

goods.\* The lack of financial institutions which might loan money made it extremely difficult to acquire either type of capital. Thus, the few individuals who did have money to lend were able to charge high rates of interest. This forced manufacturers (and others) to plow back profits into their businesses in order to expand. Further complicating this entire process was the lack of a stable medium of exchange.

A combination of other factors also helped deter industrialization in colonial America. Skilled workers were scarce, and the high wages they commanded increased the costs of production and lessened the ability of colonial manufacturers to compete with their English counterparts. In spite of their high wages, many artisans preferred the independence and prestige they could obtain by purchasing land and becoming farmers. Other problems were poor transportation, high freight rates, a relatively small (for the early period) and scattered population, and—most importantly—the lack of ready money in the hands of potential consumers. The average farmer received little, or no, cash when selling a crop. What cash the farmers might obtain went only for those few articles which could not be made at home.

All food was grown and processed at home. Grain was ground into flour and baked into bread and biscuits. Milk was churned into butter and cheese. Cattle were slaughtered and preserved by smoking or pickling. Beer, cider, and brandy were distilled at home. Farmers fashioned their own furniture and most of their tools. Men, women, and children cooperated in preparing, spinning, and weaving woolen, linen, and leather clothing. Candles and soap were also made by the family. Thus, home industry, or household manufacturing—as it was also called—severely impeded the growth of large-scale commercial industry in colonial America.

While shipbuilding and the production of naval stores were encouraged, English manufacturers were vehemently opposed to anything which appeared to challenge their interests (as shown by the Woolens, Hat, and Iron Acts, which will be discussed later in this chapter). In addition, colonial acts to encourage industries that might compete with English industries, whether by bounties or tariffs on English goods, were either vetoed by colonial governments or disallowed by the Privy Council. Lastly, England prohibited the emigration of skilled workers and the export of machinery.

Yet, in spite of all these obstacles, industry did develop in colonial America. One type of industry that developed may be described as domestic industry (not to be confused with household industry). In this type of industry (which was also common in Europe at the time), merchants brought raw materials such as wool or flax to the farmers and their families, and the latter would turn them into cloth. Leather making was another important domestic industry.

\*Working capital is the ready cash necessary to pay workers, buy materials, and cover the other costs of conducting a business. Capital goods are the tools and relatively simple machines necessary to produce goods.

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## Colonial Industry

*Jerome Rich*  
*Colonial America*

Daniel Neal, an early eighteenth-century historian of New England, described the amount of industry in that region at the time (1720) as "very inconsiderable." He went on to state that "it will be impossible for New England to subsist itself for some centuries of years." As we will see in this chapter, Neal's prediction proved unduly pessimistic not only for New England, but also for the middle and southern colonies as well.

### Obstacles to the Growth of Industry

Although the search for raw materials was the primary motive for colonization and competitive industrialization was strictly forbidden, the English government did hope to develop in the colonies certain industries which were not found in the mother country. Artisans were sent to Jamestown from its inception, and the Virginia Company had plans for an ironworks, a naval stores industry, and the manufacture of glass. None of these plans materialized, however, partly because of the profitability of tobacco growing.

Later colonies offered bounties to encourage the establishment of some of the industries mentioned above, but in spite of those subsidies, America never became industrialized, even as the word was understood at the time. One reason for this was the lack of capital—either working capital or capital

### Forest-Based Industries

Still more crucial were the commercial industries which developed in the colonies. Even before the colonies were founded, fish, furs, and timber were in great demand in western and southern Europe. England was in dire need of wood for shipbuilding and for charcoal, which was basic to the smelting of iron. However, England obtained much less timber than it hoped from the colonies because American oak, pine, and maple trees were in great demand in the colonies themselves for construction of homes, ships, furniture, tools, and household implements. Coopers, or barrelmakers, also consumed a tremendous amount of wood because barrels were used to contain tobacco, sugar, wine, rice, fish, meat, naval stores, and all the other products which today are packed in cardboard, tin, or plastic containers.

