

THE WHALE OIL TRADE

1750-1775

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OLD DARTMOUTH HISTORICAL SKETCH NUMBER 79

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Whaling Museum

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FROM the earliest days of Massachusetts' commerce overseas, the products of whales were recognized as articles of value. Not only were oil and baleen early used as commodities of trade; once the beaver pelts and furs of the New England hinterland were exhausted, whale oil alone emerged to take their place as the foremost source of sterling earned in direct trade with England. Unlike the circuitous traffic required by rum and dried fish, New England's greatest exports, whale oil and baleen found a ready market within Great Britain. There they earned for the colonial merchant the remittance chronically needed to credit against the goods he imported. Whale products, moreover, fitted well in the scheme of an imperial economy: as raw materials of value, they flowed into the mother country, either to be manufactured or sold elsewhere to increase her wealth. The commerce in oil and baleen was therefore favored by the authorities in London, despite the competition the traffic offered to the domestic fishery of England.¹

Between 1768 and 1772—the five-year period for which the records of colonial trade are most complete—whale oil accounted for 53 percent of all sterling earned by direct exports to Great Britain from the northern colonies.² Its importance as an object of remittance was obvious and the commerce in it attracted some of the greatest merchants of eighteenth-century Massachusetts. How this oil was obtained, how it was made into marketable commodities, and how the competitive forces its commerce engendered provide the keys to understanding the fundamental changes that occurred within the fishery and in the trade itself in the years between 1750 and the outbreak of the war in 1775.

¹ The introductory essay in Alexander Starbuck's *History of the American Whale Fishery from Its Earliest Inception to the Year 1876* (Washington, 1878) remains the most useful account of the colonial fishery.

² James F. Shepherd and Gary M. Walton, *Shipping, Maritime Trade, and the Economic Development of Colonial North America* (Cambridge, England, 1972), Appendix IV, Table 2, pp. 211-216.

The Revolution provides a clear-cut conclusion, marking as it did the total disruption of the colonial fishery. For a beginning, 1750 offers valid justification, for in about that year, two innovations occurred that transformed the methods and conditions of the whale-oil trade. Each involved a change in the technology of an industry otherwise notable for its adherence to traditional ways. Together, they laid the basis for American dominance of the fishery, not only as colonials but for a century and a half to come.

The first of the changes, simple in itself, profoundly altered the scope of whale hunting. It consisted of the installation aboard the vessel of the tryworks, an apparatus of iron pots set in a brick furnace, which were used to render oil from blubber. The circumstances and exact date when this was first done are not known, but the impulse that promoted the innovation is clear enough. Earlier, tryworks aboard the vessels had not been needed, either by European or American whalers. The former could do without them because their voyages took place in cold climates where blubber would keep when packed in casks until the vessel's return to a shore-based tryworks, either at home or on some northern coast. Nor did the New England whalers need them, as long as the stocks of whales close to shore were plentiful enough to permit short voyages. For the first half of the eighteenth century, this was so: a three- or four-week voyage from Nantucket or the mainland coast could be launched with a reasonable chance of taking two or three whales and getting home before the blubber spoiled. By 1750 as these local stocks became thinned out, voyages to more distant grounds were necessary. Even then, for vessels that headed north, the blubber could be kept until the voyage was over, although its deterioration over time impaired the quality of the oil. The urgency that prompted innovation arose from voyages east and south in search of unexploited stocks of whales. With tryworks once aboard, the vessels were liberated for ever-lengthening voyages; as rudimentary factory ships, they could process their catch wherever they might find it.³

³ Three quarters of a century earlier, French whalers at Spitzbergen attempted unsuccessfully to operate tryworks at sea. See Friedrich Martens, "Voyage into Spitzbergen and Greenland" (1671), in *A Collection of Documents on Spitzbergen and Greenland*, ed. Adam White (London, 1855), p. 130. The American practice may

The northern voyages, whether from Europe or the colonies, sought right whales, both for oil and baleen. To a lesser extent, humpbacks would be pursued in the bays and shallows along the coasts, but only for oil, as their baleen had little value. Sperm whales would be taken, if encountered, but lacking baleen, they were not considered the "right" whale to capture. Although the properties of sperm oil differed from that of the right or humpback, little distinction was made between them in commerce before 1750. After that year, and because of the second of the innovations that then occurred, the sperm whale became the greater prize, and through the agency of the tryworks, its capture in the temperate waters it inhabited was possible.

The innovation that increased the sperm whale's value consisted of a method of separating and utilizing spermaceti, the waxy substance found in the large cavity, or case, of the whale's head. As with the tryworks, the originators of the new procedure cannot be identified, although the meager evidence suggests as a likely candidate a Sephardic Jew, Jacob Rodriguez Rivera, who arrived in Newport in 1748.⁴ Apparently familiar with the process of tallow candle manufacturing, Rivera began in about 1751 to purchase head matter, the name then given to the mixture of oil and spermaceti taken from the whale's head, for the purpose of making candles. The process required separating the two ingredients, for only spermaceti was needed for the candles. The oil obtained was a by-product, but of such superior quality that it was quickly recognized as a more satisfactory illuminant in lamps than the oil of right or humpback whales. Thereafter, the two kinds of oil—sperm and whale—would be distinguished in the marketplace, each being sold as a separate commodity and priced accordingly. Thus head matter with its two ingredients, usually commanded three times as much as right whale

have begun in the 1740s, but logbook or other contemporary references to tryworks on board have not been found before the 1750s.

⁴ But see a puzzling advertisement in the *Boston News-Letter*, 30 March 1748, offering "Sperma Ceti Candles, exceeding all others for Beauty, Sweetness of Scent when extinguished . . . [and] emitting a soft, easy expanding light." As no evidence for the manufacture of spermaceti candles in the American colonies before 1750 has been found, the vendor, James Clement, possibly imported his wares. Yet no foreign source nor sperm whale fishery outside the colonies is known.

oil, while common or body sperm oil brought a price midway between them. Once established, the spread in prices created a wholly new incentive to engage in sperm whaling. Together with the tryworks, which made such whaling possible, it acted as the mainspring for the expansion of the fishery. Sperm whaling itself quickly became an American preserve, exclusively so up to the time of the Revolution and largely so thereafter.

