discounting activities.⁴⁴ For example, the Baltimore iron brokers John Gittings and E. J. Stickney borrowed hundreds of thousands of dollars from the Savings Bank of Baltimore in the period 1845 to 1866. During that time they made loans and discounted notes for several manufacturers including Lobdell Car Wheel, and the Locust Point Furnace (Maryland).⁴⁵ Some measure of the profitability of such operations when prudently managed can be seen in the career of the Philadelphia metal dealer Nathan Trotter. Trotter habitually put his surplus funds into discounting. Between 1833 and 1852 he cleared almost half a million dollars from such deals.⁴⁶

With such widespread demand for discounting, and such great profits

⁴³ Don M. Dailey, "The Early Development of the Note Brokerage Business in Chicago," *Journal of Political Economy*, 46 (1938), 202-217; Davis, "New England Textile Mills," p. 7; Elva Tooker, "A Merchant Turns to Money-Lending in Philadelphia," *Business History Society Bulletin*, 20 (1946), 71-85; Klein, "Mercantile Instruments of Credit," p. 603.

⁴⁴ See William B. Catton, "John W. Garrett of the Baltimore and Ohio" (unpublished Ph.D. dissertation, Northwestern University, 1959), pp. 48-49, 91-93.

⁴⁵ Payne and Davis, *Savings Bank of Baltimore*; credit report of Locust Point Furnace, in Baltimore, Md., vol. 8, p. 348, D and B. MSS. On occasion Baltimore banks were reportedly unable to discount any kind of paper because the entire supply of loanable funds was in the hands of merchants and note brokers. See Klein, "Mercantile Instruments of Credit," p. 603.

⁴⁶ Elva Tooker, *Nathan Trotter* (Cambridge, Mass.: Harvard University Press, 1955), p. 182. Not all of the paper Trotter handled was manufacturers'; he also dealt in bills of exchange.

to be made, many merchants quit dealing in merchandise altogether and became specialized note brokers. Their services were expensive, but since they were available nowhere else, note brokers proved indispensable to many manufacturers. As the volume of trade increased, so did specialization. Note brokerage as a speculation by commission merchants with surplus funds was commonplace by 1830. Specialized note brokers appeared by 1840. By 1850, some of them were further specialized, handling only one kind of paper, e.g., iron or dry goods.⁴⁷ Thus volume brought disintegration of the merchants' cluster of financial competencies, just as it had already transformed the manifold mercantile functions of the all-purpose merchant into specialized fields such as dry goods jobbing. In time the process of disintegration produced specialists in every sphere of financial responsibility, and these became the precursors of the formal institutions that appeared after the Civil War.

Commission merchants also supplied working capital by making advances on sales. Brokers paid producers some portion of the total value of the goods as soon as they had been shipped. For example, in 1819 Ballard and Hall, Baltimore commission merchants, wrote Jacob Haldeman, a New Cumberland, Pa. rolling mill proprietor, after receipt of a shipment of iron, "You are at liberty to value on us payable in 90 days and your draft will meet due honor." The commission house declared itself "always willing to make advances to any desired extent on goods in hand . . . if you continue your shipments or iron."⁴⁸

This practice was universal before the Civil War, and was often formalized by a contract between a manufacturing firm and a commission

⁴⁷ Klein, "Mercantile Instruments of Credit," pp. 533-535.

⁴⁸ Ballard and Hall to Haldeman, May 18, 1819 and February 24, 1820. See also Andrew Hall to Haldeman, December 31, 1819 and David Kizer to Haldeman, March 24, 1820, Haldeman MSS, Eleutherian Mills Historical Library, Greenville, Del. Frequently such advances were subject to interest charges.

When the merchant authorized the manufacturer to "draw" on him, the manufacturer filled out a promissory note showing amount, and date of maturity. He sent this to the merchant who signed ("accepted") and returned it. The manufacturer could then hold the note to maturity or discount it for cash. The policy of drawing advances on unsold goods was not restricted to proprietorships like Haldeman's. Equity financed firms used it as well. Advances from textile selling houses were a vital source of working capital for the mills, and Whitaker Iron sometimes kept its wheeling mill running on advances from Enoch Pratt. Davis, "New England Textile Mills," pp. 6-7; Nelson Whitaker to George P. Whitaker, November 17, 1868, Whitaker Iron Papers, Maryland Historical Society. Hereafter cited "Whitaker Iron MSS."

house.⁴⁹ Typical of such agreements was one between Robeson, Brooke Company, blast furnace operators of Berks County, Pennsylvania and the Philadelphia iron brokerage house Whitaker and Coudon. The brokers bound themselves to

. . . undertake the sale of your iron for two years . . . charging you 5% commission and guarantee on the entire product of said furnace [plus] the usual charges for weighing, wharfage &c., and will advance you either in cash or our paper—monthly, the amount of sales, fast as made less charges and interest.

Whitaker and Coudon thus assumed the role of exclusive manufacturer's agent for Robeson, Brook. In return for exclusive sales rights, the brokers promised to supply working capital.

