§ *BOTTLES, Glass Liquor*

Glass bottles were in use in British America from the earliest years of colonization, though the first truly successful American manufacturing venture did not occur until 1739, when Caspar Wistar, an emigrant German buttonmaker, set up a glass factory in southern New Jersey. As virtually nothing is known about the products of American bottlemaking prior to the Revolution, it must be supposed that the majority found on colonial sites are of English manufacture. The admittedly biased Lord Sheffield, in his *Observations on the Commerce of the American States*, declared that "there is no article of glass in any part of Europe but the British, which will answer in the American market. There are glass works in Pennsylvania"; he added, "bad glass is made in New Jersey for windows; but there is not any quantity of glass ware made in America as yet, except bottles, and even of these the quantity is trifling."[7]

A great deal has been written about the evolution of the English glass wine bottle, and attempts have been made to provide a datable evolution of its shape. In broad terms these efforts have been fairly successful, and it is possible to tell the differences between bottles of, say, 1650, 1690, 1730, 1760, 1780, or 1820 without much trouble. The difficulties arise when we try to pin down the transitional forms that link these dates together.

Rather than republish evolutionary drawings which have been seen before, I have elected to show for the first time a series of bottles bearing dated (or closely datable) seals ranging from c. 1651 to 1834. (Figs. 8–13) In the interest of brevity I propose to let them speak for themselves. I would add, however, that there is some indication that the 1651 form may have been preceded by one with a neck half its length, perhaps in about 1645. At the other end of the series it should be noted that the first mold-made bottle (with

[7] John Lord Sheffield: *Observations on the Commerce of the American States*, 6th edn. (London, 1784), p. 24.

the exception of the string-rim) is thought to have been produced by the Bristol (England) firm of Henry Ricketts & Co. in about 1814, the process patented in 1822. Thus, bottles bearing mold marks and the word PATENT on their shoulders and molded inscriptions on their bases are unlikely to have been made any earlier than the latter date. Once the molding process was introduced, bottlemaking entered an entirely new phase, with American manufacturers well to the fore.

The practice of affixing identifying glass seals to the bodies of wine bottles developed in the mid-seventeenth century. The earliest-dated seal known (now divorced from its bottle) was made for a certain John Jefferson, is marked 1652, and is in the collection of the London Museum. However, the earliest-intact and -dated sealed bottle was made for an unidentified King's Head Tavern in 1657 and is in the Northampton Museum in England. Undated, but unequivocally attributable to a year no later than 1652 are two bottles found in London with seals identical to another found at Jamestown, Virginia. (Fig. 8)

The earliest seals seem to have been made either for gentlemen or for taverns, but by the late seventeenth century all sorts of people had their own sealed bottles, and the practice continued into the early nineteenth century. In the second half of the seventeenth century, glassmakers provided single initial matrices for those customers who could not afford, or did not care to have, their own brass seals designed and cut. These single-letter stamps were mounted on a wooden handle in any combination that the purchaser desired. The majority of the resulting seals bear only two initials, but on rare occasions three were used to indicate family ownership. Thus the letters TOA might be read as Thomas and Ann Osborne, the husband's Christian name always coming first, then that of his wife, and the surname initial capping both. It was a style in general use in the sixteenth and seventeenth centuries but which died out in the eighteenth.