The vessels used in the fishery, whether for sperm or right whaling, were usually sloops of fifty to ninety tons, with occasional brigantines and topsail schooners also being employed. They differed little from the common merchant sloops of the time and were, in fact, used interchangeably for freighting cargoes, catching cod, or chasing whales. As the center of whaling activity shifted to the newly opened sperm whaling grounds near the Azores, on the coast of Guinea, at the Brazil Banks and, by 1775, around the Falkland Islands, the voyages lengthened, and the size of the vessels increased to as much as about 150 tons. For the smaller sloops, the customary crew was thirteen, a number sufficient to allow for the manning of two five-handed whaleboats. The larger vessels on the longer voyages sometimes carried three boats and a crew of eighteen, although the available records indicate that these numbers were still not common.⁵ Whatever the size of the crew, it frequently contained some Indians, recruited on the Cape, the Vineyard, or Nantucket. Contrary to popular belief, the Indians brought to whaling no traditions or prior experience of their own. They were taught to whale, they learned well, and were esteemed, not only for their prowess but for the cheapness for which they could be hired. Few vessels did not have their Indians, occasionally enough of them to man a whaleboat on their own.⁶

The boats themselves deserve consideration, for in the years from

⁵ Although documentary material on outfitting costs and crew sizes for colonial whaling vessels is fragmentary, three useful sources are (1) Aaron Lopez Ships' Book: 1767-1772, vol. 559, Lopez Papers, Newport Historical Society, (2) Ledger B (1769) of William Rotch, Sr., and (3) Journal B (1771), also of Rotch, in the Old Dartmouth Historical Society.

⁶ Except for a well-known one-paragraph description of whale hunting by Penobscot Indians in *A True Relation of the Most Prosperous Voyage made this Present Year 1605*, by Captain George Waymouth, there is no other documentary or archaeological evidence to sustain the assertion of an independent whaling tradition by native Americans. Without such confirmation, the Waymouth account should be treated with care.

1750 to 1775 they emerged as a distinctive craft, developed for a specific service and economically useless in any other. While Europeans, then and earlier, had used boats in chasing whales, the evidence of their prints and paintings suggests that they were ships' boats or shore boats adapted for the purpose rather than true whaleboats. The distinction is important, for along the coast of southern New England, from Cape Cod to New London, whalers and boatbuilders in these years evolved a wholly American boat to answer the needs of the fishery. In 1750, the boats in use reflect an early stage of development. Often common pulling boats, they were about twenty-five feet in length, with sharp bows, round bottoms, clinker planking, and square sterns.⁷ In them, three oarsmen pulled a pair of oars, leaving space forward for the harpooner and aft for a boatheader, who steered with rudder and tiller. They were carried on deck or on "tail feathers" projecting from the stern, or were towed behind the vessel, if conditions were suitable. By 1775, twenty-five years later, significant changes had occurred: the boats were usually double-ended, being steered with an oar and carrying a crew of six, not five. They had, in short, emerged with most of the basic characteristics of the fully developed, nineteenth-century American whaleboat.

If the whaleboat evolved, some of the other features of the colonial fishery disappeared as the scale of the industry increased. One of them was the custom of mateship, meaning the sailing of two vessels in company for the season. Given the small size of the sloops and their crew, a cooperative partnership with one another made possible a pooling of effort in the pursuit of whales and during the process of cutting-in. It increased the chances of taking whales, but also provided a margin of safety to each of the vessels in case of accident at sea. An intricate code of custom and law governed the arrangements, as can be seen in a celebrated case, *Doane vs. Gage*,

⁷ For variations in available whaleboats of the period, see the letter from Jacob Rodriguez Rivera to Henry White, 19 June 1767: "I have agreable to your request been with a Whaleboat Builder to git one built as you direct, but your directions not being explicit enough he is fearful to begin it till I hears from you. . . . The Common Whaleboats here row with 5 oars, they are 20 foot keel & 27 foot from stem to stern & about 5 foot 4 in. broad. If you incline to have it either longer or broader it shall be done. He wants to know if she is to be (as she is to steer with a Rudder) Square Stern or in the form of a Common Whaleboat." Aaron Lopez Letter Book, 1767, vol. 81, Lopez Papers, Newport Historical Society.

which was argued in 1768-1769 by John Adams and James Otis.⁸

For the taking of whales, the primary implement was the two-barbed harpoon, which descended with little change from the implements of the Basques of the thirteenth century. Before 1750 and to some extent thereafter, American whalers fastened the harpoon's line, known as the short warp, to a drogue, usually consisting of a plank of wood, which would be pitched over the side to become the means of tiring the whale until it could be approached again for killing with a lance. Although the practice persisted for a time, the whaleboat itself was used increasingly to serve the purpose of the drogue. The harpoon's line now ran directly to the boat, and although increasing the hazards of the hunt, enabled the crew to reach the whale for the second encounter by simply hauling in the line.⁹ Finally, and with surprising frequency, whales were harpooned not from the boats at all but from the bowsprits of the sloops, much in the manner of swordfish harpooning from the pulpits of more recent craft.¹

Although old ways and forms persisted throughout the twenty-five years before the war, the period was one of innovation and expansion. During these years, virtually all the important practices of the nineteenth-century industry appeared, either for the first time or becoming more and more widespread in their use.² The center of this growing fishery rested on Nantucket, an outpost as dependent

⁸ For a detailed description of colonial whaling practices, see Adams' notes and minutes for the case, in *The Legal Papers of John Adams*, ed. L. Kinvin Wroth and Hiller B. Zobel, II (Cambridge, 1965), pp. 68-97. Useful information may also be found in Douglass C. Fonda, Jr., *Eighteenth Century Nantucket Whaling, As compiled from the Original Logs and Journals of the Nantucket Atheneum and the Nantucket Whaling Museum* (Nantucket, 1969).

⁹ Among the earliest accounts of fastening to a whale with a whaleboat in colonial America is Felix Christian Sporri's description of a capture off Narragansett Bay in 1662. Originally published in his *Amerianische Reiss-beschreibung Nach den Caribes Inseln, Und Neu-Engelland* (Zurich, 1677), a translation is available in Carl Bridenbaugh, *Fat Mutton and Liberty of Conscience: Society in Rhode Island, 1636-1690* (Providence, 1974), Appendix V, pp. 144-145.

¹ See Logbook of the Sloop *Dighton*, 1769, in Old Dartmouth Historical Society, and Fonda, *Eighteenth Century Nantucket Whaling*, p. 10.

² For brief summaries of the conditions of the Massachusetts fishery before the Revolution, see the "Replies to Queries: Massachusetts," submitted to Thomas Jefferson in 1784, and Jefferson's "Memoranda Concerning the American, British and French Fisheries" (1788), in *The Papers of Thomas Jefferson*, ed. Julian P. Boyd et al., VII (Princeton, 1953), 339-343, XIV (Princeton, 1958), 226-234.

on its single crop as any sugar island in the Caribbean. In 1750, its whaling fleet consisted of about sixty sloops; by 1775 it had doubled in number and tripled in tonnage. The number of vessels sailing from all other New England ports probably equalled the island's fleet in size, but her only close competitor was Dartmouth, far behind in 1750 but gaining steadily each year.

The whaling merchants of Nantucket handled the great proportion of oil taken in the fishery, usually sending it to Boston for export but occasionally breaching that established channel of trade by direct shipments to the London market. The oil itself, whether tried out on board or on shore and whether from right or sperm whales, was graded and coopered in casks suitable for shipment. Right whale oil was sold in its crude state, simply being pumped, or "recked off," from its original casks, leaving the sediments behind. Sperm oil was heated to settle out impurities and evaporate whatever water may have mixed with it. It was then graded, and designated by color: white for that tried out immediately after the whale was killed, yellow for a thinner oil, usually made from stale or improperly tried-out blubber, and brown, the poorest grade, made from blubber brought ashore, often in a rank state and worth no more than right whale oil.

