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Old Slip and Cruger's Wharf at New York: An Archaeological Perspective of the Colonial American Waterfront

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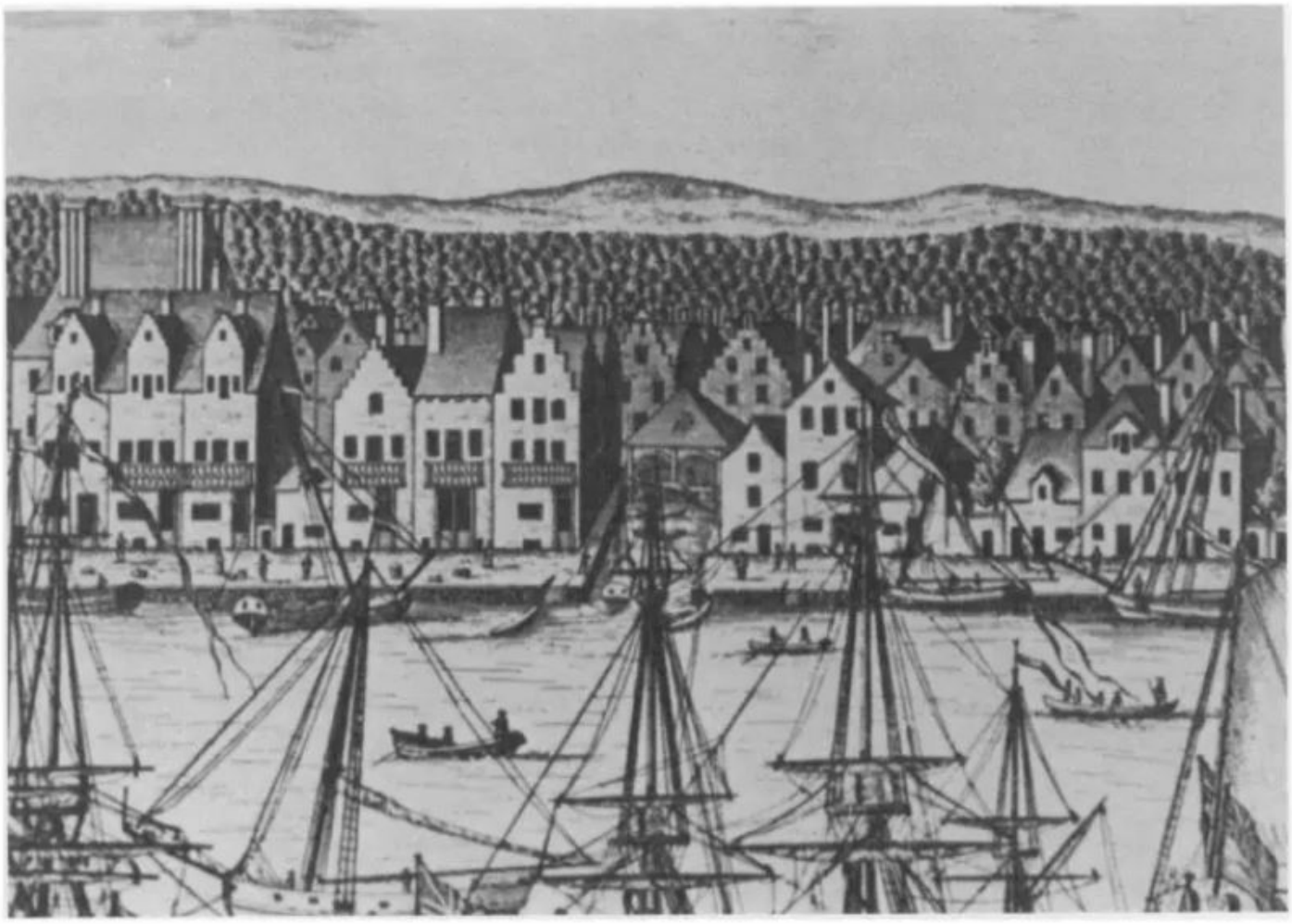

FIGURE 4. Detail from the "South Prospect" view of New York by William Burgis, ca. 1716–1718. Courtesy of I.N. Phelps Stokes Collection, Art, Prints and Photographs Division, The New York Public Library, Astor, Lenox and Tilden Foundations.

PAUL R. HUEY

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ABSTRACT

In 1969 the removal of an entire block of filled land adjacent to Old Slip in Manhattan during construction of a new building revealed a sequence of soil deposits dating from about 1690 to 1800. Sampling of these soil layers indicated deposition during successive periods of land filling in the area, before and after the construction of Cruger's Wharf at this location in 1739 and 1740. Old Slip provides an example of a type of Dutch-influenced waterfront development beginning in the late 17th century that contrasts with development of the waterfront in Boston, Philadelphia, and other cities initially settled by the English. Colonial American city waterfront development differed distinctively, on the other hand, from English precedents.

Old Slip and the New York Waterfront

For years after its capture by the English in 1664, New York city retained many of its Dutch characteristics. As a major colonial trading port, the city developed a distinctive system of slips, or inlets, along its shoreline. A road or street usually ran inland from each slip so that the slip served as a canal-like extension of the street (Figure 1). As the blocks of intervening land along the shoreline were filled in, a heavy log cribbing was built in line with the slips to hold back the fill. Thus, as the shoreline was filled, the slips were extended as inlets between the blocks of new land. Usually the slips were maintained for no more than one block inland in length.

The shoreline of lower Manhattan in the area that later became the southwest side of Old Slip was settled probably as early as 1655 by Abraham Martens Clock, who was previously a carpenter in Rensselaerswyck, located up the Hudson River near Albany. In 1656, Clock was granted a water lot that extended into the river. By the summer of 1660, he had built a large house facing the river as well as a smaller house for his son facing the present-day Hanover Square (Stokes 1916:II, 323).

On the maps of 1728 and 1735 (Figures 1 and 2), the original shore line and house of Abraham Martens Clock were approximately one block inland northwest of Old Slip. The formation and extension of the slip by means of land fill on each side of it had commenced by 1695, as shown on Miller's map of that year (Figure 3). By 1716 the additional block of filled land was virtually complete between Dock [Pearl] Street at Hanover Square and Water Street. The view drawn about 1716 by William Burgis (Figure 4) shows a row of new houses overlooking the quay along Water Street, with a large house at the south corner of the Old Slip inlet and Water Street. The quay along Water Street, including "Hunters Key," ran in a nearly straight northeast-southwest direction (Figure 1). It is within this block of filled land that excavations were directed by Arnold Pickman, Diana Rockman, and Nan Rothschild in 1981 (Rothschild 1982:26–27).

In 1739 Henry Cruger, Henry Cuyler, and their partners hired an Albany builder named Adam van Alen to construct a huge wharf of 30-foot timbers along the waterfront beginning 170 feet from Clock's corner at Old Slip and extending southwestward parallel to Water Street. Every 20 feet a cedar post was set into the wharf for tying up ships (Stokes 1916:IV, 561). Cruger's Wharf was finished in 1740 (Figure 5), and it enclosed an area that was subsequently filled between it and the shore at Water Street. In 1754 Cruger widened the Wharf about four feet, and a map made in 1755 shows this area enclosed and partly filled (Stokes 1916:IV, 649; Stokes 1915:pl. 34). The plan surveyed in 1765 and 1766 by John Montresor shows the block entirely enclosed and filled (Figure 6) (Montresor 1775).

Henry Cuyler, one of the partners, died in 1770, and from 1771 to 1773, Henry Cruger petitioned with little success to receive water lots extending from the Wharf southeast into the river (Anon.

FIGURE 1. Detail of the Manhattan shoreline from "Plan of the City of New York In the Year 1735," showing the system of slips and the location of Old Slip (Stokes 1915:pl. 30). The circle is drawn around locations of the houses of Abraham Martens Clock and his son in the 17th century. I.N. Phelps Stokes Collection, Art, Prints and Photographs Division, The New York Public Library, Astor, Lenox and Tilden Foundations.

1905:324, 332, 339–40, 362–63, 410, 438–39; Scott 1970:105, 108). Henry Cruger was closely associated with Bristol merchants and had extensive interests in the West Indies. His son, Henry, served in Parliament for Bristol with Edmund Burke from 1774 to 1780. It is recorded that during one of Henry Cruger's campaign speeches, a New Yorker happened to be present and shouted "huzzah for Old Slip!" (Van Schaack 1859:34). Henry, Sr., went to England in 1775, and he died in Bristol in 1780 (Van Schaack 1859). In 1778, a fire in the area of his Wharf had consumed 64 houses, three ships, storehouses, and at least one dwelling (Scull 1882:126, 508).

