



CUTTING ICE ON THE SCHUYLKILL
Eli Bowen, *The Pictorial Sketch-Book of Pennsylvania* (Philadelphia, 1854), 23.

THE NATURAL ICE INDUSTRY OF PHILADELPHIA IN THE NINETEENTH CENTURY

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THE USE of ice to preserve food is an American institution. The development of the ice industry can be traced from the private icehouses of the eighteenth century through community projects to an industry that in 1860 employed thousands of people. Americans developed processes for cutting, storing, shipping, and marketing ice on a large scale. The use of ice and snow had long been known to Europeans, but they had not the extremes of temperature that made ice harvesting feasible. The cold winters of the northern United States left on the rivers and ponds a layer of ice that could be used to keep food fresh in the hot summers that followed.¹

This paper will trace the development of the ice industry in Philadelphia from colonial times to the 1870s. Philadelphia is a good city by which to study the place of the ice industry in American urbanization, both because of its location and its steady growth in the nineteenth century. The Schuylkill River provided ice that did not have to be transported far. The increasing number of people in the city and its environs created problems in securing fresh food for the inhabitants.²The coming of the railroads facilitated the movement of fruits, vegetables, meat, and dairy products into the city. Refrigeration was needed to keep this food fresh.

Peter Kalm, who visited Philadelphia in the 1750s, remarked that Saturday and Wednesday were market days, when the people had to

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¹Oscar Edward Anderson, *Refrigeration in America* (1953; reprint, Ann Arbor, 1965), 3, 5-6.

²The population in Philadelphia grew from 41,220 in 1800 to 93,665 in 1840 and to 847,170 in 1880.

buy their fresh provisions at one of the two city markets. It was almost impossible to find fresh food on other days. In summer, however, market was held practically every day and was open during the cool hours from four or five until nine o'clock in the morning.³ Farmers carried their milk to market during the night to take advantage of the lower temperature.⁴ Even so, the city dweller would find his milk sour by evening on hot days. As the city became more crowded, the farmer found increasing difficulty in getting his products to market. People with money would send special messengers to the countryside to get fresh milk and cream. Fresh meat presented as great a problem, for in hot weather meat would not keep past dinner time of the day it was killed.⁵ Butchers slaughtered their meat daily in slaughterhouses inside the city. From 1805 until 1860 meat for Philadelphians came from cattle driven from Kentucky, Ohio, Indiana, and Illinois. Fresh fish dealers tried to keep fish alive until they were purchased.⁶

While efforts were made to get fresh food to consumers, the diet of early Americans was not based primarily on perishable foods. Hogs, which could not be driven to market because they lost too much weight, made suitable cured or pickled meat. Foods were also cured by drying in the sun, salting, or spicing. Salted meat and bread dominated the diet of the urban worker.⁷

Probably very few Philadelphians in the eighteenth century stored ice for the purpose of keeping food cool during the summer months. They did find other uses for ice, such as cooling drinks and medicinal purposes. Also, ice was needed for that delicacy so enjoyed by the wealthy, ice cream. The desire of people in warmer climates for cool drinks prompted Philadelphia sea captains to use ice for ballast in their ships during trips to Southern ports.⁸

³Peter Kalm, "Peter Kalm, Scientist from Sweden," *This Was America*, ed. by Oscar Handlin (New York, 1964), 21-22.

⁴Anderson, *Refrigeration*, 9.

⁵Marshall B. Davidson, *Life in America* (Boston, 1951), II, 136-137.

⁶Anderson, *Refrigeration*, 9, 33; Henry Sinclair Drago, *Great American Cattle Trails* (New York, 1965), 9.

⁷Anderson, *Refrigeration*, 7-8; James Truslow Adams, *Provincial Society, 1690-1763*, vol. III of *A History of American Life*, ed. by Arthur M. Schlesinger and Dixon Ryan Fox (New York, 1927), 9.

⁸Anderson, *Refrigeration*, 10; Richard O. Cummings, *The American Ice Harvests* (Berkeley, 1949), 8, 172.