For the merchants in England who dealt in oil, the failure of their American suppliers to distinguish carefully between the various grades and kinds gave rise to numerous complaints. "I must beg," writes one of them, that "you will please to order your People to be correct and exact, in the assorting, character and denomination of your Oil." It would "be of great help to us in the selling of it, and wou'd save us much cavelling her" if you would "let the Brown Oil be call'd Brown, and the White, White; and please to let Whale Oil be distinguished from the other." Although he hoped his observations "would be taken in a friendly Light," the point could not be pushed too far.⁸ As one Boston merchant advised, "I must caution

⁸ Henry Cruger, Jr., to Aaron Lopez, Bristol, 28 July 1766, in *Commerce of Rhode Island*, 1. 1726-1774, ed. Worthington C. Ford, Massachusetts Historical Society Collections, 7th series, IX. (Boston, 1914), 165. See also Cruger's letters to Lopez, 9 April 1766, and 6 April 1768, *Commerce of Rhode Island*, 1. 152-153, 236, and the blunter remarks of William Stead, London, to Lopez, 10 February 1764, Aaron Lopez Papers, Box 651, Newport Historical Society: "As to the 44 casks of white oyl my cooper tells me they most of them stunk."

you against being too nice and critical with the Nantucket men, for I can assure you nothing can be done with them in that case, the only way is to make the best Terms you can with them, whenever you have occasion to purchase; but tis in vain to attempt to tye them down to any measures they don't like."⁴

The manufacture, as distinct from the simple cleansing of sperm oil, began in 1750, probably in Newport. The first of the manufacturers sought to guard the process closely, but concealment was difficult, for the methods were not complicated. Yet attempts were made not only to limit access to information but entry into the business as well. The most fully documented case occurred in January 1751, when Benjamin Crabb of Rehoboth brought to the Massachusetts House of Representatives a petition, representing "that he and no other Person in the Province has the Art of pressing, fluxing and chrystalizing of Sperma Coeti and coarse Sperma Coeti Oyl, and of making Candles of the same." He had, he said, already erected presses and procured the utensils for manufacturing "Candles of such Transparency and Lustre in burning, that they exceed all others." The expense had been heavy, so only with due encouragement would he be able to carry on the business. In the usage of the time, encouragement meant privilege, and this indeed was what Crabb sought: "Sole use, Exercise and Benefits of making Candles of coarse Sperma Coeti Oyle within this Province for the Term of Fourteen years." The General Court assented, granting Crabb a monopoly, but for ten, rather than fourteen, years. The Act further stipulated that the candleworks would have to be located within seven miles of Boston, and that within five years, he must "well and fully instruct five of the inhabitants of this Province in the Art" that he claimed to possess alone.⁵

The conditions may not have been acceptable, for Crabb made no move to exercise the privilege. Instead, he went to Providence, where

⁴ Henry Lloyd to Aaron Lopez, Boston, 10 May 1756, in *Commerce of Rhode Island*, 1. 68.

⁵ *Acts and Resolves of the Province of Massachusetts Bay*, III. (Boston, 1878), 546-547. See also *Journals of the House of Representatives of Massachusetts, 1750-1751*, ed. Stewart Mitchell (Boston, 1952), pp. 115, 135, 165, and Starbuck, *History of the American Whale Fishery*, pp. 149-150. The date of the petition is misstated by Starbuck and others as 1750. The confusion is probably due to the fact that the period from 1 January to 24 March 1751, was considered part of 1750 under the Julian Calendar still in effect in Great Britain and the colonies.

an established Quaker merchant, Obadiah Brown, engaged him to establish and conduct a candleworks. Although the date when he began his manufactory for Brown cannot be timed precisely, it may have been as early as the summer of 1751. A surviving invoice of 21 August 1751 suggests that Crabb was already providing Brown with candles, while an undated "Schem for Contract with Obadiah Brown" may set forth the terms of their arrangement. The "Schem" included a projection of potential profits, based on the costs and receipts per ton of oil. On the expense side, there was the cost of oil, figured at £160 per ton, plus a charge of £24, payable to the supplier, for saving the head matter separate. The earlier practice of mixing the head matter with body oil continued until the candlemakers appeared on the scene, seeking head matter only and willing to pay a premium for it. A final charge of £10 for freight, commissions, and incidental charges brought the total cost per unit of raw material to £194. From it, Crabb anticipated 160 pounds of candles, to be sold at £160, as well as six barrels of clear sperm oil, obtained as a by-product of the refining process and worth £120. The return per ton of oil would thus amount to £280, leaving the two men with the neat sum of £86 over costs.⁶

Should profits in fact be realized, Crabb's "Schem" then called for their division. For his efforts in "finding & supporting all utensils in the manufactory," and providing for servants' wages and supplies, he was to have one-eighth of all the candles outright. The profits from the sale of the remaining seven-eighths would then be divided equally between them, while Brown alone would have the oil to sell. On these or similar terms, Crabb and Brown joined forces for the conduct of the candleworks. The arrangement apparently continued for the next three years, but not entirely to Brown's satisfaction. His partner may have exaggerated his knowledge of the business, for Brown was later said to have been "disappointed in the information which he expected to receive from Crabb and was obliged to learn the secret of refining by his own experiments."⁷ At any rate, Crabb dis-

⁶ Invoice, Benjamin Crabb to Obadiah Brown, Providence, 21 August 1751, and "Schem for a Contract with Obadiah Brown" in Miscellaneous Papers, Obadiah Brown, 1742-1757, Box B-814, Rhode Island Historical Society.

⁷ The assertion that Brown was disappointed with Crabb's ability was made by Obed Macy in his *History of Nantucket*, published in 1835, p. 69. See also James B. Hedges,

appears from the scene in 1756, while Brown and the nephews who succeeded him in his enterprises were on their way to becoming the largest producers of spermaceti candles in the American colonies.