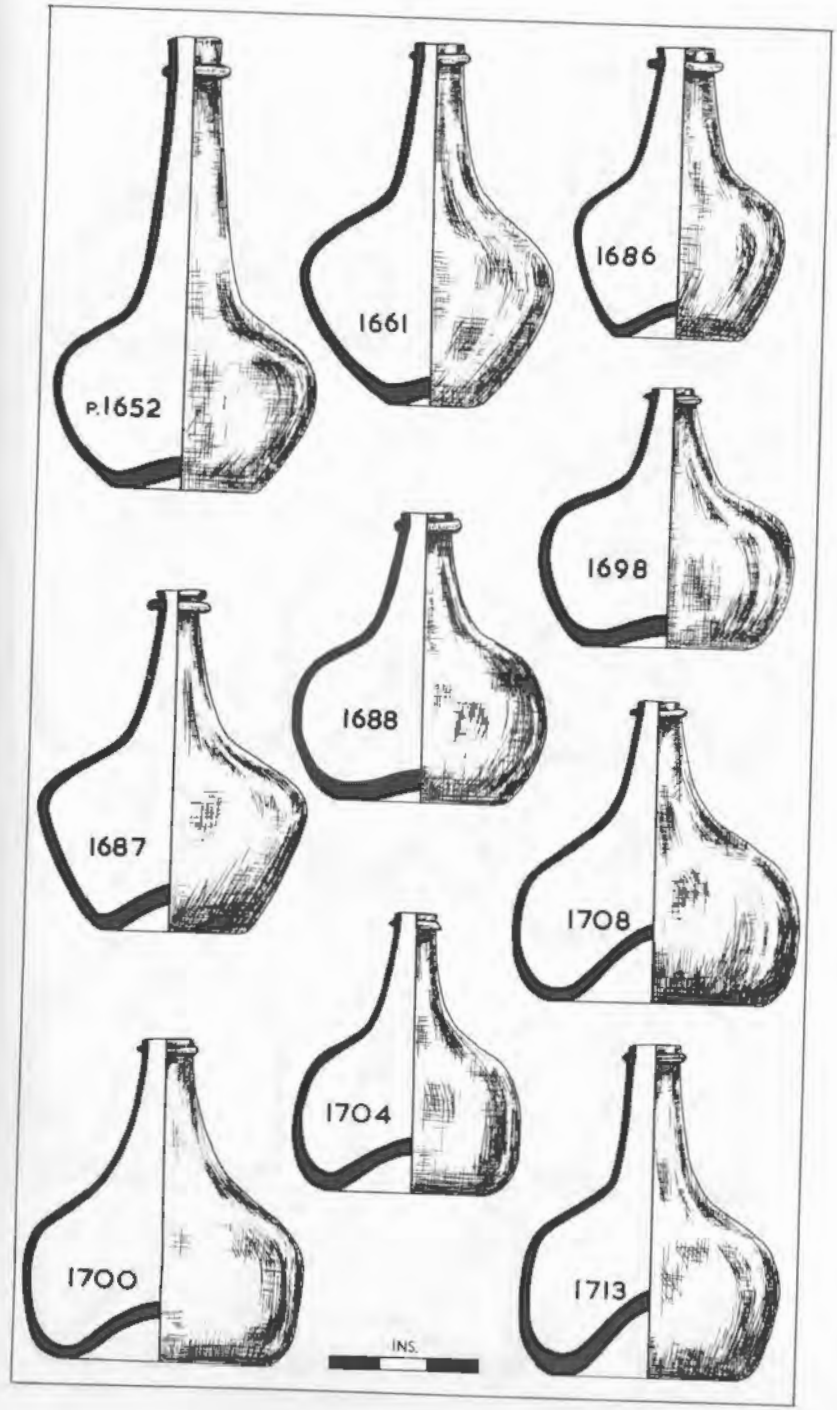
Not all seals indicated ownership; a few related to the contents. The most common are those from bottles which had contained Piermont or Pyrmont Water and which came from the German province of Waldeck. They were common in the period c. 1720–70, those with the words PIERMONT WATER around a star belonging predominantly to the early years and those with the legend