Maine had a sawmill as early as 1623; New Hampshire built one in 1635. These and the many later mills were powered either by water or wind. Most of the planks, shingles, and clapboards produced by these mills were consumed locally, but when in 1722 England abolished its import duty on American lumber (and later actually placed it on the list of enumerated articles) large amounts went to the mother country. However, as was the case with other enumerated articles, a significant quantity continued to be exported to other nations, particularly Spain and Portugal. By the time of the Revolution, the colonies exported 40 million board feet of lumber, 15,000 tons of timber, and 20 million barrel staves.

Shipbuilding was another early colonial industry. Attempts to build ships were made at Jamestown; the Dutch built a ship on Manhattan Island in 1614; two ships were built at Plymouth in 1624; and the thirty-ton *Blessing of the Bay* was built for John Winthrop in 1631. Later, after the passage of the Navigation Acts, thousands of ships were constructed in the colonies—two-thirds of them in New England and the rest in the middle colonies and upper south. The cheap price of colonial timber overcame the high cost of labor and made it possible for colonial ships to be built for about £2 to £4 a ton, about 40 percent less than a similar ship could be built in England. As a result, by the end of the colonial period, about 200,000 tons, or one-third of all British ships, were made in the colonies. An average of £140,000 worth of ships was sold annually to English merchants. Yet, most colonial ships remained under American ownership, and New England possessed a fleet of almost 2,000 merchant ships and a greater number of smaller fishing vessels. It is estimated that 33,000 seamen manned American ships—the largest single group of workers in the colonies.

The size of colony-made ships varied greatly—from 10 tons for fishing sloops to 500 tons for "topsail" ships for the Atlantic trade of the eighteenth century; the average was about 60 tons. These smaller ships, often constructed at Newport, were preferred because they could sail into shallow waters to pick up cargoes and because maritime risks were so great, particularly in

wartime, that merchants preferred to own several small ships rather than one large one. Not only was shipbuilding important in itself, but ancillary industries—sail lofts, rope yards, foundries for ships' hardware, and chandleries to provide them with supplies—created thousands of jobs for colonial workers.

One complaint of American shipbuilders was that the tallest pines (at least seventy-two feet in height and twenty-four to thirty-six inches in diameter), which made the best masts, were reserved for the royal navy. Although owners were compensated when such a tree was cut, anyone who illegally cut down a tree marked with the king's "broad arrow" was liable to a fine of up to £100. However, enforcement of this statute was lax, and although many masts were shipped to England, American ships never lacked adequate masts.

Closely allied to the shipping industry was the naval stores industry—the manufacture of pitch, tar, hemp, turpentine, and resin. Pitch, tar, and resin were necessary to protect a ship's planks and rigging. So crucial were these supplies for the English navy (which had previously depended largely on Swedish sources) that in 1705 naval stores were placed on the list of enumerated articles. Generous bounties (originally £6 a ton for hemp, £4 a ton for pitch and tar, and £3 a ton for resin and turpentine) were paid for their production. With certain modifications, these bounties were paid for most of the remainder of the colonial period. The naval stores industry boomed, particularly in North Carolina, South Carolina, and Virginia, where farmers made it an important supplement to their income. By the end of the colonial period, almost £200,000 worth of naval stores was being exported from the American colonies.

Another forest-based industry was the production of potash, which was used in England and in the colonies to make soap, glass, and fertilizers, and as a bleach in the woolen industry. Potash was a thick brown salt produced by taking the ash from hardwood trees such as the oak or birch and boiling it with water in huge kettles. Potash might then be placed in hot ovens and cooked until the carbon was burned out and it yielded a more refined product, called pearl ash. Many colonies paid bounties for the manufacture of potash or pearl ash, although the English government did not place them on the list of enumerated articles until 1764. Farmers in New England and the middle colonies were enthusiastic producers of about £50,000 worth of these products; the farmers had to clear their lands anyway, and with potash selling for £40 and £50 a ton the profits from potash production were greater than those made from the sale of raw timber.

The last of the industries we might call forest based was hat making. The making of beaver hats centered in New York, Pennsylvania, and Rhode Island. These hats were very popular in Spain, Portugal, and the West Indies as well as in the mainland colonies. When American exports reached about 10,000 a year, English hat makers, the Company of Feltmakers, felt threatened. The Hat Act of 1732 banned the export of hats from any colony, limited

colonial hat makers to two apprentices, and lengthened the period of apprenticeship to a full seven years. Although the Hat Act largely deprived colonial hat makers of their overseas markets, the domestic market continued to grow. Further, colonial hat makers also began making much cheaper hats of wool and other fabrics, which were bought by plantation owners for their slaves.