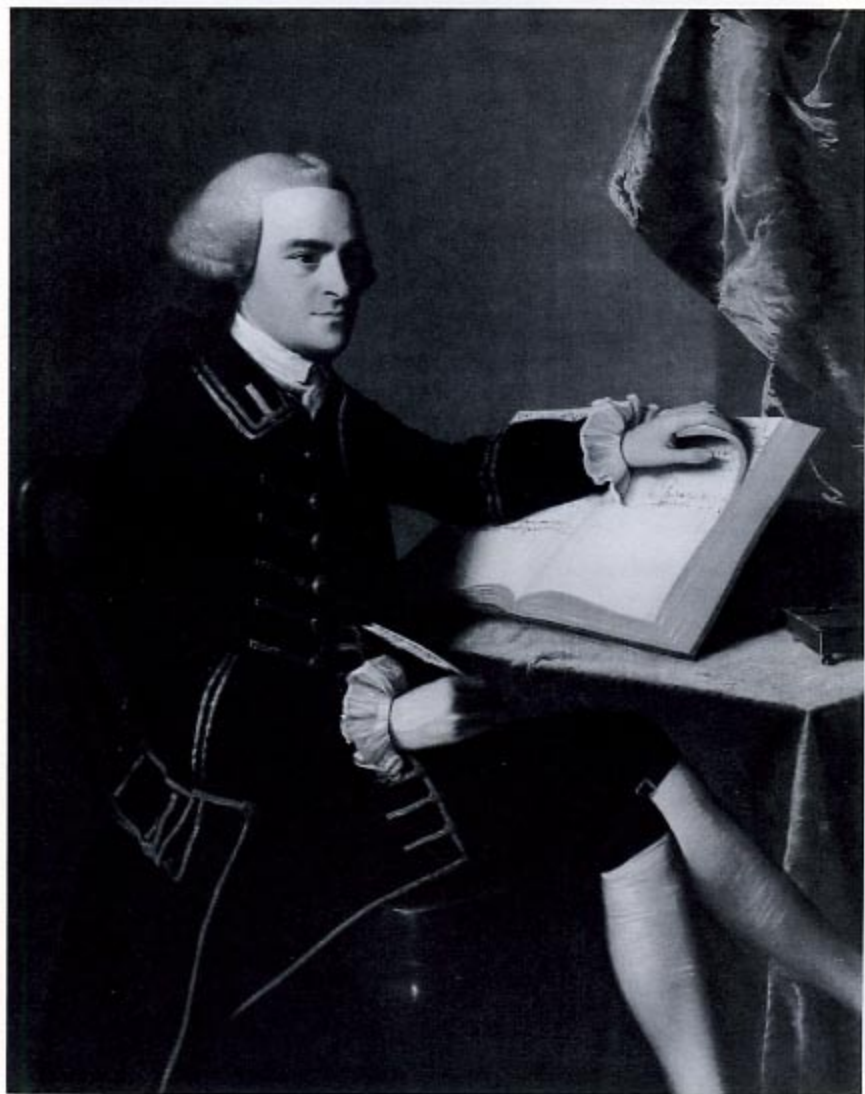
Meanwhile in Massachusetts, Crabb's relinquished monopoly attracted other claimants. The first to appear was Josiah Quincy, who brought to the House of Representatives in December 1752 a petition for "an exclusive Act granted in his Favour, upon the same Conditions with that of the said Crabb." If such privileges were granted, Quincy would then engage "a person lately from England, well skill'd in the Art of refining Sperma Caeti from the Oyl, and making the same into Candles." A candleworks would be established, utilizing a new machine "for the more easy expressing the Oyl from the Sperma; as also sundry Utensils never before used."⁸ The House had hardly time to consider the proposal before the "person lately from England" appeared with a complaint. John Surrah was his name and he spoke of "sundry hardships he had suffered by the unjust treatment of Mr. Josiah Quincy of Braintree." Being "a stranger in the country," he prayed for the "interposition and protection of this Court." Quincy asked for an opportunity to vindicate himself from these "groundless Aspersions," but the House, perhaps suspicious now of all aspiring candlemakers, dismissed the petition and complaint.⁹

With or without privilege, Quincy was determined to make candles. He had just retired from the active life of a Boston merchant, rich on the spoils of a captured Spanish treasure ship. Among the wealthiest men in the Province, he moved to the family estate in Braintree to devote his attention to manufacturing. Among his various enterprises were a chocolate mill and a glass factory, located in the settlement of Germantown and under the management of two brothers-in-law, lately arrived from Devon, Joseph Palmer and Richard Cranch. Of the latter, John Adams, whose wife and Cranch's were sisters, said he possessed "a mathematical metaphysical, me-

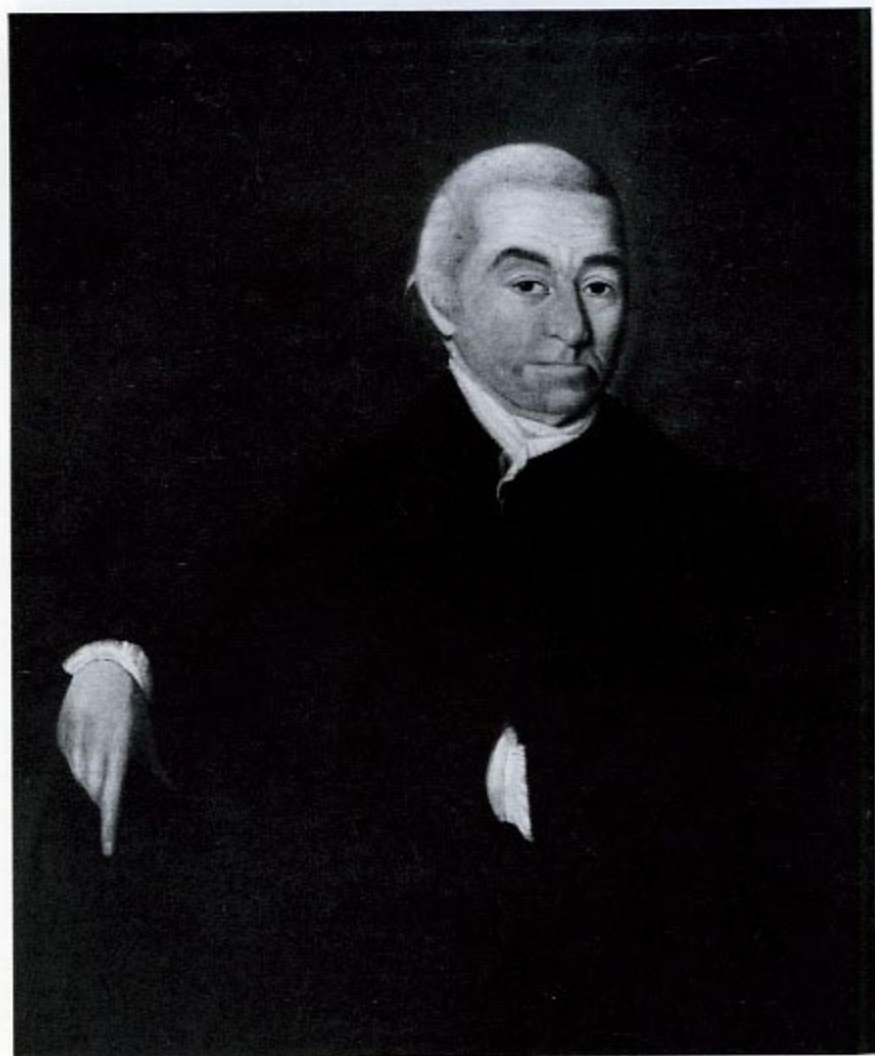
The Browns of Providence Plantations: The Colonial Years (Providence, 1968), pp. 9, 89.