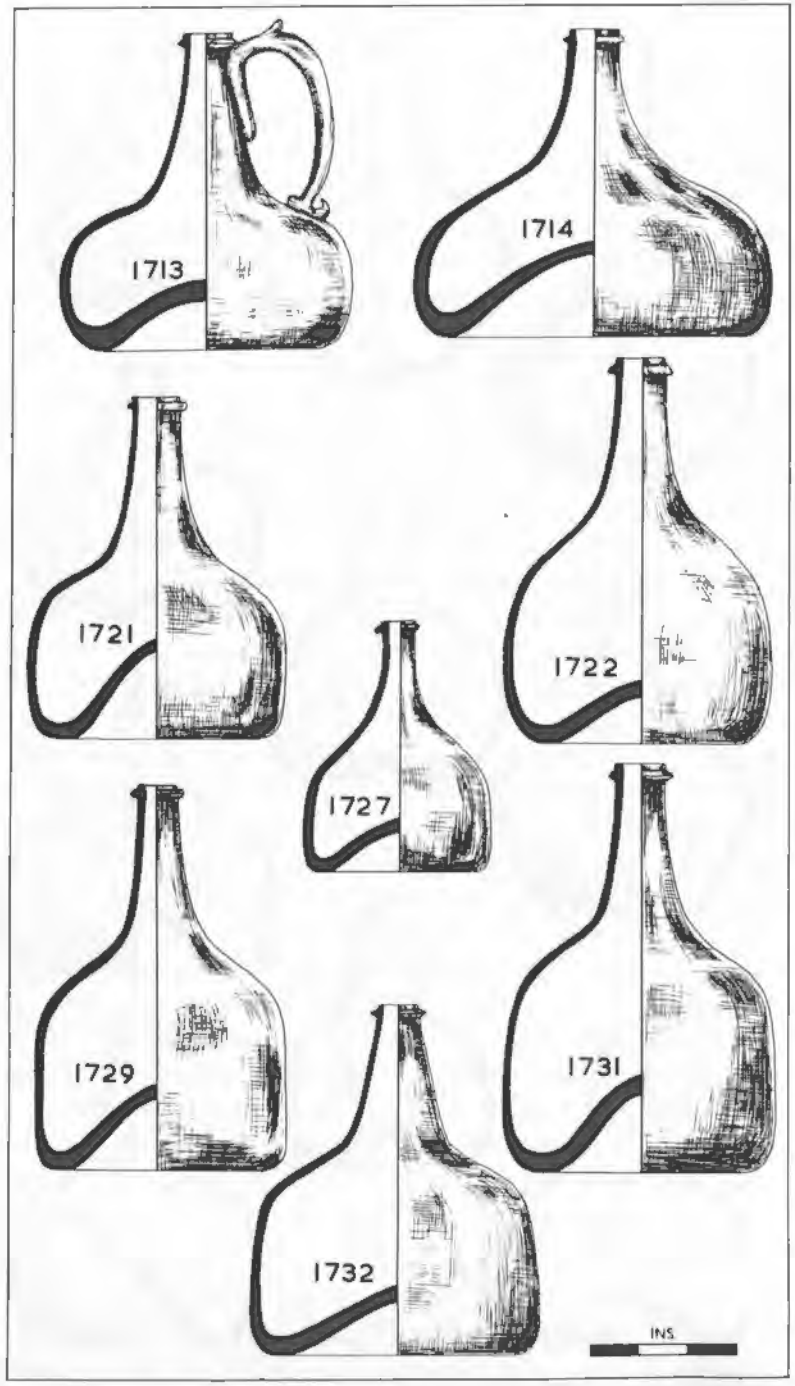
PYRMONT WATER flanking a crowned shield of arms being later. Other English and European mineral waters were sold in seal-embossed bottles during the eighteenth century, such as those manufactured for H. EYRE PERVEYOR FOR MINERAL WATERS TO HER MAJESTY (probably Caroline of Anspach, d. 1737) and containing Holt Mineral Water. French bottles for both wines and olive oil continued to be sealed with the names of growers all through the nineteenth century; the latest example known to me is dated 1905. Yet another class of seal related neither to the contents nor the seller but to government ownership. English bottles of the late Georgian and Victorian periods made for the army and navy were often identified by a seal bearing the initials of the monarch (GR, WR, or VR, with a broad arrow or an anchor between the letters. Examples of all three have been found at Port Essington in Northern Australia, a site occupied between 1838 and 1849.