#### Sea-Based Industries

Two very profitable industries stemmed from the products of the sea. The most important of these industries was fishing. Although fishing was good all along the Atlantic coast, the area off Newfoundland, the Grand Banks, was one of the world's premier fishing grounds—abounding in cod, mackerel, salmon, and herring. Fishermen from several European nations reached the Grand Banks by 1500, if not before. There they fought each other for fishing stations where they could dry and salt their catches. By the end of the seventeenth century, however, English and colonial fishermen dominated the area.

Fishermen caught cod with hand lines and nets, using mackerel as bait. As soon as they were caught, the fish were cleaned and preserved either in salt or brine. The heads were used to feed hogs, the livers were saved for their oil (which was used to soften leather), and the tongues were considered a gourmet's delight. The remainder of the fish was divided into three grades. The best grade, the "merchantable," was sold in southern Europe and Ireland. The "middlings," or middle grade, was consumed in large quantities in every colony. The poorest grade, the "refuse," was sold at about half the price of the "merchantable" to the West Indian planters who used it to feed their slaves.

New England's own teeming waters, its proximity to the Grand Banks, its many good harbors, and its poor soil combined to make its people the leading commercial fishermen of the colonial period. It required little capital to go into the fishing business. All that was required was a small boat and a crew of eight to ten men and boys. Often these crews were made up of farmers who went to sea during their "off" season. Each fisherman worked "on his own hook"; that is, he was paid on the basis of what he caught. Even on large fishing ships, one-third of the profits was divided among the crew; one-third was spent on food, salt, nets, and other equipment; and the final third went to the ship's owner(s). By the time of the Revolution, Gloucester, Marblehead, and the other New England fishing ports were sending out over 10,000 fishermen, who brought in a catch worth £2 million, accounting for over half of New England's exports. No wonder a gilded codfish still hangs over the desk of the speaker of the Massachusetts House of Representatives.

Whaling was the second of the maritime industries. It, too, was largely limited to New England. During the seventeenth century only offshore

whaling was practiced. Whales that wandered into shallow water or drifted onto beaches and became stranded were the main victims. By the eighteenth century, as whales became more rare in the North Atlantic, larger ships—outfitted in Nantucket, Marblehead, or New Bedford—began to venture into the South Atlantic and Arctic oceans. These ships were equipped with iron pots to melt down blubber and casks in which to store the resulting oil.

In addition to oil (which was used for illumination and lubrication), whales were prized for baleen (the strainers often called whalebone) in their throat, used for women's corsets; a secretion called ambergris, used as a base for perfume; and spermaceti, or head matter, used for candles. By 1750, 300 ships (150 from Nantucket alone) employing about 4,000 men, were engaged in the whaling industry. Like fishing, whaling was a cooperative venture in which every member of the crew received a share of the profits, depending on his rank.

#### Earth-Based Industries

The processing of products grown on the surface of, or under, the earth led to the development of several other colonial industries. Lack of money and the Navigation Act's ban on the importation of relatively cheap Dutch products forced the colonists to manufacture their own clothing. As already noted, cloth making was a prime example of domestic manufacturing. Attempts at fostering commercial textile manufacturing were also made in all the northern colonies. Although costs in the colonial textile industry were so high that it presented no threat to the English, the Irish textile industry was competitive. When the Woolens Act of 1699 banned the export of woolens from Ireland, it also prohibited their export from the America colonies. Yet, only a handful of Americans could afford English-made textiles, and most continued to make or buy domestic products.

Leather making was another industry which had both domestic and commercial aspects. Almost every home made clothes, shoes, belts, and numerous other articles out of the hides of their cattle and sheep, or from the skins of other animals they were able to trap. More skilled workers made and sold the saddles, harnesses, and other paraphernalia necessary in that horse-drawn society. Shoemaking also became an important industry in Massachusetts. Most shoes were ultimately sold to the owners of slaves in the southern colonies and the West Indies.