Front Street eventually replaced Cruger's Wharf. The filling of Old Slip had commenced by 1784, and in 1791 "Persons in the neighborhood" proposed in a petition to continue Front Street across it (Anonymous 1917:34–38, 75, 97, 99, 106, 161, 310, 641, 643). Finally, by 1797 filling had continued along the shore southeast of Front Street, and the new waterfront was characterized by the numerous piers and wharves that projected into the river and replaced the old slips and the

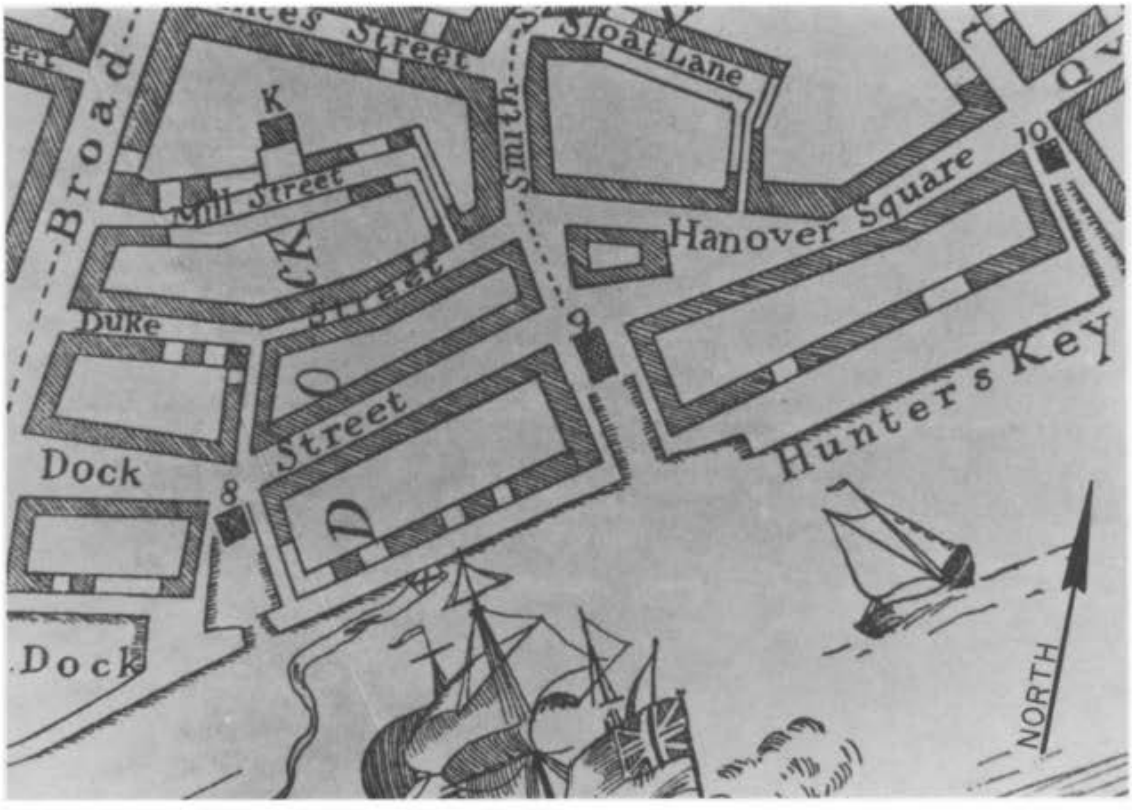

FIGURE 2. Detail of Old Slip (at number 9) from a plan of New York City about 1728 (Anon. 1898:262–63).

wharves that had paralleled the shoreline (Stokes 1915:pl. 64).

Archaeological Investigation of the Cruger's Wharf Area

When a new building was constructed by the Uris Corporation at Old Slip and Water Street in 1969, a large area of historic landfill was excavated to an immense depth, below the original bottom of the river. Workmen and relic collectors began finding a variety of artifacts including a bow of a small boat. Bottles were discovered that included types produced from about 1675 through the 19th century. One large round bottle bore a seal impressed with the words "Henry/Cuyler/Iun.r/ 1750." Another bottle seal fragment was inscribed "16 . . . /A. Schuyler." Intact bottles included one example made probably between about 1685 and 1715 and an even earlier bottle dating ca. 1675–1690, based on its form (Noël Hume 1961:99, nos. 4 and 7).

Fortunately it became possible in September 1969 to make arrangements with the Uris Corporation to allow the New York State Historic Trust (now the Division for Historic Preservation in the New York State Office of Parks, Recreation and Historic Preservation) to conduct limited archaeological work at the site. The entire block southeast of Water Street contained vast quantities of significant colonial material that were rapidly destroyed by the construction work. By the time arrangements for archaeological salvage were made, only one access ramp into the hole remained

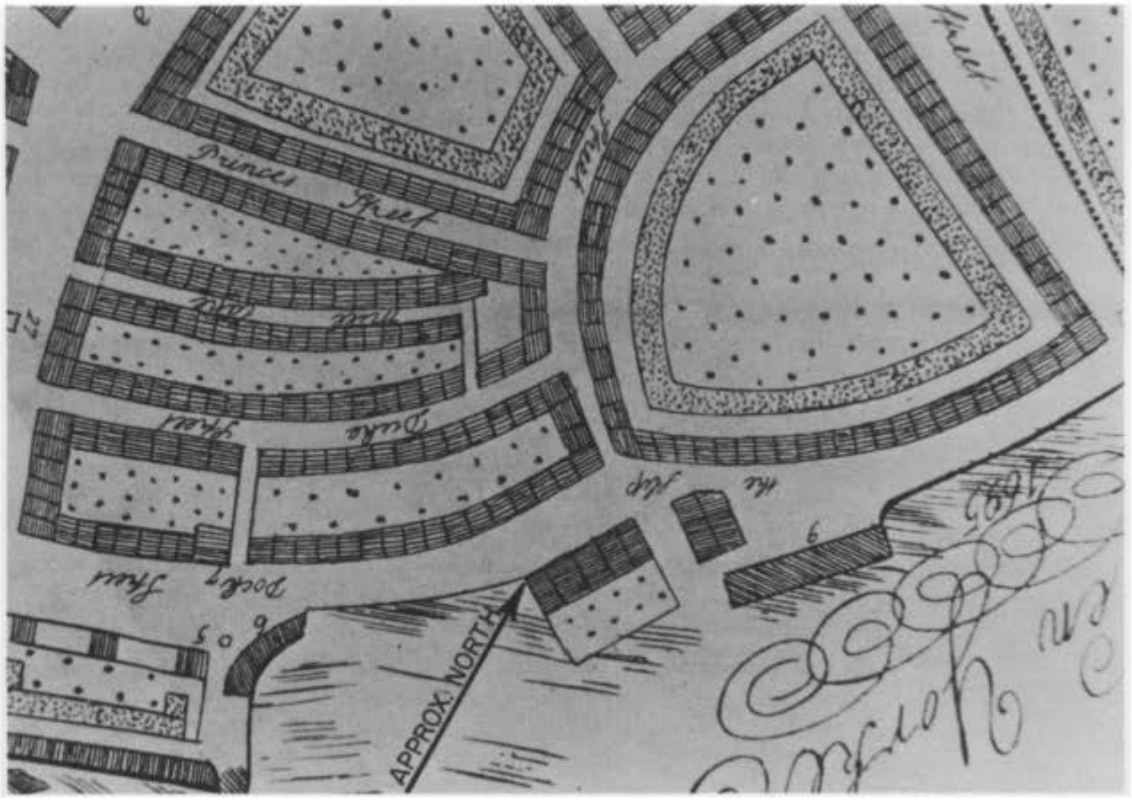

FIGURE 3. Detail of Old Slip ("the Slip") from the map of New York drawn in 1695 by Reverend John Miller (Valentine 1853:226–27).

where the original layers of the soil profile could still be observed and recorded.

In the process of cleaning and measuring this profile, many artifacts in stratigraphic association were unearthed. The original log crib footing under the northeast end of Cruger's Wharf built in 1740 at Old Slip was clearly visible (Figure 7). Measurement of the site revealed that this footing extended to a point 175 feet southeast from Water Street along the original line of Old Slip. The 20-foot section of profile exposed through the fill was immediately southwest of the footing (Figure 8). Until the land filling between 1740 and ca. 1765, the area to the northwest was under water, and ships were moored here. The view in Figure 7 gives some idea of the scale of the Cruger's Wharf pier footing and the scope of the excavated soil profile area on the ramp immediately to the right. A temporary datum level for the profile was established at the base of the nearby log pier footing (Figure 9).

Most noticeable in the soil profile was the reddish sand that represents the original river bottom. The same natural reddish sand deposit was visible to the northwest in the construction cut along Water Street, closer to the original shore and where the upper surface of the red sand had sloped up to 9 feet 6 inches above the datum level measured from the base of the log cribbing. The drawing of the soil profile reveals a series of strata that can be dated on the basis of historical documentation and associated artifacts. The gray sand dates

FIGURE 4. Detail from the "South Prospect" view of New York by William Burgis, ca. 1716–1718. Courtesy of I.N. Phelps Stokes Collection, Art, Prints and Photographs Division, The New York Public Library, Astor, Lenox and Tilden Foundations.

probably ca. 1650–ca. 1700 and represents deposition on the harbor bottom while the shore line was expanding from Dock Street to Water Street. Above this, the dense gray clay dates probably ca. 1700–ca. 1740, or until Cruger's Wharf was constructed if not slightly later. The wood chips deposited on the surface of this layer probably date from this construction. Until 1740, the area remained a harbor bottom. The next deposit is dense black clay and in part represents the gradual filling of the block inland from Cruger's Wharf, ca. 1740–ca. 1765 or later. These two layers, the dense gray clay dating from about 1700 to 1740 and the dense black clay dating from about 1740 to 1765, yielded a useful sequence of artifacts.