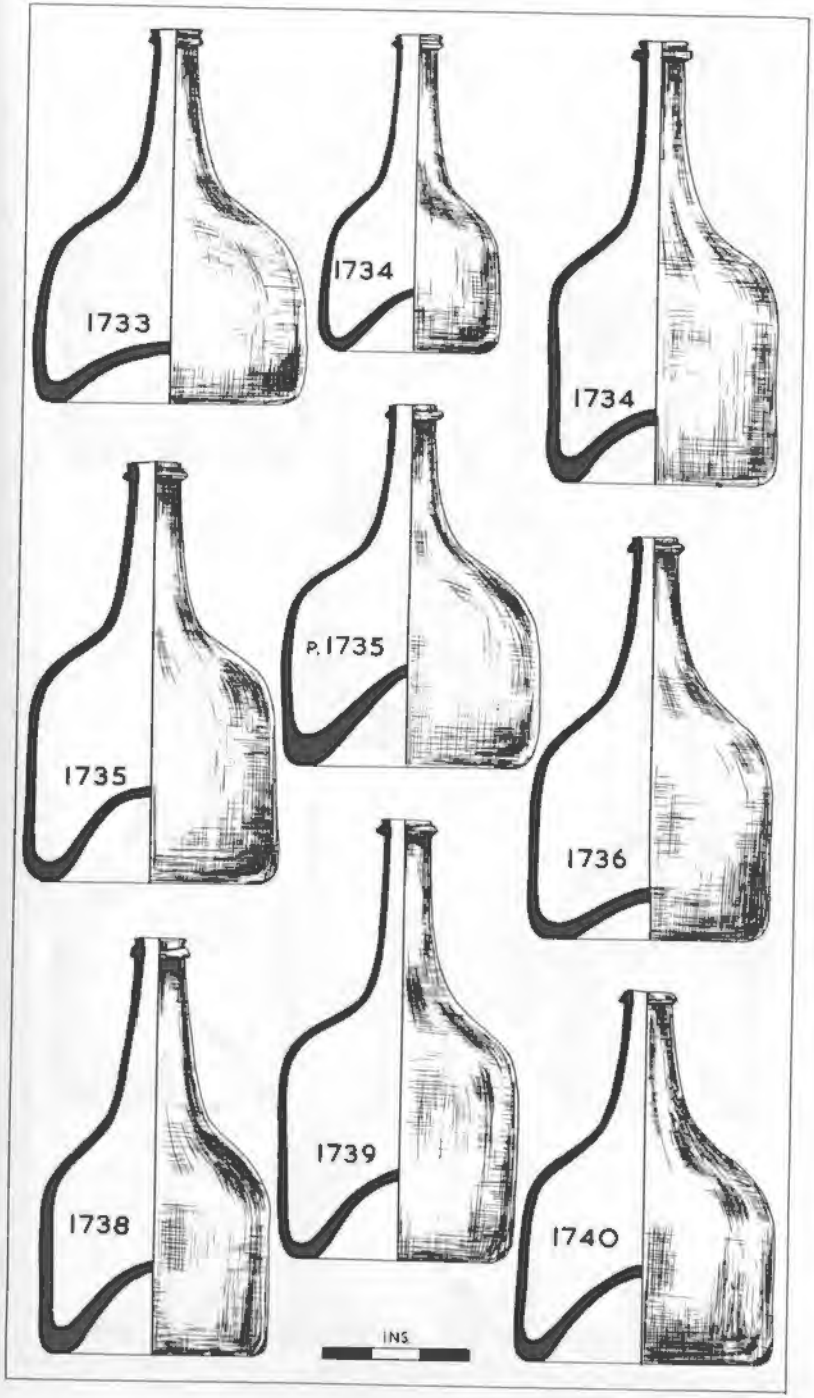
Prior to the appearance of the globular-bodied dark-green glass bottles of the mid-seventeenth century, the common large bottle was blown into a square-sided mold and had a nearly flat base and a short neck with an everted lip, the latter feature frequently concealed beneath a threaded pewter collar and cap. (Fig. 14) The bottles varied considerably in size, but because of their vulnerable flat surfaces they were sold, carried, and housed in cases or "cellars," each generally holding a dozen bottles. These case bottles have frequently been described as "Dutch gin bottles," probably because they were so used in the latter part of the eighteenth century. The Dutch bottles for "Hollands" or "Geneva," were certainly square-sectioned (though tapering toward the base), but that does not infer that all square-bodied bottles were of Dutch origin. On the contrary, they undoubtedly represented a very large part of the English bottle output of the first half of the seventeenth century.