⁸ *Journals of the House of Representatives of Massachusetts, 1752-1753*, ed. Stewart Mitchell (Boston, 1954), p. 78.

⁹ *Journals of the House of Representatives, 1752-1753*, pp. 132, 147, 153.



John Hancock. Oil by John Singleton Copley, 1765.



Jacob Rodriguez Rivera, circa 1775. Oil attributed to Gilbert Stuart.



Nathaniel Hurd's engraved label for Joseph Palmer & Company.



Nathaniel Hurd's engraved label for Nicholas Brown & Company.



View of Newport, Rhode Island, circa 1740. From a lithograph by J. P. Newell, 1864, based on a contemporary overmantel painting.

2 August 14th 1754. a fine breeze of Wind all the day at 8 till
 midnight & then a bit we steered NW a fine smooth sea? & have
 made a fine Run. Linnis and S. had a good Obⁿ \odot D^o: 30-30
 D^o: 14-5
 44-354

Course NW Dist 150 Diff Lat. 1-50 Lat. 44-38 Depth 46y. or. York Pl. 18 52.6

H ^{rs}	C. Steer	C. Wind	Wind & Weather	Remarks
1	SW	SW	SW	This 2d hour Moderate Weather
2	SW	SW	SW	at night sea. We chas out the M
3	SW	SW	SW	Sail & set up the 7th Stay, the
4	SW	SW	SW	Wind got round to the Westward.
5	SW	SW	SW	Saw Black Fish
6	SW	SW	SW	
7	SW	SW	SW	
8	SW	SW	SW	
9	SW	SW	SW	
10	SW	SW	SW	
11	SW	SW	SW	
12	SW	SW	SW	
13	SW	SW	SW	
14	SW	SW	SW	
15	SW	SW	SW	
16	SW	SW	SW	
17	SW	SW	SW	
18	SW	SW	SW	
19	SW	SW	SW	
20	SW	SW	SW	
21	SW	SW	SW	
22	SW	SW	SW	
23	SW	SW	SW	
24	SW	SW	SW	
25	SW	SW	SW	
26	SW	SW	SW	
27	SW	SW	SW	
28	SW	SW	SW	
29	SW	SW	SW	
30	SW	SW	SW	
31	SW	SW	SW	

Date	Course	Dist	Diff Lat	Lat	Long	Dep	M. Dist	Diff Long	Long
2 Aug 14	30 N	58	53.1	43.43	—	30. W	200 N	52 W	55.48 N



One of the earliest known renderings of a sperm whale, this drawing was made by Robert Treat Paine in his logbook of a whaling voyage on the sloop *Seafloower* in 1754.

chanical, systemical Head."¹ However this might suit a candle-maker, he took over management of Quincy's works. Known at first as Cranch and Company, then as Joseph Palmer and Company, it was, from 1754 until the Revolution, the largest of the Boston candleworks.

Except for Cranch's establishment in Braintree and Brown's in Providence, the five other early candleworks were all in Newport.² With the exception of Thomas Robinson's, they were owned by Jewish merchants of the town: Jacob Rodriguez Rivera, Naphtali Hart, Isaac Stelle, and Aaron Lopez. Of this able group the career of Aaron Lopez is most fully documented. In 1752, at age twenty-one, he came to Newport from Portugal. An older half-brother, Moses, had earlier emigrated to New York, where he married the sister of Jacob Rodriguez Rivera. In 1748, Rivera and Moses Lopez moved with their families to Newport, where Aaron joined them four years later and entangled the family alliance further by marrying Rivera's daughter, Sarah. The clannishness of the two families and their ties of marriage and commerce with co-religionists elsewhere were important elements of their success, just as similar ties of family and religion were to play a comparable role in the emergence of another clan in the whale-oil trade, the Quaker merchants of Nantucket and the mainland town of Dartmouth.³

¹ *Diary and Autobiography of John Adams*, ed. L. H. Butterfield, II. (Cambridge, 1962), p. 46. See also George Francis Dow, *Whale Ships and Whaling* (Salem, 1925), pp. 36-38.

² A Pennsylvania candleworks is known to have been in operation in the 1750s, perhaps as early as November 1751, when Benjamin Franklin referred in a letter to "a new kind of Candles very convenient to read by," which were made at Marcus Hook in Chester County. From the description, they seem almost certain to have been spermaceti rather than tallow candles: "You will find that they afford a clear white Light; may be held in the Hand, even in hot Weather, without softning; that their Drops do not make Grease Spots like those from common Candles; that they last much longer, and need little or no Snuffing." Letter, Franklin to Susanna Wright, Philadelphia, 21 November 1751 in *The Papers of Benjamin Franklin*, ed. Leonard W. Labaree, IV. (New Haven, 1961), 211.

³ The largest single collection of Lopez papers is in the Newport Historical Society. For biographical details, see Stanley F. Chyet, *Lopez of Newport: Colonial American Merchant Prince* (Detroit, 1970). On the Jewish merchants of Newport, see Jacob Rader Marcus, *Early American Jewry: The Jews of New York, New England and Canada*, I. (Philadelphia, 1951) and S. Broches, *Jews in New England, Six Monographs: Jewish Merchants in Colonial Rhode Island* (New York, 1942).

For Lopez, Rivera, and the other operators of spermaceti works, the technology of refining oil and making candles was relatively simple, once the process was known and equipment procured. Specifications for the layout and equipping for a number of candleworks survive, including those of Brown's in Providence and the Cranch-Palmer works in Braintree.⁴

One such manufactory, capable of refining 600 barrels of head matter a year, was housed in a building 30 x 30 feet, with an adjacent storage shed 24 x 30 feet. To it would be brought the year's supply of head matter, purchased in the fall at the end of the whaling season. On delivery, it would be heated in a large copper vat to liquefy the sludgelike substance and remove impurities and water. The now-fluid mixture of oil and spermaceti would then be drawn off and stored in casks in the shed, where winter cold would congeal and granulate it. A spongy, viscous mass, it would next be shovelled into strong woolen bags and placed in the most important and difficult to acquire of all the implements involved, a large screw press. In this slack press, as it was known, pressure would be applied, forcing from the bag an initial quantity of superior oil, ready for marketing as an illuminant in lamps at the highest of all oil prices. The contents of the bags were then reheated and molded in forty-pound cakes. These, in turn, were shaved into smaller pieces, which were placed in cotton bags and pressed again, this time under much greater pressure in the taut press. Again, the oil was saved, to be sold at a lesser price, and the contents of the bags, now almost pure spermaceti but brown in color, were heated once again. An alkali, generally potash, was added next to clarify and whiten the melted spermaceti, after which it was ready for molding into candles or cakes for storage or for sale.⁵

Once made, the candles would be wrapped in blue paper and

⁴ For specifications and equipment of various candleworks, see (1) "Account of Cost Spermaceti Works," in Obadiah Brown, Misc. Papers, 1742-1757, Box B-814, Rhode Island Historical Society, (2) Letter, J. Palmer & Co. to Nicholas Brown & Co., 26 August 1763, in Brown Papers, P-U5, John Carter Brown Library, (3) "Spermaceti Agreement" in *Commerce of Rhode Island*, I, 137-139, and (4) William Rotch, Jr., Account Book, "Spermaceti Candle Mfg. Accounts, 1772-1776," in New Bedford Free Public Library.