Some of the earliest icehouses in America were found in the Philadelphia area. Isaac Norris had one on his estate in Germantown.⁹ An icehouse at Gloucester Point served a nearby tavern. This icehouse was partially underground with a slab house lined with straw over a pit five feet deep with logs on the bottom to a depth of two feet. Sixty-one cart loads of ice were needed to fill it. In some seasons the ice would last throughout the summer, but in others it would last only until some time in August.¹⁰

In Philadelphia six or seven families shared an icehouse in the 1790s. This was a brick-lined cell in the ground that was filled in winter, by the families using the icehouse, with about 1,200 cubic feet of ice. They began using the ice in May, removing what they needed daily and placing meat in the cell to keep it cool. The ice lasted throughout the hot weather.¹¹

Marketing ice in Philadelphia probably began about the beginning of the nineteenth century when the House of Correction began to sell ice that had been piled up beside the Schuylkill River. It was sold by the bushel basket to families, wholesale in the spring, retail in the summer.¹² The Pennsylvania Hospital advertised ice for sale in July, 1804. The hospital customarily gathered ice for use in treating patients. When supplies exceeded the need, ice was available to people who wished to buy it.¹³ In 1812 Mayor Robert Wharton sold ice to a few private families, druggists, and to those who made ice cream. On a lot next to his home on Third Street near Spruce he had built a large icehouse.¹⁴

One of the first people to deal in ice regularly was Daniel George, who advertised in 1811 that he could furnish ice from his icehouse at 143 South Third Street, for export or for local use. He sold his business to George Durham in 1813. In that same year Joseph D.

⁹Townsend Ward, "The Germantown Road and Its Associations," *The Pennsylvania Magazine of History and Biography*, V (1881), 13.

¹⁰J. B. Bordley, *Essays and Notes* (Philadelphia, 1799), 370.

¹¹"Of Ice and Ice Houses," *Carey's American Museum*, XII (1792), 179.

¹²Cummings, *American Ice Harvests*, 2.

¹³"Notes and Queries," *The Pennsylvania Magazine of History and Biography*, XII (1888), 498; "Some of Philadelphia's Ice Men," *Ice Trade Journal*, XXVI (August 1, 1902), 21.

¹⁴"First Dealer in Ice in Philadelphia," *The Pennsylvania Magazine of History and Biography*, V (1881), 237.

Drinker began selling ice at Goldwater Alley near Eighth Street. Plants remained small with many changes in ownership for the next few years as the demand remained small and the profits negligible.¹⁵

The demand for ice was increasing. By 1816 fishing boats carried ice in order to preserve their fish for the Philadelphia market. In the markets, the fish were kept on ice in the summer. More people were beginning to see ice as a necessity. The ice business also profited from the lack of space for private icehouses in the increasingly congested city.¹⁶

Ice began to be harvested on a larger scale in 1821, when William Lee built an icehouse seventy feet by forty feet and twenty-six feet under ground. Customers could have one-half peck of ice daily for \$.375 per week. Ice purchased at the icehouse cost \$.25 per bushel. The imitators who followed included Henry Molier, who operated his business from Shippen Street near Second Street.¹⁷

The icemen cut their ice on the Schuylkill River, above Fairmount Dam, where a good supply could usually be obtained.¹⁸ Their methods were inefficient. Relying on axes and saws, they had to cut the ice before it got very thick. The irregularly shaped blocks would melt rapidly unless broken down into small pieces that could be packed close together. Water might be sprinkled on the ice to consolidate it into a single mass.¹⁹

The ice needs of Philadelphia in 1828 were estimated to be 7000 tons. Due to the warm winter of 1827-1828, only 600 tons could be obtained locally. As a result, ice had to be imported from Maine. In 1832 Henry Molier obtained ice from a Massachusetts company. This pointed out the need for large companies that could import ice more economically than small dealers, and who could carry supplies of ice over from one year to another.²⁰

¹⁵"Some of Philadelphia's Ice Men," 21.

¹⁶Jacques Gerard Milbert, "A French Artist Describes Philadelphia," *The Pennsylvania Magazine of History and Biography*, LXXXII (April, 1958), 215; "Some of Philadelphia's Ice Men," 21.

¹⁷"Some of Philadelphia's Ice Men," 21.

¹⁸*Ibid.*

¹⁹Anderson, *Refrigeration*, 11.

²⁰Cummings, *The American Ice Harvests*, 23-24; E. W. Metcalf to Richard Peters, Appendix No. 1, Philadelphia Ice Co., "First Annual Report, December 12, 1833," *Hazard's Register of Pennsylvania*, XIII (January 25, 1834), 52.

The Philadelphia Ice Company was formed in 1832 or 1833 to provide ice for the holders of its 600 shares and for customers. The plans of the company called for the erection of a building that would hold 200,000 bushels of ice. The icehouse was to be two hundred feet long, fifty feet wide and twenty-five feet high, entirely above ground. The company rented land between the Columbia Railroad and the Schuylkill River for the icehouse. Ice could then be raised by machinery from the river to the building. They planned to have ice carried into the city by rail. Deliveries would then be made from the railroad car in the city to the stockholders and customers. The company made arrangements to obtain ice from other points in poor seasons.²¹