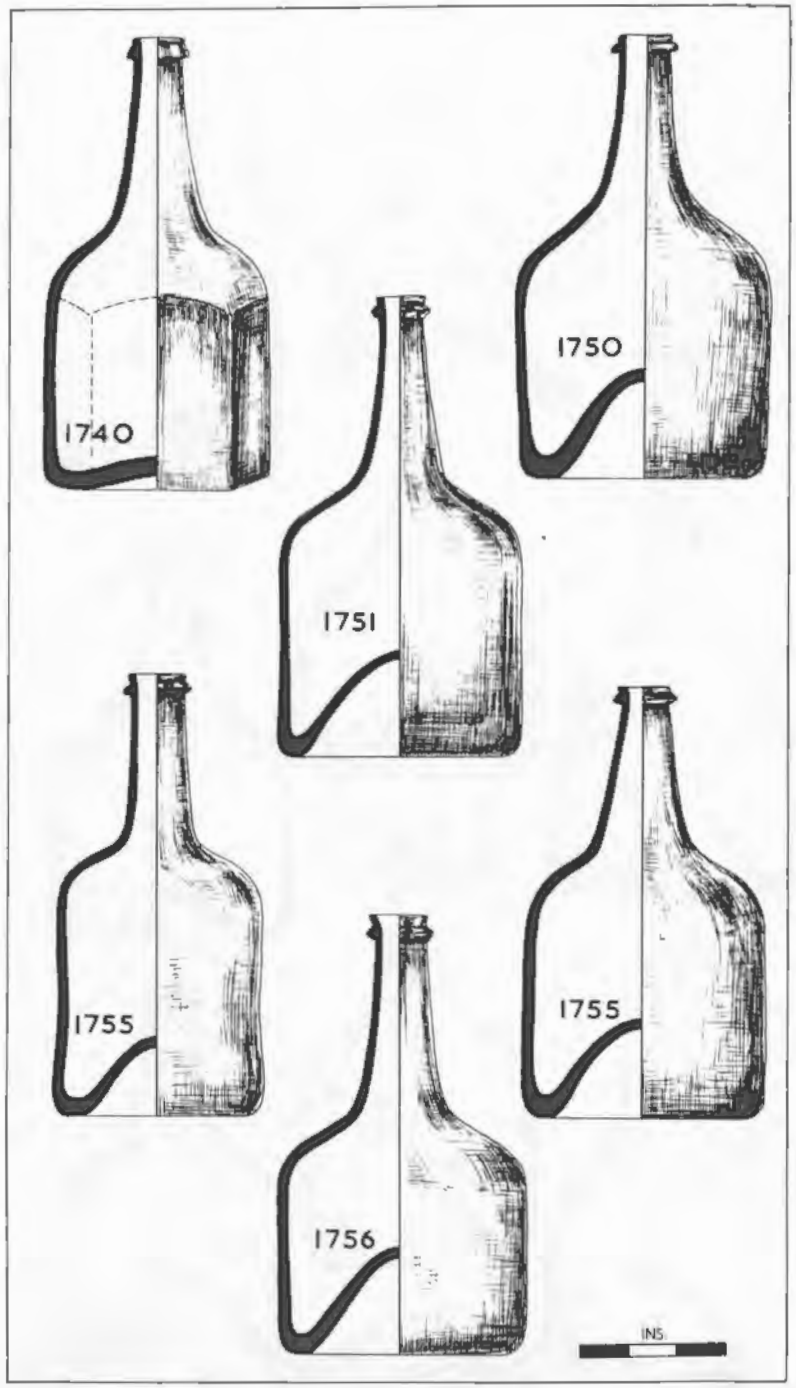
Square-bodied bottles, 8″ to 10″ in height, with short, straight necks, and of a pale-blue metal, occur in contexts of the mid-eighteenth century and thereafter. (Fig. 15) It has been suggested that