Brewing was important as both a household and a commercial industry. Alcoholic beverages made from barley, wheat, rye, and corn (as well as a variety of fruits) were all produced and consumed in the average home. The distilling of rum, however, was a large-scale commercial enterprise. New England alone had more than 150 distilleries. Toward the end of the colonial period, about 4 million gallons of molasses were being imported from the



West Indies, and each gallon of molasses was converted into a gallon of rum. Much of this rum was consumed in American homes and inns. The surplus served as a crucial item in the slave trade with Africa and the fur trade with the native Americans.

The milling industry was extremely important in colonial America. Cornmeal was made at home, but wheat had to be ground into flour at grist mills. To encourage the construction of mills, local governments often granted mill owners exemption from taxes and from militia duty. In addition, they were allowed to keep from one-sixteenth to one-sixth (depending on the locality) of the flour or meal as their fee. Most mills were run by water power, although a few were operated by the wind. As the eighteenth century progressed, mills around New York and Philadelphia increased in size and widened their operations. They milled flour for the export trade and baked ships' biscuits, which were in great demand. Still later these large commercial millers had to be closely regulated because they attempted to hold grain off the market or otherwise increase the price of their bread.

The first colonists had busied themselves in a frantic search for gold and silver, but none was found. A profitable mining industry did develop in America, but it was based on a much less glamorous metal—iron. Bog iron, a brownish liquid that could be dug up from the bottom of swamps and ponds and made into useful utensils, was plentiful in every colony. Iron ore was also found in most colonies. With the need for iron implements so great and the cost of importing them so high, it is not surprising that Virginians attempted to forge their own iron as early as 1620. However, the Indian war of 1622 aborted this experiment. John Winthrop, Jr., was smelting iron in Massachusetts in 1644, and more sophisticated forges were soon built there and in other colonies. However, the largest number of ironworks was located in Pennsylvania. By the time of the Revolution, ironworks had become very large. It is significant, however, that the two largest ironworks—the Principio works in Maryland and the Hasenclaver works in New Jersey—were financed by English and German capitalists respectively.

The iron industry was divided into two branches. The first branch took the ore and converted it into pig and bar iron. The second produced finished wrought-iron articles such as farm tools, kitchen utensils, and stoves. Both branches flourished in colonial America during the eighteenth century. English manufacturers of pig and bar iron became so concerned that they requested that Parliament ban all colonial iron from England. The English manufacturers of finished iron products, however, wanted the colonial pig iron, which tended to be of higher quality than the English product. On the other hand, they did not want competition from finished American iron products. Parliament solved both their problems with the passage of the Iron Act of 1750. This act prohibited the erection of any new plating forges (for sheet iron), steel furnaces (to make tools), and slitting mills (for

nails) in the colonies; forbade the export of finished iron products from any colony but continued to allow the import of pig iron and bar iron into England duty free. The outbreak of the French and Indian War nullified any possibility, or reason, to enforce this law. By 1770 America was producing 27,600 tons of iron and exporting about 8,000 tons of it. This was about 15 percent of the entire world's production and was more than England was producing at the time.

### Other Colonial Industries

Attempts were made to develop numerous other industries in colonial America. Paper making became an important commercial industry, requiring complex machinery and skilled (usually German) labor. Philadelphia was the center of the paper-making industry, and Benjamin Franklin was the leading supplier of linen rags which were used in the manufacture of paper. Colonial paper mills virtually monopolized the American market because their lower shipping costs made it possible for them to undersell their English competitors.

A glass furnace was built at Jamestown as early as 1608, and a few years later a group of Italian workers was imported to produce glassware. That attempt (as most later efforts at fine colonial glassmaking) failed because of English competition. The most famous—temporary—exception was the factory built by "Baron" Stiegel with German capital near Lancaster, Pennsylvania. Stiegel prospered for several years before finally going bankrupt in 1774 because of his own extravagance. However, Caspar Wistar, a manufacturer of brass buttons, opened a successful glass factory in New Jersey, which was managed after his death by his son Richard. The Wistars' main source of income came from window glass, but they also manufactured jars, canisters, and tubing for some of Franklin's scientific experiments.