Others who started ice businesses in the 1830s included Mills and Lewis on Bush Hill and later on the Schuylkill. Soltz and Hines had an icehouse near the old Navy Yard. Fetters Brothers built a large icehouse near the Market Street Bridge on the west side of the river. Parkinson and Bolton built three icehouses, at Coates and Fairview streets, on Lemon Hill, and at Broad and Walnut streets. The Carpenter Ice Company was successful for many years. Charles Carpenter harvested ice at a pond near Broad Street and Monument Cemetery, moving later to the Schuylkill. He imported ice from Newfoundland and Halifax after the poor harvest of 1842.²²

New ice harvesting methods were probably introduced to Philadelphia in 1841 by David B. Kershaw and Horace Dennett, who came to the city from New York, where they were interested in the Knickerbocker Ice Company.²³ The cutting of ice was undergoing a revolution due to the 1829 invention of a horse drawn ice cutter. With this cutter, a frame of steel teeth could be drawn over the ice, cutting parallel grooves. The frame was repeatedly drawn over the original grooves until they were about four inches deep. Cutting the ice the other way then produced square blocks. The uniform square blocks that this method produced facilitated the development of mechanical means for removing the ice from the

²¹The first officers of the company included Richard Peters, president, George Y. Browne, secretary and treasurer, and Robert Brooke, former county and city commissioner, superintendent. In 1840 Alexander Henry was president, John Binns treasurer, Benjamin F. Binns secretary, and William G. Stewart superintendent. Philadelphia Ice Company, "First Annual Report," 49-51; *McElroy's Philadelphia Directory for the Year 1840*, 318.

²²"Some of Philadelphia's Ice Men," 21.

²³Cummings, *American Ice Harvests*, 35; "Some of Philadelphia's Ice Men," 21.

water. Uniform blocks could also be stored in uniform piles, while insulation could separate the piles, keeping them from freezing together. Solid square blocks of ice reduced waste, not only in harvesting and storing, but also in distribution and delivery.²⁴

With these improvements the ice industry expanded, and the use of ice increased. The cost of cutting ice dropped to about one-third of what it had previously been. The way was prepared also for selling ice by weight rather than by volume.²⁵ As the risks involved lessened, more people entered the ice industry. Competition increased, operations increased in scale, distribution as well as production costs dropped, and prices dropped at the retail level.²⁶ In 1842 Philadelphia required about thirty tons of ice a day, which were delivered in a dozen two-wheeled carts.²⁷

David B. Kershaw was joined by David Hunt and others in establishing the Knickerbocker Ice Company of Philadelphia, named for the New York concern. In 1856 Kershaw and L. P. Fitch built an icehouse at Catskill Point on the Hudson in New York to hold ice for Philadelphia. In the 1860s they purchased ice harvesting privileges in Maine, selling their business on the Hudson. Jacob Kershaw, David's brother, became a partner in the firm. On his death Jacob's son, Edward P. Kershaw, inherited his interest. Edward Kershaw and Augustus Hunt bought the interest of David Kershaw and continued the business as Kershaw and Hunt. By 1869, at which time many of the ice companies of Philadelphia united, their company was the second largest supplier of ice in Philadelphia.²⁸

Two other companies of major importance arose in the 1850s. Theodore A. Hendry and William Cornell, brothers-in-law, began the Eagle Ice Company in 1852. The Cold Spring Ice and Coal Company, with Thomas E. Cahill as president, was incorporated in 1854. This company became the leading supplier of ice in Philadelphia, with about twenty-five wagons. The Eagle Ice Company was in third place.²⁹

²⁴Anderson, *Refrigeration*, 13, 15-16.

²⁵Cummings, *American Ice Harvests*, 22.

²⁶Anderson, *Refrigeration*, 16.

²⁷"Some of Philadelphia's Ice Men," 21.

²⁸"Some of Philadelphia's Ice Men," 21; Edward P. Kershaw Obituary, *Ice Trade Journal*, XXV (August, 1901), 11.

²⁹"Some of Philadelphia's Ice Men," 21-22.

In the 1860s the Park Commission of Philadelphia condemned the icehouses on the Schuylkill River to allow for the expansion of Fairmount Park. Thomas E. Cahill of the Cold Spring Ice and Coal Company saw more efficiency possible if Philadelphia had only one firm building the icehouses needed to serve the city, and some of the icemen agreed with him. As a result, the Knickerbocker Ice Company was incorporated in 1869 by the Pennsylvania legislature with Thomas Cahill as president and Edward Kershow as vice president. In addition to the three leading firms, some of the smaller ice dealers, with five to ten wagons each, joined the new concern. These were the Philadelphia and Boston, Mantuaville and Boston, National Bush Hill, and Union Ice Companies. John H. Johnson, who entered the ice business in 1846, transferred his Old Driver's Ice Company to the Knickerbocker Ice Company.³⁰