The many artifacts from the dense gray clay included a scratch blue white salt glazed stoneware saucer. The floral design on this saucer somewhat resembles that on scratch blue white salt glazed stoneware saucer fragments from Fort Ligonier (ca. 1758–1766) in Pennsylvania and at Wormslow Plantation in Georgia (ca. 1737–1790), but it is most similar to the design on a fragment from a mid-18th century British military site southwest of Fort Ligonier (Grimm 1970:156; Kelso 1979:118, nos. 3 and 4; Miller and Stone 1970:123, no. e). Another white salt glazed stoneware saucer from the same stratum is undecorated. Other artifacts included a nearly intact medicine bottle of pale green glass, the spout from a Jackfield ware teapot, and sherds of buff-bodied earthenware decorated with combed brown slip and lead

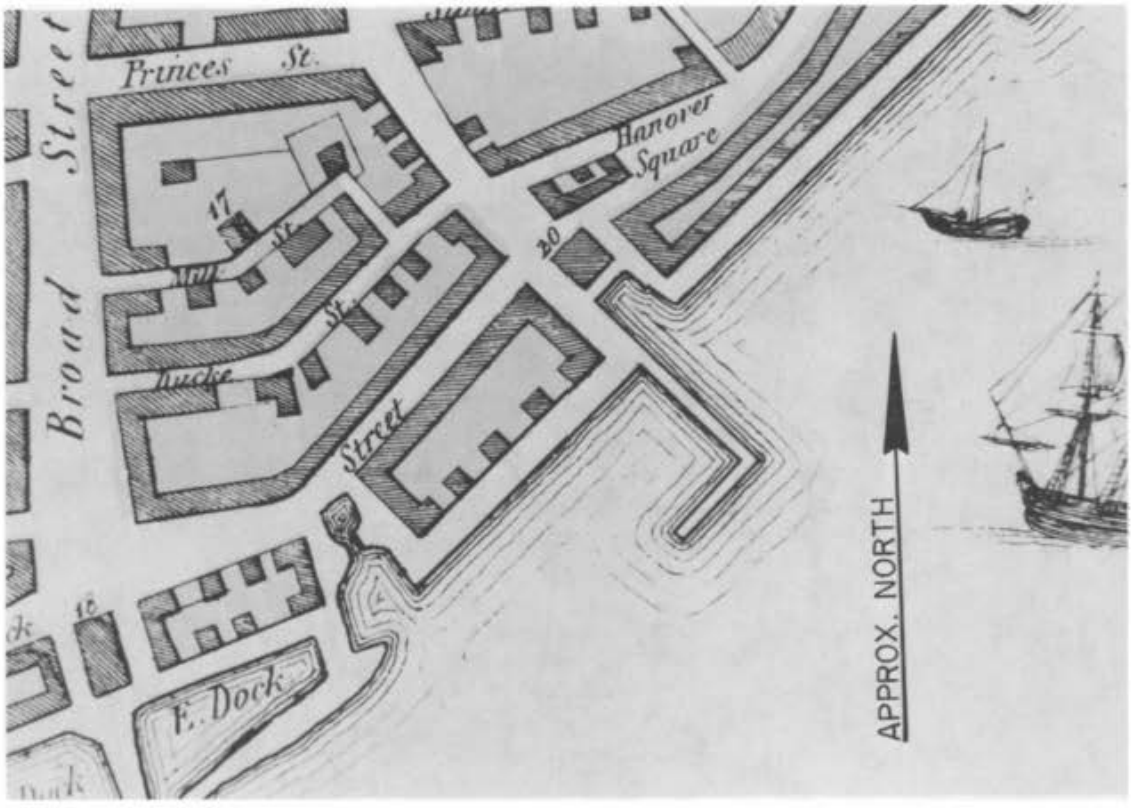

FIGURE 5. Detail from a plan of the city and environs of New York in 1742–1744 showing Cruger's Wharf (Grim n.d.).

glazed. Two types of this decorated "yellow ware" occurred: one type was decorated by means of combing through a buff slip coating to a brown slip layer, and the other type was decorated by direct application of brown slip prior to the lead glazing. While dated examples of this combed ware exist from as early as the 1680s, in 1750 it was being imported to New York directly from Liverpool and Bristol. Gerard Beekman wrote in 1750 from New York that "it Cost 8/6 in Bristol but the Same Sort of Yeallow ware with Small black dashes on it Comes also from Liverpool at 2/ Sterling a Crate less then they Cost at Bristol and the Crates Larger" (Hodgkin and Hodgkin 1973:16; White 1956:115). The medicine bottle was slightly conical in form and probably represents a transition from the type illustrated by Noël Hume from a context of ca. 1660 and the type also recovered from the wreck of a British warship sunk in 1703 (Noël Hume 1970:73, no. 7; Perkins 1979:Fig. 6, no. 15). The scratch blue white salt glazed stoneware saucer and the Jackfield ware probably date very shortly before or about 1740, at the end of the dense gray clay deposition time period (Godden 1965:xiv; Mayes 1972:71; Mountford 1971:48). They are among the most recent dateable objects in this deposit and thus provide a *terminus post quem* date no earlier than ca. 1740 which, however, closely coincides with the documentary record.

The next stratum above was dense black clay, a deposit largely associated with Cruger's Wharf. The dense black clay was very thick and sticky and smelled of decaying organic matter. Artifacts in-

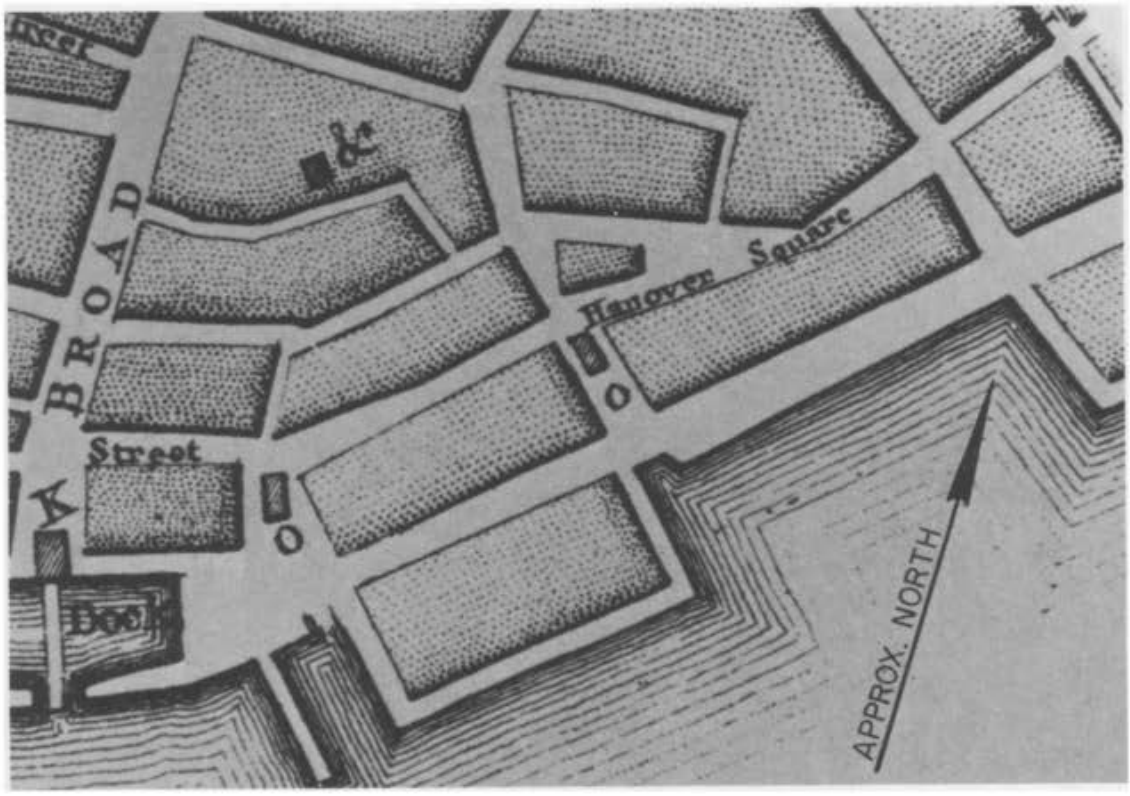

FIGURE 6. Detail from the plan by John Montresor, surveyed in 1765 and 1766 and published in London in 1775 (Montresor 1775).

cluded glass, ceramics, and preserved pieces of ship rigging such as bits of rope and pulley sheaves. The lead glass was frequently discolored to a smokey black because of its contact with the strong, caustic soil. Some of the ceramics were manufactured probably earlier than 1740. One sherd is a buff earthenware plate fragment decorated with "joggled" buff, tan, and brown slip (Goring 1981:10, 14). This plate had once been crudely mended with a black tar-like substance applied along a broken edge. It dates probably from within the first four decades of the 18th century. Similar examples have been found in England at Burslem in Staffordshire (Mountford 1967:22, 25) and at a warehouse site in Norwich, Norfolk (Jennings 1981:104–05). In other American ports it has appeared in contexts predating 1740 at Brunswick Landing, New Jersey, and at Port Royal, Jamaica (Grossman 1982:IV-51, 52, VII-8, 9, pl. V.1.1-10b, pl. V.1.1.-18d; Mayes 1972:53, 76–77, nos. 27, 29). Sherds have been found in the Hudson Valley at the Van Wyck house in Fishkill, built in 1732 (Cartwright n.d.:47), and at the Schuyler Flatts site in an 18th century stratum and at the De Ridder-Vandenburgh house in an occupation zone dating ca. 1720–1790, both excavated by the author and both located in Albany County. A broken Chinese porcelain bowl from the dense black clay dates probably from the 1720s or 1730s (Frank 1969:62–63). Duplicates have been excavated in Kenya on the east African coast (Sassoon 1978:128–29), and in New York state at the early 18th century Requa House site in Tarrytown (Brennan 1980) and at

FIGURE 7. View of the Uris construction site in September 1969 looking eastward from beside Water Street toward Old Slip and the log cribbing for Cruger's Wharf.

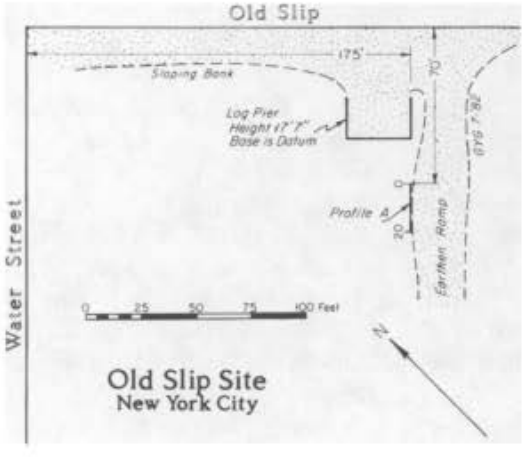

FIGURE 8. Plan of the Old Slip site in September 1969.