A variety of other industries started, many of which prospered in eighteenth-century America. Brick and tile works were founded in all colonies to build houses and provide them with the necessary fireplaces, chimneys, and roofs. In the 1760s several of the leading merchants of Newport formed the United Company of Spermaceit Candles, which developed a monopoly of the manufacture and sale of spermaceit candles. Also, two peculiarly "western" industries developed around Lancaster, Pennsylvania. One was the manufacture of what were later called Kentucky rifles. In 1721 Peter Leman, a Swiss gunsmith, is believed to have made a long-barreled, small-bore rifle. Other gunsmiths improved the weapon until it was faster to load and had greater accuracy than any other rifle of its time. The Conestoga wagon (described in Chapter 14) was also developed in the Lancaster area. The Conestoga wagon, together with the Kentucky rifle, helped open up the west.

### Workers and Wages

As can be seen, a wide variety of artisans was found in the colonies. Estimates vary, but it is thought that they made up about 18 percent of the colonial population. Artisans, encouraged by the high wages paid in the colonies, came from England, Scotland, Ireland, and France (the Huguenots). Many were skilled specialists who could compete successfully with their English counterparts. Nowhere is this more obvious than in the furniture industry. In the 1760s, 2 million Americans were buying less furniture from England than 200,000 Americans had bought at the beginning of the century. The upper classes also provided a market for other colonial luxury products such as silverware, wallpaper, and coaches.

Other artisans supplied their fellow colonists with shoes, hats, clothes, wigs, bread, beer, books, and newspapers. While most of these artisans were men, a surprisingly large number of women are noted in the records. Female dressmakers, milliners, hairdressers, and flower makers were common, but women were also active as shoemakers, as tinsmiths, and in other traditionally male occupations. Most women engaged in the retail trade; some also specialized in laying out the dead. Some of these women had helped their husbands while the latter were alive and then carried on the family trade when they were widowed.

No matter what the trade or craft, the standard method of learning it was similar, but not identical, to that followed in Europe at the time. The first step was apprenticeship. The apprentice agreed to work for a set number of years—usually four to seven years, but not past age eighteen for women and twenty-one for men. Apprentices also agreed to serve their masters faithfully and not to marry during the term of service. The master promised to teach the apprentice the "art and mystery" of the craft; to provide the apprentice with the necessities of life; and perhaps to give the apprentice a set of tools at the completion of the apprenticeship. In addition, the master was usually expected to teach his male (but not female) apprentice reading, writing, and some arithmetic.

Ideally, the apprentice was treated as one of the family and might eventually marry into it. On the other hand, some masters cruelly exploited their apprentices, not giving them the proper training or even the proper food. This was more often true of compulsory apprentices—orphans or illegitimate children who were bound out as apprentices by the local authorities. Although supposedly protected by law, most apprentices preferred to solve their problems by running away—often to sea. Poor girls were also apprenticed out to learn sewing, spinning, weaving, fancy needlework, cooking, or baking.

In the highly skilled trades, masters often charged a fee for taking an apprentice. This was done primarily to limit the number of apprentices and thus reduce future competition. However in some crafts the lack of candi-

dates for apprenticeship was so severe that masters in these trades often paid parents to apprentice their children to them and promised to teach their trade to these young people in three or four years rather than the more usual seven. This problem arose more commonly in the rural districts than in the towns. Because there were no formal schools for most of the colonial period, even professions such as law and medicine trained new practitioners by means of the apprenticeship system.

Once the period of apprenticeship was completed, the young man\* became a journeyman and hired himself out to a master craftsman. If he had the necessary skill and had saved enough money to buy the necessary equipment, he might become a master craftsman himself. Unlike in Europe, no guilds existed in the colonies to regulate the trades and limit individual initiative. However, a few relatively feeble attempts were made to create trade associations. In 1724 ten master carpenters formed the Carpenters Company of the City and County of Philadelphia to set prices and regulate wages in their industry. In the same year thirty-two Boston barbers organized to increase the prices for shaves and for making wigs. Other trade groups tried to form similar associations, but none was strong enough to carry out its purposes over any length of time.