⁵ The most complete description of the process of refining head matter and spermaceti is in Charles H. Stevenson, "Aquatic Products in Arts and Industries: Fish Oils, Fats, and Waxes," *U. S. Fish Commission Report for 1902* (Washington, 1903), pp. 200-201, 244-247.

packed in boxes. Labels were usually affixed to the packages, surviving examples being Nathaniel Hurd's elaborate engraving for Joseph Palmer and Company and his even more elegant design for George Rome's later candleworks in Newport.⁶ The candles themselves then entered the stream of colonial commerce as a specialized element of the whale-oil trade. Considered and priced as a luxury item, they found affluent customers in the towns and cities of the eastern seaboard, in the sugar islands, and in the African slaving ports. Their greatest market was in the Caribbean, which annually absorbed more than 225,000 pounds in the years from 1768 to 1772. Small quantities were also sent to southern Europe, but the English market was closed to them as articles of colonial manufacture.⁷

As commodities of trade, the candles and strained oil produced at the spermaceti works never equalled in value the exports of unrefined oil, whether from sperm or right whales. Yet the trade was profitable enough, and the business attracted growing numbers of candlemakers in the two decades before the Revolution. Like manufacturers elsewhere, their interest lay in procuring raw material as cheaply as possible in order to maximize the profits from the sale of finished articles. With their emergence as a distinct and separate force in the marketplace, competing against the merchants who relied on whale oil as an earner of sterling, they brought severe disruption to the established pattern of the trade.

In 1750, the trade was almost a century old. From the beginning, it had been based on a simple relationship: the whalers caught the whales; the merchants, largely in Boston, purchased the oil and shipped it to the English market. As long as the whalers were content to tolerate the middlemen and as long as no other market for their oil existed, the system worked to the benefit of both parties. To take advantage of the opportunities it offered, the Boston merchant, Thomas Hancock, entered the trade in about 1731. Successful from the first, he derived more than half his income during the 1730s from whale oil sold in London. Yet in 1739, for reasons not fully

⁶ An impression of Hurd's label for Rome is in the collection of the John Carter Brown Library. The label for Palmer & Co. is reproduced in Dow, *Whale Ships and Whaling*, p. 37.

⁷ Shepherd and Walton, *Shipping, Maritime Trade and the Economic Development of Colonial North America*, Appendix 6, pp. 211-226.

known, he withdrew and stayed out of the trade during the next two decades of war and uneasy peace between France and Great Britain. Not until 1761, when he faced the loss of lucrative contracts for supplying the forces at Annapolis Royal and Louisbourg, did he take the advice of his London agent and plunge again into whale oil.⁸

Although the Seven Years' War had crippled the fishery, recovery was swift. Strong demand for oil in England and the opening of hitherto forbidden whaling grounds in the Gulf of St. Lawrence and Strait of Belle Isle encouraged expansion, and Hancock, urged on by his London agent, sought to take advantage of the improving situation. A three-way partnership was planned: the Nantucket firm, Folger and Gardner, would buy the whalers' oil, Hancock would ship it to England, and Barnard and Company, the agent, would do the selling there. A new ship, the *Boston Packet*, was built expressly for the trade, and in 1763, the adventure was launched with large purchases of oil on Nantucket. Delays in assembling the cargo in Boston kept the vessel from sailing until midwinter, and by the time it reached England, a schooner carrying oil directly from Nantucket arrived to skim the market and break the price.⁹ Barnard may well have echoed the words of a Bristol agent in a similar plight: "what a strange thing it is that People will not strive to be the *first* at Market, when they know all depends upon that circumstance."¹⁰ For Hancock, the disappointment was not serious but the lessons of the affair were clear: he must get to market first, even if it meant preventing his competitors from getting there at all. The most effective measure, as he saw it, was to control all future shipments to England by cornering the American supply of oil. The scheme was audacious, and was not launched until after Hancock's death in 1764. His heir and nephew, John, had been a party to the planning, and in his hands the scheme was ruthlessly pursued.

The great oil battle that resulted brought each of the three interests that had arisen in the trade into intense and bitter conflict. At the

⁸ The story of Hancock's participation in the whale-oil trade is told in detail by W. T. Baxter, *The House of Hancock: Business in Boston, 1724-1775* (Cambridge, 1945). See also N. S. B. Gras and Henrietta M. Larson, *Casebook in American Business History* (New York, 1939), pp. 66-69.

⁹ Baxter, *The House of Hancock*, pp. 168-174.

¹⁰ Letter, Henry Cruger to Aaron Lopez, Bristol, England, 6 December 1769 in *Commerce of Rhode Island*, 1. 300.

heart of the struggle was sperm oil, in one or another of its forms: spermaceti, head matter, or body oil. For shipping merchants like the Hancocks, their need was only for oil. They bought head matter, too, but only in quantities that could be so thoroughly mixed with body oil as to pass undetected through British customs where a burdensome duty awaited.² The manufacturers, on the other hand, needed only head matter, from which to derive spermaceti for candle-making. The refined oil they obtained as a by-product could be sold to the merchants or shipped elsewhere on their own account. The third group was the producers, either the whalers themselves who had oil to sell or the investors who underwrote their voyages and controlled the sale of the oil brought home.

Between each group, the lines of demarcation were seldom sharply drawn. The Browns, for example, traded in numerous commodities as general merchants. So, too, did Lopez, with a far-flung commerce that stretched from the Caribbean to the Guinea coast to England. Yet when it came to whale oil, their primary interest lay in securing the raw material needed for manufacturing candles. If access to the supply was threatened, they could seek to provide their own, as both the Browns and Lopez did on occasion by outfitting small fleets of whaleships. But the expertise required to manage a whaling venture did not come quickly, and the efforts they made to obtain head matter directly did little to reduce their vulnerability at the hands of the producers.³

Of the third group—the producers of whale oil—the dominant firm was that of Joseph Rotch & Sons, first of Nantucket, later of Bedford in the town of Dartmouth. With hindsight, they held the key to the trade, for if the merchants attempted to corner the supply, they could ship directly to England. If the manufacturers combined against them, they could erect their own candleworks. And if worse came to worst, they could conspire to deny either of the others the

² The problems of smuggling head matter under the guise of common oil are vividly described in two "remarkably saucy" letters from Joseph Rotch & Sons to (1) Rivera & Co., Naph. & Isaac Hart, Thos. Robinson and Aaron Lopez, 31 July 1764, and (2) Robert Jenkins, 16 August 1764, both in Brown Papers, John Carter Brown Library.