Crown Point in Fort St. Frédéric, built by the French in the 1730s and now a State Historic Site. On the other hand, a larger blue decorated Chinese porcelain bowl that was also found seems perfectly typical of the period 1750 to 1775 (Jolliffe 1973:14, no. 7; Miller and Stone 1970:85, no. a).

The artifacts in the dense black clay demonstrate the introduction and first appearance of molded white salt glazed stoneware plates at this site after 1740. These were probably parts of shipments sent to Cruger's Wharf from England. Included are examples of the bead and reel pattern and the dot, diaper, and basket pattern, as well as a variety of the barley pattern (Noël Hume 1970:116, nos. 1 and 2). The barley pattern variation is an alternating seed with basket and wavy line rim pattern. It appears on an oval dish modelled by Aaron Wood

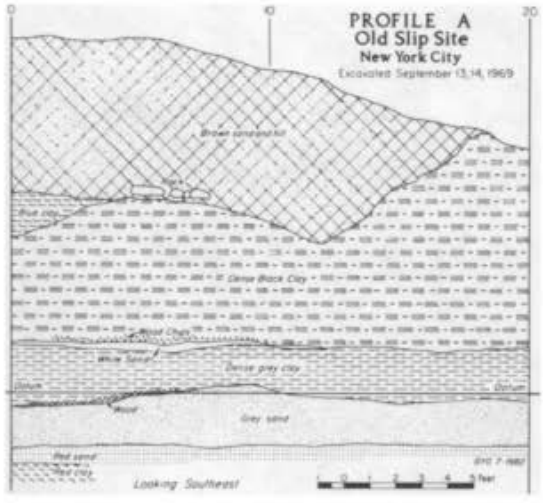

FIGURE 9. Exposed and cleaned northwest face of the soil profile at Old Slip, September 1969.

of Burslem in 1760 (Mountford 1971:47, pl. 152). White salt glazed plate fragments with this pattern have been excavated at Burslem, at Port Royal, Jamaica, at Fort Stanwix and at Johnson Hall both in the Mohawk Valley of New York, and at Fort Montgomery in the Hudson River Highlands (Hanson and Ping Hsu 1975:32, 121, no. e; Mountford 1967:22, no. 6; Mayes 1972:69, no. 13). Sir William Johnson built and occupied Johnson Hall in 1763, but in 1769 his agent at New York advised him to purchase the "new fashioned" creamware rather than the "Common White" wares that were neither any longer fashionable nor available in the quantity Johnson had ordered (Flick 1931:173). The Fort Stanwix specimen is from a context dating after 1764. Excavations by John H. Mead at Fort Montgomery, built by the Americans in 1776 and destroyed in 1777, have produced numerous ceramics, including this type and pattern, that must have been "old fashioned" by 1776.

Colonial trade patterns are also suggested by many of the other artifacts at the site, such as a clay pipe bowl perhaps made by John Bryant of Bristol (Walker 1977:1073–75) or some other Bristol maker with the same initials who also supplied similar pipes that were excavated at Port Royal, Jamaica (Mayes 1972:113, no. 30). These artifacts represent not only part of a definite, dateable material sequence observed at this site, but many can be associated with historic Cruger's Wharf and the goods that were shipped there in the 18th century.

The material at Cruger's Wharf and Old Slip clearly suggests a predominant trade connection with Bristol and the west of England. Cruger's Wharf was constructed at the beginning of the War of the Austrian Succession, following a period of vastly increased demand worldwide for English manufactured goods and products (Kroll 1971: 145, 153, 166; O'Callaghan 1855:559–61; Rogers 1970:144, 163; Shelvocke 1930:118–19). Actively protected and cultivated by Queen Anne and Governor Hunter during the previous French war, the import of English-made goods to New York had grown in an atmosphere of sharp trade rivalry that involved the colonies of France and Spain (Bonomi 1971:81–87; Brown 1935:321–22, 328; O'Callaghan 1855:559–61). It is with this increased concentration of English goods, perhaps, that there had occurred by 1730 what Bonomi has characterized as a sectional realignment in which landed merchants elsewhere in the colony relied less on partnerships with a few large New York importers and more often imported directly from England using agents or sometimes family members located in New York (Bonomi 1971:101). The question remains whether New York interests, instead, may have been increasingly represented by the growing number of free traders with sloops and small land holdings that extended up the Hudson Valley in this period.

Waterfront sites in New York City such as Cruger's Wharf and Old Slip, as archaeological resources, include not only landfill deposits but also deeper strata that were evidently deposited on the harbor bottom before and perhaps during the initial land filling process. The numerous unbroken bottles, intact or nearly intact ceramic vessels, pieces of ships' rigging, intact leather shoes, and other complete objects suggest that portions of imported cargoes as well as personal items were frequently lost or discarded overboard during usual waterfront activities. The remarkably high artifact density re-

vealed in the scraping of a single profile cut not only indicates the intensity of activity at Cruger's Wharf and in the harbor but also indicates the need for carefully controlled excavation and sampling procedures at all levels. If such sites are properly studied, they may hold the key to understanding New York not only as a colonial distribution center reaching far inland but also its relation to other ports along the eastern seaboard. Through careful analysis of types and specific attributes of artifacts retrieved from stratified, dateable river bottom layers such as under or near Cruger's Wharf, it may be possible to determine changing patterns of trade involving the goods imported to New York by geographical distribution based on comparison with data from other sites.

FIGURE 10. Village of Goedereede, on the Island of Goeree in South Holland. Courtesy of Consulate General of The Netherlands.

The Colonial American Waterfront: Origins and Development

Dutch Seaports

The waterfront of New York typified by slips in the colonial period may represent Dutch influence. Nearly every slip was located at a street that led into the city from the waterfront, suggesting the channeling of water into developed areas that is also typical of Dutch land use (Figure 10). An English traveller in Rotterdam in 1668 noted "The Heads or Keyes between which we entred the towne by water are handsome, and Ships of great burden are received into the middle of divers streets without difficulty, (their Channels being deep and large)" (Brown 1677:2–3). When John Smeaton toured South Holland in 1755, he observed at Brielle that "The Heads of Jettys at the mouth [of the port] are wood piles, drove near each other, as is done every where in the Low Countries; the whole port being a canal, as is generally the case in Holland. . . ." Around Zaandam in North Holland he noted that "the ground is in general laid out in long slips" so that small vessels carrying goods had access to mills. Between Haarlem and Amsterdam in the River Ij he saw "a little harbour for fishing Boats, constructed in the form of a T; so that let the wind come which way it would the boats would lay quiet on one side or other. It was composed of 2 Rows of piles, & filled between with light seaweed" (Smeaton 1938:35–36, 40, 53). In Gelderland, at Culemborg, Blaeu's engraving of 1648 shows, in addition to a town harbor, a small square slip for ships cut into the bank of the River Lek directly opposite a main city gate that faced the river (Bacon 1967:149).

The view of Amsterdam in 1544 by Cornelis Anthoniszoon (Figure 11) shows canals such as the Oude Zijds Voorburg Wal leading into the heart of the city and providing maximum access to the waterfront. The harbor front was cut off from the Ij by a double row of pilings interrupted with several openings for ships to pass through. Creation of new land was a continuous process in Amsterdam, and by 1605 the quiet harbor of the Lastage shipyard shown in the 1544 view had become land. By 1625 additional new blocks of land in the form of islands separated by canals were created; Realen Island (Figure 12) was an example of such a block. In some cases delays resulted from land speculation. The new land was contained within quay walls constructed at private expense by the owners under supervision of the city. The city shared expenses for bridgeheads and the streets which appeared along the quays (De Roever n.d.:31; Reinders 1981:256–57).

A double row of pilings continued to be used to close off the harbor at the time of Smeaton's visit in much the same fashion as it had 200 years ear-

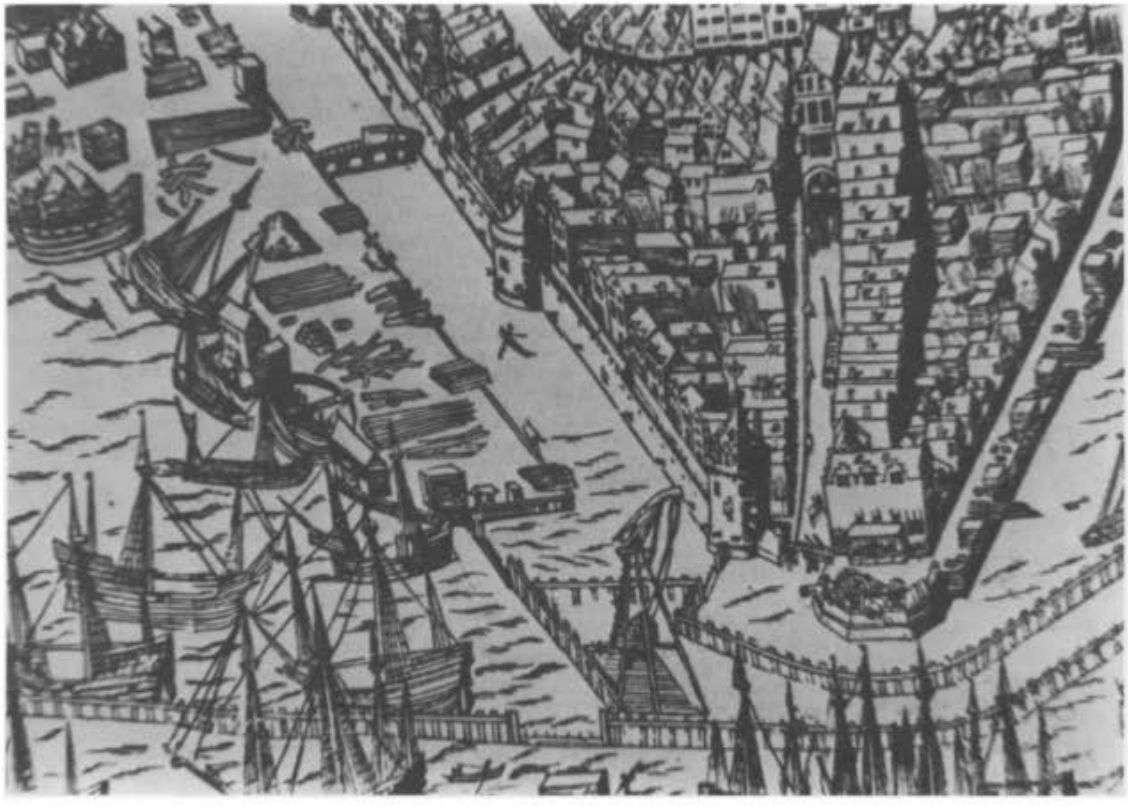

FIGURE 11. Detail from the view of Amsterdam in 1544 by Cornelis Anthoniszoon, showing the Oude Zijds Voorburg Wal, Schreierstoren, and part of the Lastage shipyards.