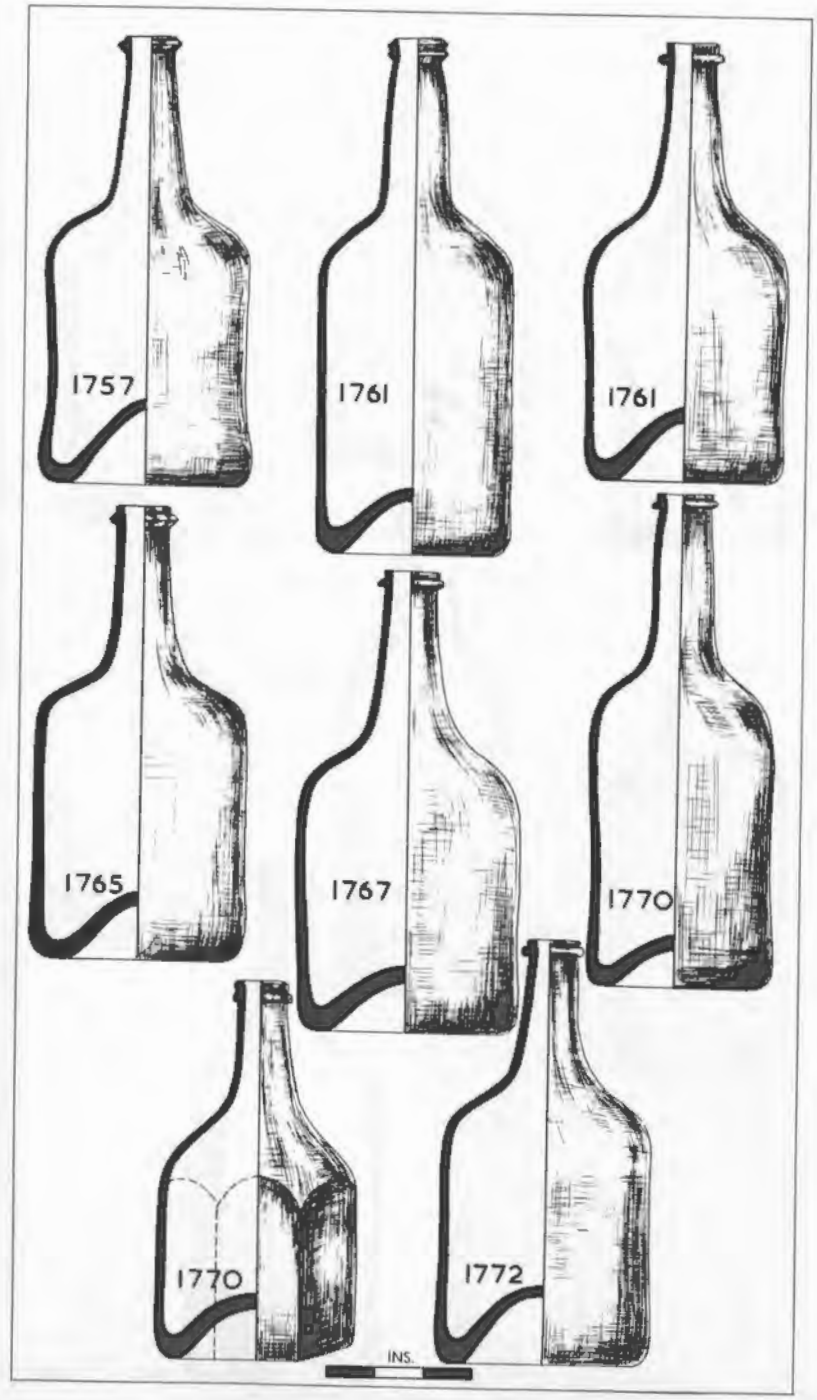
Figs. 8–13. A series of English glass wine bottles, all bearing dated seals with the exception of those having a "P" prefix indicating that on other evidence those examples date prior to the given year.