The ice companies of Philadelphia harvested as much ice as was economically feasible in Pennsylvania in the 1870s. They cut ice on the Schuylkill River as far upstream as Norristown. The ease of transporting ice on the Delaware River prompted them to cut ice there, on the Perkiomen Creek, and on the Lehigh River. With three years of poor harvests in the late 1870s, Philadelphia began to rely more heavily on supplies from Maine. Ice from Maine was thick and inexpensive and could be transported cheaply by coasting schooners.³¹ In 1890 the Knickerbocker Ice Company owned icehouses in Maine holding 400,000 tons.³²

As a large concern, the Knickerbocker Ice Company could expand its interests. It became a leading supplier of ice harvesting tools, which were advertised in the *Ice Trade Journal*. This journal, published in Philadelphia by the company, carried news of natural ice harvests throughout the country.³³

On the death of Thomas E. Cahill in 1878, Augustus Hunt became president of the Knickerbocker Ice Company. He, in turn, was succeeded by his son, David W. Hunt, in 1894. After the firm was

³⁰*Ibid.*, 21-22; E. P. Kershow Obituary, 11; John H. Johnson Obituary, *Ice Trade Journal*, XXV (August, 1901), 12.

³¹Henry Hall, "The Ice Industry of the United States," United States Department of the Interior, Census Office, *Tenth Census, 1880*, Vol. XXII: *Power and Machinery* (Washington, 1888), 30.

³²"Some of Philadelphia's Ice Men," 22.

³³*Ice Trade Journal*, 1877-1904; Cummings, *American Ice Harvests*, 67.

absorbed by the American Ice Company of New York in 1897, David Hunt became a vice-president of that company while managing the Philadelphia branch.³⁴

With the increased availability and use of ice, refrigeration became even more important. In many homes the refrigerator was considered a necessity, rather than a luxury, for cooling both beverages and foods. Producers and distributors of perishable foods were using refrigeration. Hotels and taverns were heavy users of ice. Refrigerated transportation developed more slowly than did other uses of refrigeration. By 1857 rail service made the use of refrigerated railroad cars practical for shipping meat from the West to the East but not until after the Civil War were they widely used.³⁵

Contributing to the expanding use of ice was the increasing importance placed on fresh fruits and vegetables in the diet. Proper diet had a place in the reform movements that swept the country in the nineteenth century. Prejudice still existed against fresh fruits and vegetables, but the traditional diet of salt meat and bread was unsuited to people leading sedentary lives in cities.³⁶

The availability of ice made possible the development of another industry in America, the brewing of lager beer. While documentation for the introduction into this country of the bottom-fermentation yeast is lacking, John Wagner was brewing lager beer by 1840 in his home on St. John Street in Philadelphia. Other brewers followed to meet the demands of German immigrants. Lager beer required a cold atmosphere both for its fermentation and for its "lagering," or storing. Ice rooms or icehouses became adjuncts of breweries so that the brewers could meet the year-round demand for their beer. The amount of ice required must have been substantial. In 1857, the first year in which the production of lager beer outstripped that of ale, stout, and porter, Philadelphia produced 180,000 barrels of the increasingly popular brew.³⁷ Brewers purchased more than 20 percent of the ice sold in Philadelphia in 1880. In addition to this, some brewers harvested their own ice.³⁸

³⁴"Some of Philadelphia's Ice Men," 22.

³⁵Anderson, *Refrigeration*, 26-28; Cummings, *American Ice Harvests*, 24, 65.

³⁶Anderson, *Refrigeration*, 14.

³⁷Stanley Baron, *Brewed in America: A History of Beer and Ale in the United States* (Boston, 1962), 175-177, 184, 230-233.

³⁸Hall, "Ice Industry of the United States," 40.

For many years the use of natural ice continued to increase. By 1880 the per capita consumption of ice was two-thirds of a ton a year in Philadelphia. Eighty-one firms, hiring 1,278 men, supplied the city with ice.³⁹ As the demand grew, supplies were augmented by machine-made ice. Pennsylvania had five artificial ice plants in 1889 and over two hundred by 1919. Eventually, ice as a means of cooling was replaced by mechanical refrigeration.⁴⁰

Expansion of the use of ice accompanied the dramatic urbanization of America in the nineteenth century, of which Philadelphia was a good example. The rapid population growth in the cities must have been possible, in part, because nineteenth-century developments of food preservation and transportation enabled the city to depend on more distant farm areas for food. With the use of ice, even fresh food could travel long distances to the consumer, who could keep it fresh in a refrigerator in his own home.

³⁹*Ibid.*

⁴⁰Cummings, *American Ice Harvests*, 71, 75, 171; Anderson, *Refrigeration*, 42.