FIGURE 12. Detail of the Realen Island from a map of Amsterdam engraved about 1725 by Gerred de Broen. Reprinted by Bureau Voorlichting Amsterdam de V.V.V. Amsterdam.

lier. The double piling curtain evidently offered shelter and protection for the unloading of goods, but the quiet water also caused sediment to settle and fill the harbor. Although by 1674 the situation had become so serious that special studies and dredging projects were initiated (Reinders 1981:257), in 1755 Smeaton recorded that

> The Shipping lays wholy out of the Town in the Tye, no vessels of size being capable of getting into the canals within the Town. . . . All along the Key, at a small distance from the Shore, are drove double rows of piles to which the Ships fasten; and some lay within and some without; and also serve as some sort of defence from the surf which in some Winds troubles them not a little.

He explained that large ships not only were prevented from entering the city canals by the

shallowness but also because of the maximum 26-foot length of the sluice locks (Smeaton 1938:38).

New Amsterdam and New York

The town of New Amsterdam had soon emulated its Old World namsake with its development of a canal in the 17th century. Some time before 1633 the Heere Gracht was constructed as a canal in present Broad Street (Stokes 1916:IV, 78). The sheet piling with which it was lined had to be replaced in 1654, but it was not filled in until 1676. The Heere Gracht extended in a broad curve from the waterfront to about present Beaver Street, and from there it was continued to Wall Street with the pretentious name of Prinsen Gracht, also borrowed from old Amsterdam (Stokes 1915:122, 153, 210).

Stuyvesant, meanwhile, in 1648 or 1649 had constructed a small projecting wooden pier at Schreyers Hook near the tip of Manhattan (Stokes 1915:122), and by 1660 a second pier had been built just to the east, at the Custom House. Between the two a basin was formed, and in January 1676 plans were made to enlarge it as "The Great Dock." Completed by 1679, the Great Dock consisted of two curving quay walls of wood that enclosed a basin divided into a West Dock and an East Dock by a central projecting pier. The Great Dock remained a prominent water-front feature through the remainder of the colonial period (Stokes 1915:pl. 13, pl. 17, 209, 225).

The projecting piers of the Great Dock were connected to a linear quay wall of sheet piling that had been commenced as early as 1656 along the eroding beach (Stokes 1915:pl. 17, 121, 225). The Danckaerts view of 1679 shows the Heere Gracht completely filled, and the quay wall continues northeast to a point beyond Old Slip. Already the formation of Old Slip had begun, as a deliberate break in the quay wall opening into a narrow inlet possibly in the process of being excavated as a short canal or as a sloping ramp to the water's edge (Stokes 1915:pl. 17).

Construction of the Great Dock in the 1670s coincided with the entry of London merchants into the New York market and the arrival of ships direct from London (Ritchie 1977:114–15). Archdeacon has shown, however, that economically the Dutch continued to dominate New York City through the 1670s (Archdeacon 1976:40). The city nevertheless underwent a transformation in the 1680s and 1690s. French Huguenot refugees joined the English, whom they resembled socially and with whom they allied themselves politically, and they established important trade connections with family members in places such as Boston and Bristol. By 1703 the English and their French Protestant allies had replaced the Dutch as the economically dominant group (Archdeacon 1976:41, 48, 57, 73). Reverend John Miller on his map in 1695 clearly documented some of the major changes that were occurring in the 1680s and 1690s. Showing the Great Dock as "The Old Dock," he recorded "The New Docks" as large, regular block areas enclosed within new wharves or quay walls built out from the old shore line in the area northeast of Old Slip. Narrow channels remained between each block, continuing the streets on land (Stokes 1915:pl. 23, 235). With Old Slip as the first, construction of other slips soon followed along the waterfront in the 1690s:Coenties Slip, Van Clyff's (Burling) Slip, Theobald's Slip, Fly Market Slip, Broad Street Slip. More slips were then built during the first four decades of the 18th century. The increasingly wealthy English merchants as well as landed merchants of Dutch background rushed to acquire land in the large new blocks. By 1703 the English and French in these new areas were in the majority, except at Burger's Path (Old Slip) which nevertheless ranked as the wealthiest street in 1703. In 1703 the Dutch inhabitants of more ordinary wealth filled the older, inner blocks of land (Archdeacon 1976:83–89).

This process of creating new land along the waterfront repeated itself through most of the 18th century, although maintenance of the slips often created problems. Cadwallader Colden explained in 1745 that

> all along the shoar from one end of the Town to the other there is a continuation of wharfs to which the ships lay their sides except at the ends of those streets which run nearly perpendicular to the river & terminate upon the river where the wharfs are discontinued & Gaps left called Slips into which the Periaguas & small Vessels enter & unload & here

> at the ends of these streets the Market places are built. These slips are likewise the common shores into which all the filfth & nastiness of the town & streets is emptied . . . (Colden 1937:329).

In 1757 William Smith observed, also, that "The City has, in reality, no natural bason or harbour. The ships lie off in the road, on the East side of the town, which is docked out, and better built than the West side . . . " (Smith 1972:201).

Maps from 1766 and 1767 reveal the beginnings of New York's final phase of waterfront development. Since the time of Smith's description, a new type of feature had begun to appear. These were projecting piers or wharves in the northeast corner of the town, extending from the shore along Water Street beginning northeast of Burling Slip but not built in line with the existing slips (Stokes 1915:pl. 34, pl. 40, pl. 42). Finally, as the process of land creation continued, the slips were mostly filled in the 1780s and 1790s, and the old slips became lost among the narrow, projecting piers between docks that dominated the entire waterfront by 1797.

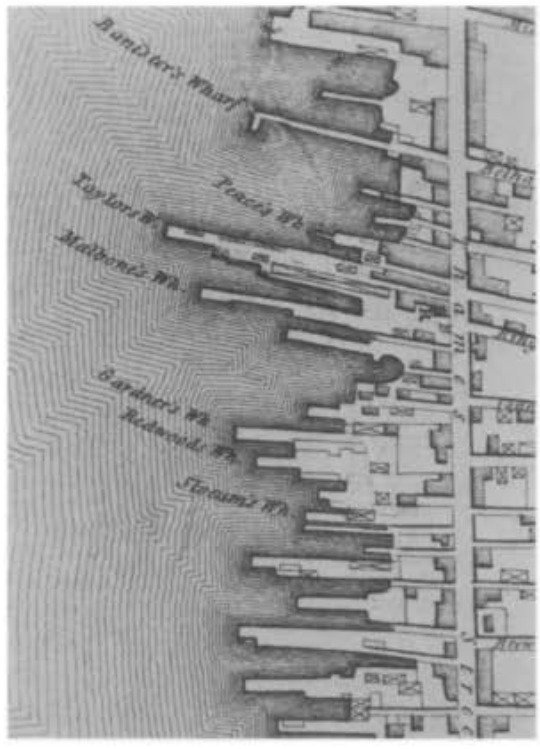

FIGURE 13. Detail from the plan of Newport by Charles Blaskowitz (1777). Courtesy of New York State Library, Albany, New York.

Other American Ports

The waterfront that was typical of most of New York in the 18th century until the Revolution is unlike the distinctive waterfront development pattern of many other American port cities and towns that were initially settled by the English, where projecting piers or wharves were built into the harbors. Only in the 1790s did New York begin more closely and fully to conform to the pattern established elsewhere. Plans of Newport, Rhode island, for example, as early as 1758 show many projecting wharves in the harbor, crowded along the waterfront (Downing and Scully 1967:34) (Figure 13). Boston had similar wharves in the 17th and 18th centuries (Figure 14), as did Philadelphia (Figure 15). The wharves of Norfolk, Virginia, in 1728 were built of long pine logs laid from the shore to the edge of the channel and tied together with cross beams (Boyd 1967:36–37). Projecting wharves were built in the harbor of Canso in Nova Scotia, established between 1732 and 1742 by Edward How, a Boston merchant (Ferguson, et al. 1981:13). One, which was destroyed by the French in 1744, was "built with stone and timber ninty feet long and fifty feet wide at the front" (Flemming 1977:130).

Carl Bridenbaugh has carefully documented the history of waterfronts and wharf construction in Philadelphia, Boston, Newport, New York, and Charleston (Bridenbaugh 1966:23–24, 170–74, 325–28). Boston, he notes, surpassed other colonial ports in terms of activity and development. Surrounded by shallow water and marshy ground, Boston rapidly expanded as wharves were built and land was filled. The grant to Captain Benjamin Gillam in 1668 "to wharfe before his owne ground adjoyninge to his dwelling house" was typical of many. By 1671 the houses along the waterfront were "for the most part raised on the Sea-banks and wharfed out with great industry and cost, many of them standing upon piles, close together

FIGURE 14. Detail of the Boston waterfront from the map by Captain John Bonner in 1722 (Bonner 1835).