We will agree to loan you our paper to the amount of Thirty thousand dollars for which we will charge you two & one half per cent.

Several important stipulations were involved. First, the furnace had to supply five thousand tons of pig iron annually. If it failed to do so, the interest on the loan jumped to five per cent. Second, the brokers reserved the right to discount their own paper (thereby adding brokerage fees to the interest charges), and the furnace could cash it elsewhere only with permission. Third, if the loan was not repaid within a year, "We will charge you over and above the commission the street rate or charge for the money."⁵⁰

Whitaker and Coudon's loan was in effect an advance against future production. Such advances were another classic mercantile technique developed in the pre-industrial economy in the form of advances against crops, and practised throughout the nineteenth century by cotton and grain factors.⁵¹ Sometimes such gambles paid off handsomely. Gibbons

⁴⁹ Klein, "Mercantile Instruments of Credit," pp. 526-528.

⁵⁰ Whitaker and Coudon to Robeson, Brooke Company, March 8, 1858, Whitaker Iron MSS.

⁵¹ This mercantile technique was traditionally employed not only in agriculture, but was used for centuries in other industries as well. In the seventeenth century British woolen merchants made advances to weavers and London coal merchants financed the operations of mining entrepreneurs in order to assure future supplies. See William Hillyer, "Four Centuries of Factoring," *Quarterly Journal of Economics*, 53 (1939), 305-311, and John U. Nef, "Dominance of the Trader in the English Coal Industry in the Seventeenth Century," *Journal of Economic and Business History*, 1 (1928-1929), 422-433. As often subsequently happened in nineteenth century U.S. manufacturing, the coal merchants' advances of short-term capital often led to ownership of the producing property.

and Huston, a Coatesville, Pennsylvania rolling mill that specialized in boiler plate, weathered the slump of 1857 with the help of advances from Curtis Bouvé, a Boston commission house, and went on to renewed prosperity, eventually becoming Lukens Steel. Samuel Colt's suppliers (principally Naylor and Co., a New York commission house) financed him until his first government contract in the 1840's assured the success of his revolver. Commission agents also made large advances to railway equipment producers. Throughout the 1850's, for example, Morris Jesup of New York helped Lobdell, Rogers, Baldwin, and Harlan and Hollingsworth in this way.⁵² All of these firms prospered with Jesup's help, and he benefited doubly through interest on his advances, and by securing to himself preferential treatment from the major producers in his special line.⁵³

In addition to making advances and discounting notes, Jesup and his colleagues performed other valuable financial functions for both the railroad equipment manufacturers and their customers. Before the Panic of 1837, many new railroads were well financed, and were able to pay cash for their equipment. During and after the recession, funds were tighter, and railroads often sought long credit terms. Commission merchants, with their greater resources of cash and credit, were better able than manufacturers to offer the necessary credit extensions.

In addition, railroads often sought to make partial payment with their stock and bonds. For understandable reasons, producers were extremely reluctant to accept securities. For one thing many of them had sustained losses in the early years of railroad construction. Harlan and Hollingsworth accepted stock in the Annapolis and Elk Ridge Railroad in partial payment for some cars delivered in 1838. The railroad soon collapsed, and the car builders received only "some curious and antiquated specimens of the wagoner's art" in payment.⁵⁴ Bad news like this traveled fast among railroad suppliers, most of whom knew each other personally and corresponded regularly.

⁵² Curtis Bouvé to Charles Huston, October 8, 1857, December 11, 1857, and January 15, 1858, Lukens Steel MSS, Eleutherian Mills Historical Library; Correspondence, 1847-1850, Samuel Colt MSS, Connecticut Historical Society, Hartford, Conn.; Correspondence, 1850-1861, and Bush and Lobdell in Account with M. K. Jesup, 1859-1860, Lobdell MSS; Baldwin Ledgers and Letterbooks, 1857-1861, Baldwin MSS.

⁵³ On some occasions, of course, such gambles proved ill-chosen. The Columbia, S. C. commission house Pollock, Solomon, and Co. lost \$9,000 in advances when an iron furnace went bankrupt. See Ernest M. Lander, Jr., "The Iron Industry in Ante-Bellum South Carolina," *Journal of Southern History*, 20 (1954), 337-355.

⁵⁴ *Memoir ... of Harlan and Hollingsworth*, p. 176.

The principal objection manufacturers had to accepting stock or bonds in payment was, of course, the fact that they were not cash, and could be converted only at a discount. Altogether, such securities represented a heavy risk, and manufacturers resisted the pressure to accept them as much as possible. When forced to take them, as all manufacturers eventually were, they tried to minimize the risk by insisting on overpayment, e.g., \$1.50 worth of stock or bonds for each \$1.00 in material delivered.