Journeyman's associations were virtually nonexistent, and the only known strike during the colonial period took place in New York in 1758, when journeymen tailors walked off their jobs. Wages seem to have been the issue here, although modern workers would certainly also have protested the twelve-hour—and longer—days put in by colonial artisans. However, the work pace was slower during the colonial period, and breaks for food and liquid refreshment were frequent and lengthy.

It is difficult to generalize about wages during the colonial period. Certainly, they were higher (some allege that they were two to three times higher) than wages for comparable crafts in England. Farm workers received the lowest wages (about £10 to £15 a year just before the Revolution), but if they were hired for a month or more, they usually also received room and board. Billy G. Smith, in an article "The Material Lives of Laboring Philadelphians," has estimated that in the late colonial period in Philadelphia, a family needed about £50 a year on which to live. In families headed by sailors and unskilled laborers whose wages were about £50 if they worked steadily all year, it is obvious that the wife, and probably the children, had to supplement the family income. Women, and certainly children, seldom earned more than half of what men were paid, even when they did the same type of work. Skilled workers such as shoemakers and tailors did earn slightly over £50, and masons, carpenters, tanners, and blacksmiths often made even more. Ship's captains earned only slightly more than skilled workers, but they had the opportunity to do some trading on their own.

\*Rarely did a young woman go through this formal process to become a master.

Thus, despite its status as a nonindustrialized area, eighteenth-century America had a wide variety of enterprises which provided generous wages for its workers, met the needs of its own consumers, and produced 40 percent of that produced by Great Britain, with only one-third of the latter's population.

#### BIBLIOGRAPHY

- BINING, ARTHUR C. *Pennsylvania Iron Manufacture in the Eighteenth Century*. Harrisburg, Pa., 1938.
- BRIDENBAUGH, CARL. *The Colonial Craftsman*. New York, 1950.
- BROWN, M.L. *Firearms in Colonial America: The Impact of History and Technology, 1492-1792*. Washington, D.C., 1980.
- CLARK, VICTOR S. *History of Manufactures in the United States*, 3 vols. New York, 1929.
- ELLSWORTH, LUCIUS F. *Technology in Early America*. Chapel Hill, N.C., 1966.
- GOLDENBERG, JOSEPH A. *Shipbuilding in Colonial America*. Charlottesville, Va., 1976.
- INNES, HAROLD A. *The Cod Fisheries: The History of an International Economy*. New Haven, Conn., 1940.
- INNES, STEPHEN. *Work and Labor in Early America*. Chapel Hill, N.C., 1988.
- MALONE, JOSEPH J. *Pine Trees and Politics: The Naval Stores and Forest Policy in Colonial New England, 1691-1775*. Seattle, Wash., 1964.
- MORRIS, RICHARD B. *Government and Labor in Early America*. New York, 1946.
- MULHOLLAND, JAMES A. *A History of Metals in Colonial America*. Tuscaloosa, Ala., 1981.
- QUIMBY, IAN M.G., ed. *The Craftsman in Early America*. New York, 1984.
- SMITH, PHILIP CHADWICK. *Seafaring in Colonial Massachusetts*. Charlottesville, Va., 1981.

## Money and Social Status

In 1724, Governor William Burnet of New York and New Jersey advocated the issuance of paper money in the colonies. He claimed that it

occasions much more trade and business than would be without it and that more specie [gold and silver coin] is exported to England by reason of these paper bills than could be if there were no circulation but of specie for which reason all the merchants here seem now well satisfied with it.

Most colonists supported Burnet's view as we will read in this chapter, but the English government strongly disagreed.

#### Hard Money

A few colonists were hard-money supporters who believed that silver and to a lesser degree—gold should be the only media of exchange. They felt that any other forms of money would lead to inflation and instability. Most colonial Americans, however, if the actions of colonial assemblies are taken as representative of colonists' financial thinking, accepted Benjamin Franklin's contention that not only would the issuance of paper money benefit the colonies, but it would also "increase the vent [sale] and demand for [English] commodities." Even some English governors agreed with Governor Burnet on the advantages of paper money.

However, the battle was not merely between the proponents of specie and of paper money. From the very beginning of the colonial period, the colonists used ingenuity and sometimes disingenuousness to solve this problem, but they satisfied neither themselves nor the English government.