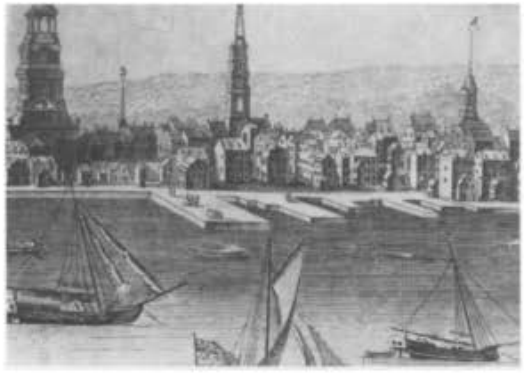

FIGURE 15. Detail of the Philadelphia waterfront, ca. 1760, by George Heap (Heap ca. 1760). Courtesy of New York State Library, Albany, New York.

on each side of the streets as in London . . . " (Whitehill 1963:11, 15, 18).

The irregular shoreline of Boston wharves attested to its rapid development. While most of the docks were created between the narrow, irregular projecting wharves and piers such as appear on the Bonner map of 1722, the Town Dock served as a large slip or inlet extending to Dock Square and was developed probably as early as 1641. South of this a second cove was dug in 1643 and apparently still existed inland from Oliver's Dock in 1769 (Bridenbaugh 1966:23; Whitehill 1963:11, 45). In the 1730s "Town Slips" also existed at the foot of Wood Lane and of North Street. The Town Slip at North Street became a ferry landing in 1734, and in 1738 the Town Slip at the foot of Wood Lane was filled in and a wharf built across it (Anon. 1885:85, 168, 191, 202).

English Seaports

The crowded, projecting wharves and piers that characterized most American seaports except for New York in the 17th and 18th centuries appear to have been a uniquely American innovation. English harbors, large and small, rarely if ever developed such a waterfront system. Excavations in London have revealed massive timber quays built by the Romans in the 1st, 2nd, and 3rd centuries that ran parallel to the river bank for great distances. One section of quay consisted of open timber framed boxes, planked over, that must have floated up and down with the tide. In other areas the quay wall was anchored to the old foreshore with timber tiebacks. The archaeological evidence of cargoes indicates that one area was used by ships unloading Rhenish pottery. In two locations the traces of small jetties that projected (one at least 16 feet) into the river have been found, and at another place the quay turned inland, perhaps forming an inlet, but in each case the evidence is fragmentary (Anon. 1982; Bateman and Locker 1982:204; Miller 1977:50; Miller 1982:143–45, 147; Schofield and Miller 1976:392–95; Tatton-Brown 1974:155–57).

Medieval revetments of the 12th to the 15th centuries in London also varied in construction but generally paralleled the previous shoreline. Some of these timber revetments were braced front and back, while other sections were braced only in front, into the river (Hillam and Herbert 1980:439, 444). The waterfront in this period became structurally more varied and less regular than in Roman times as each occupant built his own section of wharf with stairs leading down to the foreshore at low tide. The quay wall of ca. 1440, however, was built of stone. A quay wall excavated in Amsterdam from the first half of the 14th century was also constructed of stone, and in London at Blackfriars a 14th century stone-lined dock or inlet in the waterfront that was filled ca. 1480 has been found (Baart, et al, 1977:58; Bloice 1974:133; Schofield and Dyson 1980:50–53).

The Medieval London waterfront included a number of inlets that functioned as docks of various sizes where one or two ships could enter at high tide. Of the three such inlets, or water gates, of major significance, only Billingsgate and Queenhithe were the principal docks by 1600, and Billingsgate had surpassed Queenhithe in importance, according to Stow. Billingsgate, dating from the 15th century, is shown in a drawing about 1544 with two ships fitted tightly in it. The map by Braun and Hogenburg about 1580 shows Billingsgate and Queenhithe as the two noteworthy docks indented into an otherwise more or less continuous waterfront quay wall (Figures 16 and 17). The Ogilby and Morgan map of London in 1677 still shows Billingsgate as a rather spacious dock for large ships (Figure 18) (Anon. 1982; Schofield and Dyson 1980:52; Stow 1970:38–39, 41, 185, 314, 319–22).

The *Seaman's Grammar* of 1627 defines a wet dock as "any place where you may hale in a ship into the oze out of the tides way, where shee may dock her selfe." A 1758 description of the Thames explained that "Docks are small Harbours cut into the Land," and a dictionary of 1766 simply repeated the 1627 definition of dock (Anon. 1971:779–80; Bailey 1766). Docks were places where large ships could settle into the harbor bottom mud at low tide, and the extreme tidal range was thus the major factor that affected development of the English waterfront. A drawing by Hol-

FIGURE 16. Detail of the Queenhithe Dock from the map of London by Braun and Hogenburg about 1580. Greater London Council Publication 171.

FIGURE 17. Detail of the Billingsgate Dock from the map of London by Braun and Hogenburg about 1580. Greater London Council Publication 171.

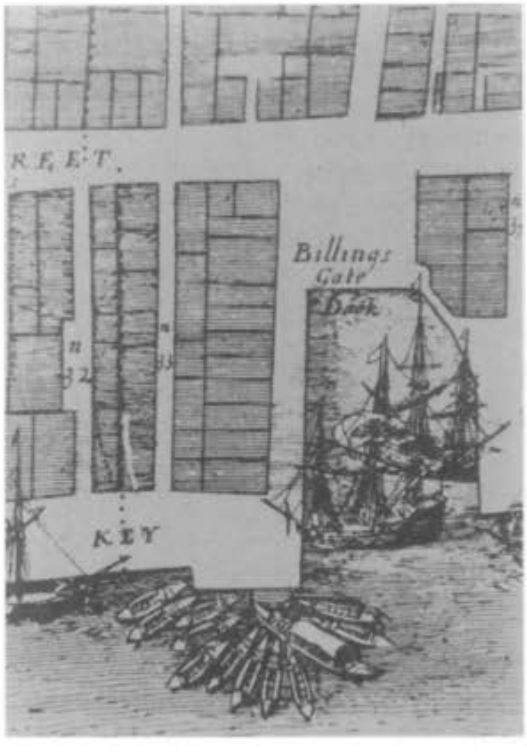

FIGURE 18. Detail of the Billingsgate Dock from the map of London by Ogilby and Morgan in 1677 (Anon. 1982).

lar in the 1640s shows the quay wall at Lambeth with a narrow, projecting, stationary wooden pier or jetty constructed across the river foreshore sloping down to the water's edge at low tide (Figure 19). Hollar also drew a view of the Milford Stairs, an example of the permanent steps that were frequently constructed from the quay wall to provide access to the foreshore at low tide (Hind 1972:pl. IX, pl. X). Such structures, of course, were covered as the tide returned, and they were of limited utility except for access to very small boats. They may nevertheless have provided a limited precedent for the development of American wharves.

With its single quay wall and in the absence of a system of projecting wharves, the harbor of Torquay, Devon (Figure 20), is in many ways typical of small English harbors, and its harbor bottom is completely exposed at low tide (Doone 1950:29). Such harbors were typically surrounded by a wall or quay to which vessels were tied. At the port of Bristol, ships tied to the quay tilted outward at an inconvenient angle at low tide (Little 1967:163). In most harbors ships were allowed to rest on the harbor bottom, in the mud flats. At a few British ports, such as Glasgow situated on a tidal river near its tidal limit or Southampton where the tidal range is sufficiently moderate, it is possible for open docks and river quays to serve for the accommodation of larger vessels (Vernon-Harcourt 1910:354). Glasgow and Southampton were not fully developed until the 19th century, however. In the 1830s the River Clyde at Glasgow was only three feet deep, and it was subsequently dredged to 28 feet (Baedeker 1901:524). Defoe in the 18th century found that despite its prosperous trade with America, Glasgow suffered from the extremes of disastrous floods to almost the complete dryness of the Clyde, depending on the season (Defoe 1971:604–06). Southampton as a port declined steadily in its maritime trade through the 16th and 17th centuries, and in describing Southampton's continuing decay in the 1720s, Defoe mentioned only its "spacious quay." The town revived with the opening of the Docks in the 19th century (Defoe 1971:154; Winbolt 1955:99).

It is remarkable that the first enclosed dock

FIGURE 19. View of the quay at Lambeth House by Wenceslaus Hollar, ca. 1646. Original drawing in The British Museum (Hind 1972:pl. IX).

FIGURE 20. View of the harbor at Torquay, Devon, ca. 1935.

where ships could remain afloat was not built in England until 1715 at Liverpool (Anon. 1919:13, 99–100). Tides at New York rise only four or five feet, while tides in England are commonly 10 or 12 feet and sometimes 20 feet in the Thames and Mersey rivers (Albion 1970:220). The range of tides at London Bridge is about 16 or 17 feet (Bosworth 1913:21). The great height of tides and force of tidal currents in England caused endless problems and difficulties and severely limited the capacity of English harbors, while the lesser tides in America made it much easier to load and unload ships at dockside at all times.

Improvements in small English harbors usually consisted of quays along the shore line and one or two projecting masonry piers which also acted as breakwaters (Andrews 1973:119–21; Couch 1871:33–34) (Figure 21). While such piers in deep harbors obviously permitted large ships to stay afloat, they were expensive and difficult to construct, and because of the extreme range of the tide, difficulty of access to boats in deep water tied to a projecting pier at low tide is often evident (Figure 22).

While the scarcity of timber in England such as that used to construct Cruger's Wharf in New York or the wharves in Boston was probably also a major factor in the separate development of American and English ports, Defoe in the 1720s described gentlemen's estates in the immediate area of Southampton "so full of large full grown timber, that it seemed as if they wanted sale for it, and that it was of little worth to them" (Defoe 1971:153). Sailing past Margate in 1755, Smeaton observed

FIGURE 21. View at low tide of the old harbor of Whitby, North Yorkshire, a major English seaport in the 18th century and home of Captain James Cook, R.N., F.R.S. Courtesy of the British Tourist Authority, London.