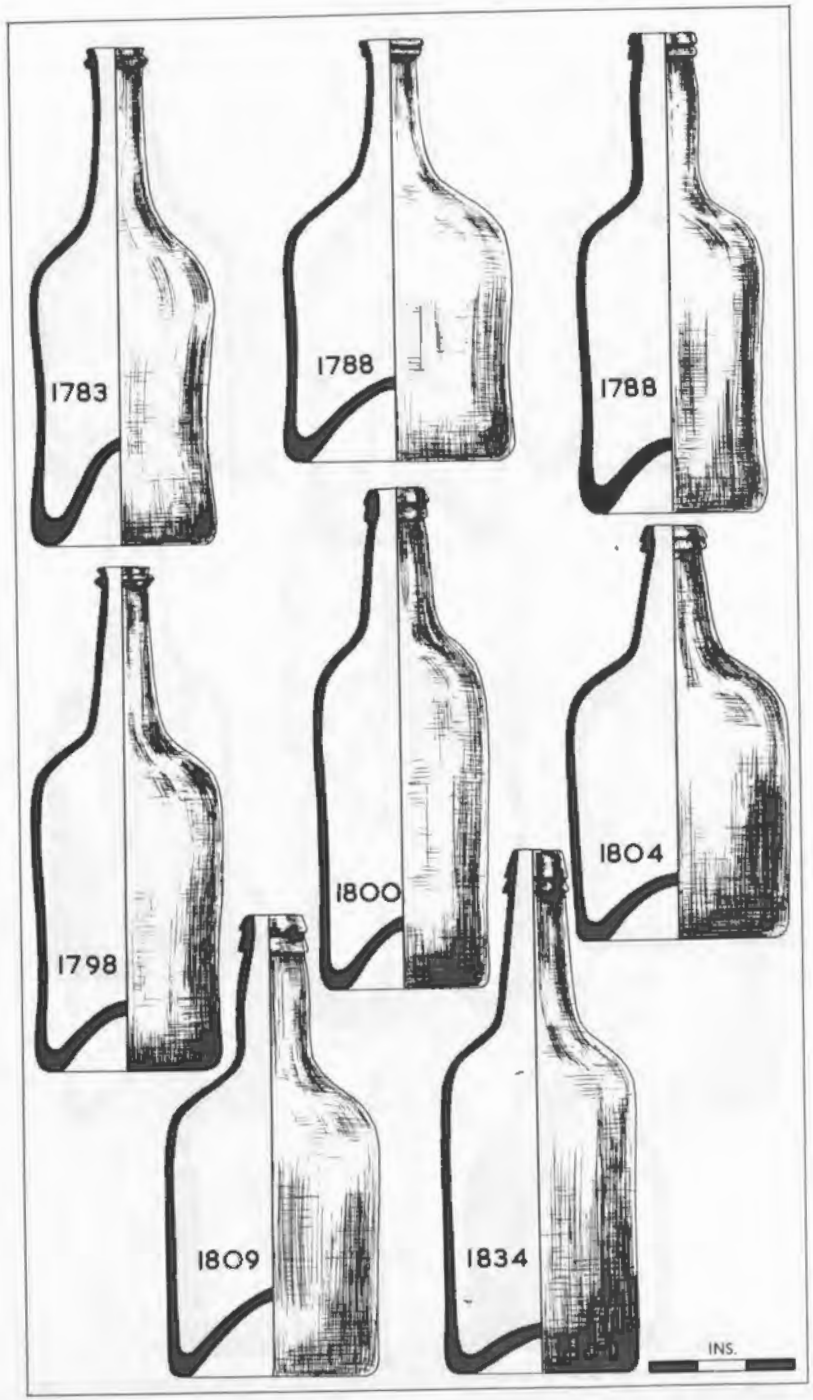



1713
1714
1721
1722
1727
1729
1731
1732
INS


1733
1734
1734
1735
P.1735
1736
1738
1739
1740
INS


1740
1750
1751
1755
1755
1756
INS.


1757
1761
1761
1765
1767
1770
1770
1772
INS.



they may be of American manufacture, but the fact that they have been found in contexts of the same period in England makes this unlikely. However, the large numbers found on French colonial sites strongly point to France as their origin. I recently encountered a neck of such a bottle protruding from the mortar of a ruined French "great house" of the mid-eighteenth century near Gros-Islet on the island of St. Lucia in the West Indies. Others, in a variety of sizes, have been found in contexts of the 1740's on the site of the French fortress of Louisbourg in Nova Scotia.

A small number of irrefutably foreign bottles are found on English colonial sites, most of them French. (Fig. 16, right) Unlike the English wine bottles of the eighteenth century, these are generally broader at the shoulder than the base, with tall necks, a style that eventually developed into the typical weak-shouldered Champagne or Burgundy bottle of the late eighteenth and nineteentb centuries. Most French bottles of the eighteenth century had poorly applied string rims, round in section and pinched against the neck at only two or three points. This was in marked contrast to the

Fig. 14. Typical square bottle from a mid-17th-century context in Virginia. The form was common in the period c. 1625–75 and was made both in England and the Netherlands. This example retains part of a threaded pewter collar to house a cap of the same metal. Ht. 10⅛".

carefully tooled string rims on most English examples. More common throughout the colonial eighteenth century than the regular French wine bottle was the French wanded bottle, which was flat and oval in shape with a long, slightly writhen neck. The necks had no string rims and the bodies no feet, and they were cased in wicker or rushes rather in the manner of the modern Chianti bottle, though not always with a foot. The metal was generally brownish, turned black in the ground, and decayed rapidly into a sugarlike consistency.