³ On the Browns' whaling ventures, see Hedges, *The Browns of Providence Plantations: The Colonial Years*, pp. 87–88. For Lopez, see his *Ships' Book*, vol. 559, Lopez Papers, Newport Historical Society.

oil they needed. Three alternative strategies were thus available to them and, in time, all three were used, despite efforts to forestall them by the other groups.⁴

As competition for sperm oil increased, the manufacturers moved first, conspiring among themselves to secure their supplies of head matter at a fixed price. The plan originated in 1760, when John Brown sought and obtained agreement from Rivera, Hart, and Lopez to limit the price they would pay to Rotch, the largest of the suppliers.⁵ They represented, however, only four of the ten candle-makers then at work, each bidding anxiously for his own supply. Clearly, the agreement would have to be expanded to embrace them all, if effective limits were to be set on the price. A more comprehensive arrangement was proposed in the following year by Richard Cranch, and is said to represent one of the first attempted combinations in restraint of trade in American history. In addition to Cranch and Company, the other Boston house, Edward Langdon and Son, was brought in, as were two more Newport firms—Stelle's and Robinson's—thus bringing together the eight largest manufacturers in the colonies, under the title of the "United Company of Spermaceti Candles." The articles of agreement fixed the maximum price to be paid for head matter, and set the price at which candles would be sold in New England. Other clauses called for the use of "all fair and honorable means" to deter the establishment of new works and stipulated that if the price of head matter exceeded the agreed-on limit, a fleet of twelve vessels would be outfitted at joint expense and entered in the fishery. The agreement was to run for seventeen months, during which two meetings to review the situation would be held "at the best tavern in Taunton."⁶

⁴ On the strategic position of the producers, see the series of letters from the Boston merchant, Henry Lloyd, to Aaron Lopez in 1755-1756, in *Letters of Boston Merchants*, I. Baker Library, Harvard University. On the dominant position of the Rotch firm, see Lloyd's letter to Lopez of 7 June 1756, in the Newport Historical Society, and the letter of another Boston merchant, John Rowe, to the London dealers, Booth and Lane, in *Letter Book of John Rowe, 1759-1762*, also in Baker Library. Pertinent material may also be found in Chapter III of a doctoral dissertation, "The House of Rotch: Massachusetts Whaling Merchants, 1734-1828," by Joseph L. McDevitt, Jr. (American University, 1978).

⁵ This and subsequent agreements of the "Spermaceti Trust" are best described in Hedges, *The Browns of Providence Plantations: The Colonial Years*, pp. 94-103.

⁶ The text of the agreement is printed in *Commerce of Rhode Island*, I. 88-92.

Agreement was one thing, observance another, and although the union was not achieved without difficulty, it was soon beset by serious charges of violations on one score or another. Rivera, Hart, and Lopez issued the first formal complaint in July 1762, reciting lengthy allegations of purchases made above the fixed price, of special privileges allowed the Browns, and of surreptitious purchases of head matter made through several houses not party to the agreement, specifically Moses Lopez's and that of a group known only as the Philadelphians. "These circumstances," they wrote to Cranch, "appear to us to have vacated our articles." Although with reluctance, "we must advise you for your government: that we think the articles are absolutely void and ourselves at liberty to purchase on the best terms we can." The reluctance was probably real enough, for they offered their ready concurrence "if such judicious measures can be concerted, as will put this affair upon such a basis to admit of no violation." Doubtless they shared the view which Cranch offered in reply: "the destruction of the articles will be the destruction of the manufacture."⁷

Before the agreement expired on 5 April 1763, efforts were made to tighten its terms, and on 13 April, a set of revised articles was adopted by all the original signers, plus Moses Lopez. The price of head matter was again fixed, and to avoid under-the-table purchases, the whaling agents from whom it could be bought were named. Five were in Nantucket, and one each in Newport, Providence, and Boston. All head matter taken by the American fishery was to be treated as a common stock, not only to pass through the hands of the designated agents but to be divided by them into the stated proportions now assigned each house. The Browns, for example, were to receive twenty out of every hundred barrels; Palmer and Company, fourteen; Rivera and Lopez, eleven each, and so on. In addition to the responsibility for dividing up the stock, the agents were also instructed to transmit accounts of their dealings to all the member houses and give "the most early notice" of any attempts to set up

⁷ Letter, Collins & Rivera, Naph. Hart & Co., Aaron Lopez to R. Cranch & Co., Newport, 29 July 1762; letter, R. Cranch & Co. to Nicholas Brown & Co., 16 and 23 August 1762; Brown Papers, John Carter Brown Library, L & A 59-92 Sp. C. The letter to Cranch is printed in Marcus, *Early American Jewry*, 1. 132-133.

new works.⁸ Surely, this was "too nice and critical," for the obligations imposed on the agents were hardly in their best interest. Nonetheless, the members of the United Company never faltered in their conviction that, given the limited quantity of head matter and an excess of manufacturing capacity, they must control the price of the supply if they were to sell their candles against the competition of the wax and tallow varieties or of whale oil itself as an illuminant in lamps.

The presence in the market of the Boston merchants worked against them, as Rotch made clear when he wrote to Rivera that he was "sorry to acquaint thee that we are in a most disagreeable situation with respect to [your] purchasing Head matter, as we are now well assured that all the Agreements in the world will not prevent the Boston purchasers from exceeding the Limits agreed on."⁹ Rotch, however, had little intention of selling to the Boston purchasers. His concern at the moment was to defeat Hancock's attempt to corner the market, cost what it may. To further his scheme, John had gone to Nantucket in 1764 to court the agents. He bought lavishly, with payments in cash, and without restriction as to price, spending an unheard-of £17,000 for oil, which took six vessels to freight to London.¹ "I can have what oyl I please," he crowed, "which of course takes from the other Channell and is very Chagrining to Mr. R---h."² His London agent, faced with disposing of the deluge, was alarmed; the English market would not stand the volume or the price of oil so dearly bought. Could not the rivalry be ended by enlisting Rotch in the syndicate? Hancock spurned the suggestion, which was shrewd enough, but went so far as to invite Rotch "to dine with me and no one else," and talk the matter over. In due course, the somber Quaker appeared at the mansion on Beacon Hill, probably to endure all the ostentation that Hancock could produce. Rotch, he found, "appears dispos'd to be upon amicable terms," but you in London "are not so well acquainted with that Gentleman as I am."³ The

⁸ The agreement is printed in *Commerce of Rhode Island*, 1. 97-100.

⁹ *Commerce of Rhode Island*, 1. 288-289.

¹ Baxter, *The House of Hancock*, pp. 226-227.

² Letter, Hancock to Barnard & Co., Boston, 17 August 1764, as quoted in Gras and Larson, *Casebook in American Business History*, p. 67.