FIGURE 22. The harbor at Boscastle, Cornwall. *Country Life*, July 11, 1963.

that the port "seems chiefly formed by a Pier or Jetty of Wood" (Smeaton 1938:1). At Ostend, in present Belgium, he reported that the piers consisted of three rows of large piles, spaced and bolted together with cross beams, filled with rock to the low water mark, and paved on the top with sloping sides. This type of pier, he observed, resisted the force of waves much better than those of masonry (Smeaton 1938:12–13). He saw the same type of piers at Flushing (Smeaton 1938:20). Smeaton was particularly impressed by what he saw in Belgium and the Netherlands, and such construction was apparently quite similar to the techniques used in New York and other American port cities in building quay walls and wharves. That such projecting piers also served as wharves is suggested by an English description of the Dutch colonial city of Batavia (in Indonesia) in 1713:

> There are also two large Peers, that run out about half a Mile into the Sea, and serve to drain all the Canals and Inland Water that run through the City. They are likewise very useful for small Vessels that lie along the Piles, where they load or unload their Cargoes (Beeckman 1973:24–25).

Summary and Conclusions

Emergency excavations at Old Slip in 1969 revealed a sequence of dateable fill layers from the original harbor bottom extending from the late 17th century until after the American Revolution. The artifacts and soil deposits can be correlated with episodes of land filling as well as harbor activity in neighboring areas and within the large block partially encompassed by Cruger's Wharf, built in 1739 and 1740.

The landfilling process demonstrated at New York, Boston, and many other American and European port cities is a nearly universal one. From the 12th to the 16th century, the London shoreline advanced in a series of roughly parallel quay walls distances of as much as 300 feet (Schofield and Dyson 1980:50). At Bergen, Norway, by the end of the Medieval period, the timber framed quay wall lay over 200 feet beyond the original shore line. Between ca. 1250 and 1550 more than 300 feet of land was reclaimed behind sheeted abutments and a jetty at Dordrecht (Baart, et al., 1977:28, 38–39). These distances were dwarfed by the scale and rate of landfill expansion that occurred in American colonial port cities, particularly Boston. Moreover, the relatively straight and continuous timber and stone quay walls parallel with the shore line at Amsterdam as at London and elsewhere are in many ways most similar to the type of waterfront that developed at New York. London had a limited number of docks that roughly correspond to New York's later slips, but

the great regularity and control in the development of the expanding New York waterfront and its land areas would seem more closely to resemble the land development process in Amsterdam. Amsterdam in the 17th century greatly expanded in size with its creation of large blocks of new land such as Bickers, Realen, and Prinsen Islands in addition to the large new urban areas developed and divided into blocks by canals.

The landfill process and the rapid creation of slips in New York in the 1690s roughly corresponds to the ascendancy of English and French Huguenot mercantile interests over the mostly Dutch pro-Leisler interests (Archdeacon 1976:141–42). The limited but controlled sample from the Cruger's Wharf soil profile provides an abundance of English artifacts that attest to the full impact of English manufacturing and trade upon New York as elsewhere by the early 18th century. The mystery of New York's atypicality as a port among most other American seaports is perhaps not easily explained. Equally curious are some of the striking differences between English ports and those harbors developed in other American cities that were settled initially by the English. Klein has observed that contrasting with the South's dominantly bilateral and New England's heavily triangular trade patterns, the commerce of the Middle Colonies was partly triangular but more largely direct with Europe. The central focus of the question of New York's uniqueness, however, Klein believes is the great diversity of its population. It was this cultural diversity that tended to encourage moderation. There is historical evidence, nevertheless, that in the late 17th century New York was more highly stratified economically than either Boston or Philadelphia (Ritchie 1977:136). While the range of wealth was much more concentrated and less extreme in Philadelphia than in New York, both cities developed common councils that tended to be regarded as "exclusive and privileged" and were governed after the manner of English cities, according to Bridenbaugh (1966:145). In Boston, economic stratification had emerged by 1771 that was equal to that of New York in 1676. Despite the continuity of maritime enterprise in Boston, town government had entered into the hands of the elite after 1750 with the emergence of a new type of social system (Henretta 1965:81–83, 89–90).

New York's more highly stratified distribution of wealth by the late 17th century, combined with its strong common council that was established by charter in 1686, may be factors which directed its distincitve form of waterfront development during the late 17th and 18th century colonial period. The common council continued to seek powers not authorized in the 1686 charter, and in 1731 Governor Montgomerie granted a new charter which secured for the common council the extension of the city's borders to 400 feet beyond low-water mark on the Hudson and East rivers (Ellis, Frost, et al.:46). It is quite possible that New York's uniqueness and atypicality among other cities resulted, in part, from the ability of particular economic groups to maintain tight control through land development policies favorable to their own interests. In other cities a more open attitude may have prevailed, with less restraint on development. Additional historical as well as archaeological research and comparison will be necessary before these and other questions of cultural differences and relationships within New York and between New York and other port cities can be more fully studied and understood.

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REFERENCES

ALBION, ROBERT GREENHALGH
1970 *The Rise of New York Port [1815–1860]*. David & Charles, Newton Abbot, Devon.

ANDREWS, JOHN H.
1973 The Thanet Seaports, 1650–1750. In *Essays in Kentish History*, edited by Margaret Roake and John Whyman, pp. 119–26. Frank Cass, London.

ANONYMOUS
1885 *A Report of the Record Commissioners of the City of Boston, Containing the Boston Records from 1729 to 1742*. Rockwell and Churchill, City Printers, Boston.
1898 *Third Annual Report of the State Historian of the State of New York, 1897*. Wynkoop Hallenbeck Crawford Co., State Printers, New York.
1905 *Minutes of the Common Council of the City of New York: 1675–1776* (Vol. VII). Dodd, Mead and Company, New York.
1917 *Minutes of the Common Council of the City of New York: 1784–1831* (Vol. I). Published by the City of New York, New York.
1919 *A Pictorial and Descriptive Guide to Liverpool, Birkenhead, Wallasey, The Wirral, Etc.* (Twelfth Ed.—Revised). Ward, Lock & Co., Limited, Warwick House, Salisbury Square, London.
1971 *The Compact Edition of The Oxford English Dictionary* (Vol. I). Oxford University Press, New York.
1982 Billingsgate Excavation. Museum of London folder. City of London Archaeological Trust, London.

ARCHDEACON, THOMAS J.
1976 *New York City, 1664–1710: Conquest and Change*. Cornell University Press, Ithaca.

BAART, JAN, WIARD KROOK, ET AL.
1977 *Opgravingen in Amsterdam*. Fibula-Van Dishoeck, Amsterdam.

BACON, EDMUND N.
1967 *Design of Cities*. The Viking Press, New York.

BAEDEKER, KARL
1901 *Great Britain*. Karl Baedeker, Publisher, Leipsic.

BAILEY, N.
1766 *An Universal Etymological English Dictionary*. Printed for T. Osborne, et al., London.

BATEMAN, NIC, AND ALISON LOCKER
1982 The Sauce of the Thames. *The London Archaeologist* 4 (8):204–07.

BEECKMAN, DANIEL
1973 *A Voyage to and from the Island of Borneo*. Barnes and Noble Books and Dawsons of Pall Mall, Folkestone, England.

BLASKOWITZ, CHARLES
1777 A Plan of the Town of Newport in Rhode Island. Publish'd by Willm. Faden, Charing Cross Septr. 1st. (New York State Library No. 7457).

BLOICE, BRIAN
1974 Excavation Round-up 1973. *The London Archaeologist* 2 (6):133–35.

BONNER, JOHN
1835 The Town of Boston in New England by Capt. John Bonner 1722. Engraved from a copy in the possession of Wm. Taylor Esq. and published by George G. Smith, Engraver, No. 91 Washington, opposite State Street, Boston.

BONOMI, PATRICIA U.
1971 *A Factious People: Politics and Society in Colonial New York*. Columbia University Press, New York.

BOSWORTH, G. F.
1913 *Cambridge County Geographies: Middlesex*. At the University Press, Cambridge.

BOYD, WILLIAM K. (EDITOR)
1967 *William Byrd's Histories of the Dividing Line Betwixt Virginia and North Carolina*. Dover Publications, Inc., New York.

BRENNAN, LOUIS A.
1980 The English Ceramic Sequence from the Requa Site, Philipse Manor, New York. Paper presented at the 64th Annual Meeting, New York State Archeological Association, Syracuse, New York, April 18, 19, and 20.

BRIDENBAUGH, CARL
1966 *Cities in the Wilderness: The First Century of Urban Life in America, 1625–1742*. Alfred A. Knopf, Inc., New York.

BROWN, BEATRICE CURTIS (EDITOR)
1935 *The Letters and Diplomatic Instructions of Queen Anne*. Cassell and Company Ltd., London.

BROWN, EDWARD
1677 *An Account of Several Travels Through a Great Part of Germany*. Printed for Benj. Tooke, and are to be sold at the Sign of the ship in St. Paul's Church-yard, London. (Reprinted in 1971 by Arno Press & The New York Times, New York.)

CARTWRIGHT, JULIETTE J.
n.d. *Report of the 1974 Excavation at the Van Wyck Homestead, Fishkill, New York*. Fishkill Historical Society, Fishkill (?).

COLDEN, CADWALLADER
1937 *The Letters and Papers of Cadwallader Colden* (Vol. VIII). Printed for The New York Historical Society, New York.

COUCH, JONATHAN
1871 *The History of Polperro, a Fishing Town on the South Coast of Cornwall*. W. Lake, Boscawen Street, Truro; Simpkin, Marshall, & Co., Stationers' Hall Court, London.

DEFOE, DANIEL
1971 *A Tour through the Whole Island of Great Britain*. Penguin Books Ltd., Harmondsworth.