Commission merchants were better equipped to accept large quantities of railroad securities. They had superior knowledge of the roads' finances because of their access to a constant flow of credit information. They were, therefore, better able to judge which securities were sound and which were not. They were also often willing to invest their surplus capital in railroad shares and did so by taking securities in payment for material, using their cash or credit to pay suppliers. Through this process many commission merchants became important railroad stockholders. Jesup, for example, was a major stock and bond owner in the Chicago and Alton, Toledo, Peoria, and Western, and a number of others. Both his partners, John Crerar and J.S. Kennedy, also became important railroad capitalists.⁵⁵

Middlemen also engaged in barter transactions with manufacturers, thereby reducing the need for cash operating capital. John Wood, the Conshohocken, Pennsylvania rolling mill operator, shipped sheet iron to

⁵⁵ William A. Brown, *Morris Ketchum Jesup, a Character Sketch* (New York: Scribners, 1910), pp. 34-37; all three of the partners had remarkable careers. After the Civil War they quit dealing in merchandise and became investment bankers specializing in railroad securities. Jesup was instrumental in establishing the American Museum of Natural History, and helped finance Peary's expedition to the North Pole.

Congress appointed J.S. Kennedy one of the incorporators of the Union Pacific. He was also a director of the Chicago, Burlington, and Quincy; Pittsburgh, Ft. Wayne, and Chicago; New York, Chicago and St. Louis and other railroads. He was a member of the syndicate that built the Canadian Pacific, was James J. Hill's closest associate, and participated in the formation of Northern Securities.

John Crerar was one of George Pullman's principal backers. He was an incorporator and director of the Pullman Company, and a director of the Illinois Trust and Savings Bank. Along with a talent for making money, he shared with Morris Jesup an enthusiasm for Comstockery. Jesup backed Anthony Comstock himself, and Crerar's bequest to the library he founded banned "all nastiness and immorality [including] dirty French novels and all skeptical trash and works of questionable moral tone." In the face of this sweeping edict, the trustees took the only sensible way out and restricted the Crerar Library's collections to technical and scientific works. *DAB*, II, 537-538, v. 61-62, 334-335.

Anson Phelps in return for copper and brass. Fall River Iron regularly paid Enoch Pratt and E.J. Stickney for pig iron by shipping them nails.⁵⁶ Such transactions were often advantageous for both parties, for the manufacturer disposed of his products and secured raw materials without adding to his debts or undergoing discount costs. Brokers of course profited on the sale of both raw materials and finished products.

Through the application of their financial expertise concomitant with their role as distributors and suppliers, merchants made it possible for American manufacturers to function in expanding markets. Their control of finances often allowed them to dictate policy to manufacturers. Some merchants became partners in or owners of producing firms as a result of their advances. In this way Joseph Anderson became president of Tredegar Iron in Richmond, Virginia; Morris Jesup became vice-president of Rogers Locomotive; New York commission merchant Augustus Moen joined the wire-making firm of Washburn and Godard. Similar examples abound in the histories of ante-bellum manufacturing firms.

Summary

Thus most early American manufacturing firms existed as a partnership (formal or informal) between technically knowledgeable factory owners or managers on the one hand, and mercantile capitalists on the other. Sometimes (as in the rail and textile mills) these alliances developed when merchants, perceiving a new market and seeking a profitable outlet for unused resources, pooled their funds to construct a factory, engage a supervisory staff, and commence production. On other occasions established manufacturers took in merchant partners in order to secure capital. Thus Jones and Laughlin. Jobbers and commission merchants became involved as a logical consequence of their role as distributors and suppliers.

Whatever the particular circumstances, the ultimate effect of these relationships was to open a channel through which capital poured from the mercantile sector into the manufacturing sector of the economy.

Merchants were the agents of transfer, a role which resulted naturally from their position at the nexus of American commerce. When American markets for manufactures grew in the early nineteenth century, their expansion presented both an incentive and a compulsion for mercantile participation in manufacturing finance. The incentive was the profit potential of trade in domestic products; the compulsion derived from the need to control large and dependable supplies in order to maintain control of trade

⁵⁶Correspondence, 1840-1850, Alan Wood Steel MSS; Correspondence, Iron Invoices, and Richard Borden to E. J. Stickney Company, February 18, 1848, Fall River Iron MSS, Baker Library, Harvard University.

flows that carried increasing quantities of manufactured products as the nineteenth century progressed.

While entrepreneurs built the factories and devised ways to run them, merchants provided agencies of distribution and finance. Only the pre-existence of a prosperous, experienced, and efficient mercantile community permitted such a rapid development of mass production in America, for although many artisans perceived the great potential of expanding domestic markets, few of them possessed the capital or mercantile expertise to take full advantage of the growing opportunities. Had early American producers been wholly dependent upon their own resources in operating their firms, or wholly dependent upon retained earnings in expanding them, the pace of industrialization would have been retarded. Merchants, however, drove the economy forward by supplying the needed capital and mercantile skills to the emerging industrial sector.

Out of this symbiotic combination of old mercantile wealth and talents, and new manufacturing technologies, emerged two of the pillars of American industrial maturity—the factory system that produced the goods, and the specialized institutions that financed their production and distribution.