³ Letters, Hancock to Barnard & Co., Boston, 5, 18 April 1765, in Gras and Larson, *Casebook*, pp. 67-68.

rivals separated, each to buy as much oil as he could, paying whatever was necessary. Again, the London agent suggested an alliance, but was rebuked: "As to my coming to any kind of conversation with Mr. R---h, I must beg leave utterly [to] decline even the thought of such a thing." I have now, he said naively, "so well Establish'd myself with those concern'd in the Whale Fishery that I can have the refusal of almost all their oyl and I think Mr. R---h has had small success."⁴

The buying campaign continued into 1766, when Hancock spent £25,000 for oil, and routed—or so he thought—his rival. Twelve ships carried his cargo to London, where, he told his agent, he would have the power to command to price. Once again, other oil reached market first, some from Nantucket, some from British whalers, some from Holland and Germany. The quantity was not large but it broke the corner and sent prices sliding. When the accounts were finally reckoned, Hancock's losses were serious: of six shipments for which records survive they amounted to more than £3,600. He took the failure more or less in stride, although with credit impaired he could no longer count on complete support from his London agent. For both of them, the lesson of the campaign was clear: only a worldwide cartel could corner the market and this, they knew, was beyond their power. Although Hancock continued in the business after 1766, he did so on a dwindling scale, never intruding very far into the domain in which he had been beaten.⁵

With Hancock's withdrawal from the competition, Rotch then turned on the manufacturers and did what they had feared from the beginning: he became a candlemaker. His entry into the field confronted them with a wholly new situation. He was, after all, the leading whaling merchant in the colonies, buying and selling more oil and head matter than any others. Being on the spot, in touch with most of the catchers, he held the whip hand. While Hancock and the manufacturers could attempt to control their specialized interests in the trade, Rotch was in a position to integrate his share of the entire enterprise, from the provisioning of vessels and their outfits to the distribution of their catches, either through trade or manufacture.

⁴ Letters, Hancock to Barnard & Co., Boston, 17 April, 8 November 1766, in Gras and Larson, *Casebook*, pp. 67-68.

⁵ Baxter, *The House of Hancock*, pp. 243-250.

Rotch's decision to become a manufacturer led him to New Bedford, a small village of recent creation in the mainland town of Dartmouth. As the consciously planned development of the major landowner, Joseph Russell, the place was intended from the start as a whaling center. In subdividing and selling off his tract, Russell provided sites for shipwrights, boatbuilders, blacksmiths, coopers, and the other artisans essential to the fishery's support.⁶ In 1765, Rotch purchased ten acres of this land. Two years later, he moved from Nantucket to occupy it, bringing two of his sons—Joseph, Jr., and Francis—but leaving a third, the canny William, to manage the business of the firm on the island. Along with his sons, Rotch brought a fund of capital and expertise that was to transform the modest village into a whaling port that soon outdistanced all others but Nantucket.⁷ In 1768, one year after Rotch's arrival, the first of New Bedford's candleworks was built. Although owned in partnership by Russell and Isaac Howland, who came from Newport to manage it, Rotch was its instigator and guiding spirit.⁸ Three years later, William built Nantucket's first candleworks, thus giving the Rotches control or access to two manufactories.⁹ With their construction, the Rotches fitted the final link in the series of operations that embraced the catching, processing, and distributing of whale oil and its derivatives. In Newport and Providence, the established candlemakers viewed the new works with alarm. An immediate effort was made to enlist the Bedford works into the United Company, and in September 1769, Howland agreed to participate under the terms of the current Articles of Agreement.¹ William Rotch's Nantucket works

⁶ Ellis, *History of New Bedford and Vicinity, 1602-1892*, pp. 58-59.

⁷ Tax Valuation List, Dartmouth, 1771, Old Dartmouth Historical Society. The property taxed to Joseph Rotch & Sons exceeded in value the combined total of the next six propertied residents of New Bedford. See also John M. Bullard, *The Rotches* (New Bedford, 1947), pp. 14-15.

⁸ Nicholas Brown & Co. to Jacob Rodriguez Rivera & rest of Spermaceti Manufacturers at Newport, Providence, 21 January 1768, Brown Papers, P-R5, John Carter Brown Library.

⁹ William Rotch Account Book, "Spermaceti Candle Mfg. Accounts, 1772-1776," New Bedford Free Public Library.

¹ Letter, Jacob Rodriguez Rivera to Nicholas Brown & Co., Newport, 7 February, 16, 26 September 1769, and letter, William Rotch to the Manufacturers of Head Matter at Newport and Providence, 24 January 1774, both in Brown Papers, P-U5, John Carter Brown Library.

posed a greater threat, and the candlemakers' approach to him was cautious and circumspect. Before its full effect was felt, however, the war had come and brought the business of whaling in the colonies to a halt.

The outbreak of the Revolution marked the end of a period of radical change. The preceding twenty-five years had been a time of expansion, of innovations in technology and management, of rivalries and problems not completely resolved before the conflict closed down the fishery. Of the participants, only a handful came back to the trade once the war was over. Hancock, of course, went on to fame in a field better suited to his talents. The Browns turned more and more to other fields of manufacturing and commerce. Lopez died in 1782, the victim of a drowning accident while travelling to Providence from Leicester, the town to which he and Rivera had retreated during the British occupation of Newport. Rivera himself never resumed his former pursuits, either in commerce or manufacturing. Joseph Rotch, after suffering heavy losses during the raid on New Bedford by the British in 1778, died in 1784. To his son, William, he passed on the spirit of full commitment to the fishery, and in his hands lay a large part of the next chapter in the history of the whale-oil trade.

After the war, the revival of whaling followed the pattern hammered out by Joseph Rotch during the whale-oil duels of the 1760s. From those struggles emerged the guiding concepts of an integrated business, in which the whaling merchants controlled production, refining, manufacture, and distribution. At each step in the process, there were benefits to be derived: commissions, sales, and even profits from such secondary operations as banking and insurance. In manufacturing itself, candlemaking as a separate organization of production did not survive the war, but was merged into the general business of refining, primarily at the oil works of New Bedford. Until the end of American whaling, the innovations in the managerial structure of the industry devised before the war and consolidated after it proved an enduring legacy of the whale-oil trade in the years from 1750 to 1775.

SOURCES OF ILLUSTRATIONS

MUSEUM OF FINE ARTS, BOSTON, DEPOSITED BY THE CITY OF BOSTON:
John Hancock.

REDWOOD LIBRARY AND ATHENAEUM: Jacob Rodriguez Rivera.

AMERICAN ANTIQUARIAN SOCIETY: Nathaniel Hurd's engraved label for
Joseph Palmer & Company.

JOHN CARTER BROWN LIBRARY: Nathaniel Hurd's engraved label for
Nicholas Brown & Company.

THE RHODE ISLAND HISTORICAL SOCIETY: Newport in the 1740s.

MASSACHUSETTS HISTORICAL SOCIETY: One of the earliest known render-
ings of a sperm whale.