DE ROEVER, N.
n.d. *De kroniek van Staets*. n.p., Amsterdam.

DOONE, VAL
1950 *We See Devon*. George G. Harrap and Company Limited, London.

DOWNING, ANTOINETTE, AND VINCENT J. SCULLY, JR.
1967 *The Architectural Heritage of Newport, Rhode Island: 1640–1915*. Clarkson N. Potter, Inc., Publisher, New York.

ELLIS, DAVID M., JAMES A. FROST, HAROLD C. SYRETT, AND HARRY J. CARMAN
1962 *A Short History of New York State*. Cornell University Press, Ithaca.

FERGUSON, ROBERT, SCOTT FINLEY, JOE LAST, SUZANNE PLOUSOS, AND BIRGITTA WALLACE
1981 Report on the 1979 Field Season at Grassy Island, Nova Scotia. Parks Canada *Research Bulletin* 152.

FLEMMING, DAVID B.
1977 *The Canso Islands: An 18th Century Fishing Station*. Parks Canada Manuscript Report Number 308.

FLICK, ALEXANDER C. (EDITOR)
1931 *The Papers of Sir William Johnson* (Vol. VII). The University of the State of New York, Albany.

FRANK, ANN
1969 *Chinese Blue and White*. Walker and Co., New York.

GODDEN, GEOFFREY A.
1965 *An Illustrated Encyclopedia of British Pottery and Porcelain*. Bonanza Books, New York.

GORING, RICH
1981 European Ceramics in 17th and 18th Century New York. *The Bulletin and Journal of Archaeology for New York State* 80 and 81:1–18.

GRIM, DAVID
n.d. A Plan of the City and Environs of New York as they were in the Years 1742, 1743, and 1744. Drawn by D. G. in the 76th year of his age. . . . Cedar Street. August 1813. Copied from an Original Drawing by David Grim in the possession of the N.Y. Historical Society. Lith. G. Hayward, 120 Water Street, New York.

GRIMM, JACOB L.
1970 *Archaeological Investigation of Fort Ligonier: 1960–1965*. Carnegie Museum, Pittsburgh.

GROSSMAN, JOEL W.
1982 *Raritan Landing: The Archaeology of a Buried Port*. Four volumes. Rutgers Archaeological Survey Office, New Brunswick, New Jersey.

HANSON, LEE, AND DICK PING HSU
1975 *Casemates and Cannonballs*. U.S. Department of the Interior, National Park Service, Washington.

HEAP, GEORGE
ca. 1760 East Prospect of the City of Philadelphia; taken by George Heap from the Jersey shore under the direction of Nicholas Scull. T. Jefferys, London. (New York State Library No. 74811.)

HENRETTA, JAMES A.
1965 Economic Development and Social Structure in Colonial Boston. *The William and Mary Quarterly* 22 (1):75–92.

HILLAM, JENNIFER, AND PAUL HERBERT
1980 Tree-Ring Dating: The Mermaid Theatre, City of London. *The London Archaeologist* 3 (16):439–444.

HIND, ARTHUR M.
1972 *Wenceslaus Hollar*. Benjamin Blom, Inc., Publishers, New York.

HODGKIN, JOHN ELIOT, AND EDITH HODGKIN
1973 *Examples of Early English Pottery Named, Dated, and Inscribed*. E. P. Publishing Limited, East Ardsley, Yorkshire.

JENNINGS, SARAH
1981 *Eighteen Centuries of Pottery from Norwich*. East Anglian Archaeology Report No. 13. Norwich Survey in collaboration with Norfolk Museums Service, Norwich.

JOLLIFFE, SUSAN
1973 Chinese Porcelain from the Shipwreck *Machault*. Parks Canada *Research Bulletin* 14.

KELSO, WILLIAM M.
1979 *Captain Jones's Wormslow*. The University of Georgia Press, Athens.

KLEIN, MILTON M.
1974 New York in the American Colonies: A New Look. In *Aspects of Early New York Society and Politics*, edited by Jacob Judd and Irwin H. Polishook, pp. 8–28. Sleepy Hollow Restorations, Tarrytown.

KROLL, MARIA (TRANSLATOR AND EDITOR)
1971 *Letters from Liselotte*. The McCall Publishing Company, New York.

LITTLE, BRYAN
1967 *The City and County of Bristol: A Study of Atlantic Civilisation*. Republished by S. R. Publishers Ltd., East Ardsley, Wakefield, Yorkshire.

MAYES, PHILIP
1972 *Port Royal, Jamaica Excavations 1969–70*. Jamaica National Trust Commission, Kingston.

MILLER, J. JEFFERSON, II, AND LYLE M. STONE
1970 *Eighteenth-Century Ceramics from Fort Michilimackinac*. Smithsonian Institution Press, Washington.

MILLER, LOUISE
1977 New Fresh Wharf: 2, The Saxon and Early Medieval Waterfronts. *The London Archaeologist* 3 (2):47–53.
1982 Miles Lane: the Early Roman Waterfront. *The London Archaeologist* 4 (6):143–47.

MONTRESOR, JOHN
1775 A Plan of the City of New-York & its Environs. . . . Sold by A. Dury, Dukes Court St. Martins Lane, London.

MOUNTFORD, ARNOLD R.
1967 Greenhead St., Burslem (SJ 867499). *City of Stoke-on-Trent Museum Archaeological Society Reports No. 2: For 1966*. City of Stoke-on-Trent Museum Archaeological Society, Hanley.
1971 *The Illustrated Guide to Staffordshire Salt-Glazed Stoneware*. Garrie & Jenkins. London.

NOËL HUME, IVOR
1961 The Glass Wine Bottle in Colonial Virginia. *Journal of Glass Studies* 3:90–117.
1970 *A Guide to Artifacts of Colonial America*. Alfred A. Knopf, New York.

O'CALLAGHAN, E. B. (EDITOR)
1855 *Documents Relative to the Colonial History of the State of New-York* (Vol. V). Weed, Parsons and Company, Printers, Albany.

PERKINS, D. R. J.
1979 *Wreck of a British Man-of-War discovered on the Goodwin Sands*. Interim Report. The Isle of Thanet Archaeological Unit.

REINDERS, H. R.
1981 Het uitdiepen van de haven van Amsterdam in de zeventiende eeuw. *50 jaar onderzoek*. Rijksdienst voor de Ijselmeerpolders, Lelystad.

RITCHIE, ROBERT C.
1977 *The Duke's Province: A Study of New York Politics and Society, 1664–1691*. The University of North Carolina Press, Chapel Hill.

ROGERS, WOODES
1970 *A Cruising Voyage Round the World*. Dover Publications, Inc. New York.

ROTHSCHILD, NAN A.
1982 Recent Archaeological Field Work in New York City. *PANYC Newsletter* 8:26–27.

SASSOON, CAROLINE
1978 *Chinese Porcelain Marks from Kenya*. BAR International Series (Supplementary) 43. British Archaeological Reports, Oxford.

SCHOFIELD, JOHN, AND TONY DYSON
1980 *Archaeology of the City of London*. City of London Archaeological Trust, London.

SCHOFIELD, JOHN, AND LOUISE MILLER
1976 New Fresh Wharf: 1, The Roman Waterfront. *The London Archaeologist* 2 (15):390–95.

SCOTT, KENNETH (EDITOR)
1970 Genealogical Data from the New-York Gazette; and the Weekly Mercury. *The New York Genealogical and Biographical Record* 101 (2):104–11.

SCULL, G. D. (EDITOR)
1882 *The Montresor Journals. Collections of the New-York Historical Society for the Year 1881*. Printed for the Society, New York.

SHELVOCKE, GEORGE
1930 *A Privateer's Voyage Round the World*. Jonathan Cape & Harrison Smith, New York.

SMEATON, JOHN
1938 *John Smeaton's Diary of his Journey to the Low Countries: 1755*. Printed for the Newcomen Society by the Courier Press, Leamington Spa.

SMITH, WILLIAM, JR.
1972 *The History of the Province of New-York* (Vol. I). Edited by Michael Kammen. The Belknap Press of Harvard University Press, Cambridge.

STOKES, I. N. PHELPS
1915 *The Iconography of Manhattan Island: 1498–1909* (Vol. I). Robert H. Dodd, New York.
1916 *The Iconography of Manhattan Island: 1498–1909* (Vols. II, IV). Robert H. Dodd, New York.

STOW, JOHN
1970 *Stow's Survey of London*. J. M. Dent & Sons Ltd., London.

TATTON-BROWN, TIM
1974 Rescue Excavations on the Old Custom House Site, Part 2.—Roman. *The London Archaeologist* 2 (7):155–59.

VALENTINE, DAVID T.
1853 *History of The City of New York*. G. P. Putnam & Company, No. 10 Park Place, New York.

VAN SCHAACK, HENRY C.
1859 *Henry Cruger: The Colleague of Edmund Burke in the British Parliament, A Paper Read Before the New York Historical Society, January 4th, 1849*. C. Benjamin Richardson, 348 Broadway, New York.

VERNON-HARCOURT, LEVESON FRANCIS
1910 Dock. *The Encyclopaedia Britannica* (Vol. VIII). Encyclopaedia Britannica, Inc., New York.

WALKER, IAIN C.
1977 *Clay Tobacco-Pipes, with Particular Reference to the Bristol Industry*. National Historic Parks and Sites Branch, Parks Canada, Department of Indian and Northern Affairs, Ottawa.

WHITE, PHILIP L. (EDITOR)
1956 *The Beekman Mercantile Papers, 1746–1799*. The New-York Historical Society, New York.

WHITEHILL, WALTER MUIR
1963 *Boston: A Topographical History*. The Belknap Press of Harvard University Press, Cambridge.

WINBOLT, S. E.
1955 *Hampshire and the Isle of Wight*. Penguin Books Inc., Harmondsworth.

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