Dutch bottles are rare on English colonial sites. Unlike the French, who seemed to have developed their own styles, the Dutch followed the English shapes, though they were rather slower to adopt them. Thus, long-necked types of c. 1660 were still being produced in the Netherlands at the end of the seventeenth century, while the squat forms of the early eighteenth century were being made there into the 1740's. Dutch bottles of the seventeenth century seem to have been a richer green than the English, but in the eighteenth century they tended more toward amber. The common Dutch variety of the first half of the eighteenth century had a squat body and a neck taller than on English examples and possessed a

Fig. 15. A pale blue and square-bodied bottle common in the mid-18th century. Probably French. Ht. 8⅝".

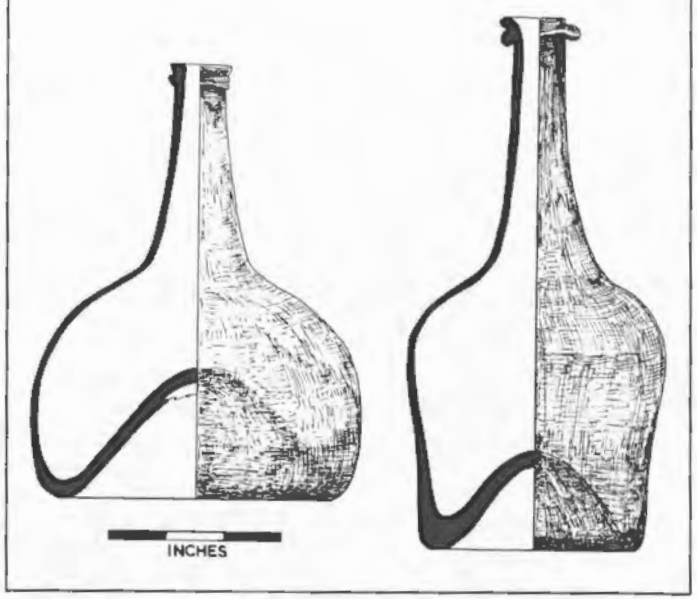


Fig. 16. Typical Dutch (left) and French (right) wine-bottle forms of the second quarter of the 18th century.

much more pronounced conical basal kick. (Fig. 16, left) The string rim was tooled flat or to a "V," but the ends of the trail were generally roughly overlapped, while the flat lip was everted above it making the mouth, rather than the string rim, the dominant neck feature. This did not occur on English bottles until the last quarter of the eighteenth century, at which time lip and string rim were tooled into a single entity.

In America the so-called black wine bottles seem to have been free-blown at least as late as 1820, and on the basis of slender evidence from New England and Philadelphia it would seem that they differed from comparable English bottles of the early nineteenth century in that their mouths were thick, broad, and gently rounded, either dwarfing the string rim below or eliminating it altogether.

DUMBRELL, ROGER: *Understanding Antique Wine Bottles.* Woodbridge, Eng., 1983.

MCNULTY, ROBERT H.: "Common Beverage Bottles: Their Production, Use, and Forms in Seventeenth- and Eighteenth-Century Netherlands," Parts I & II, *Journal of Glass Studies* (Corning, N.Y.), Vol. 13 (1971), pp. 91–119; and Vol. 14 (1972), pp. 141–48.

NOËL HUME, IVOR: "The Glass Wine Bottle in Colonial Virginia," *Journal of Glass Studies* (Corning, N.Y.), Vol. 3 (1961), pp. 90–117.

RUGGLES-BRISE, SHEELAH: *Sealed Bottles.* London, 1949.

SIMON, ANDRÉ L.: *Catalogue of the Wine Trade Loan Exhibition of Drinking Vessels.* Vintners' Hall, London, 1933.

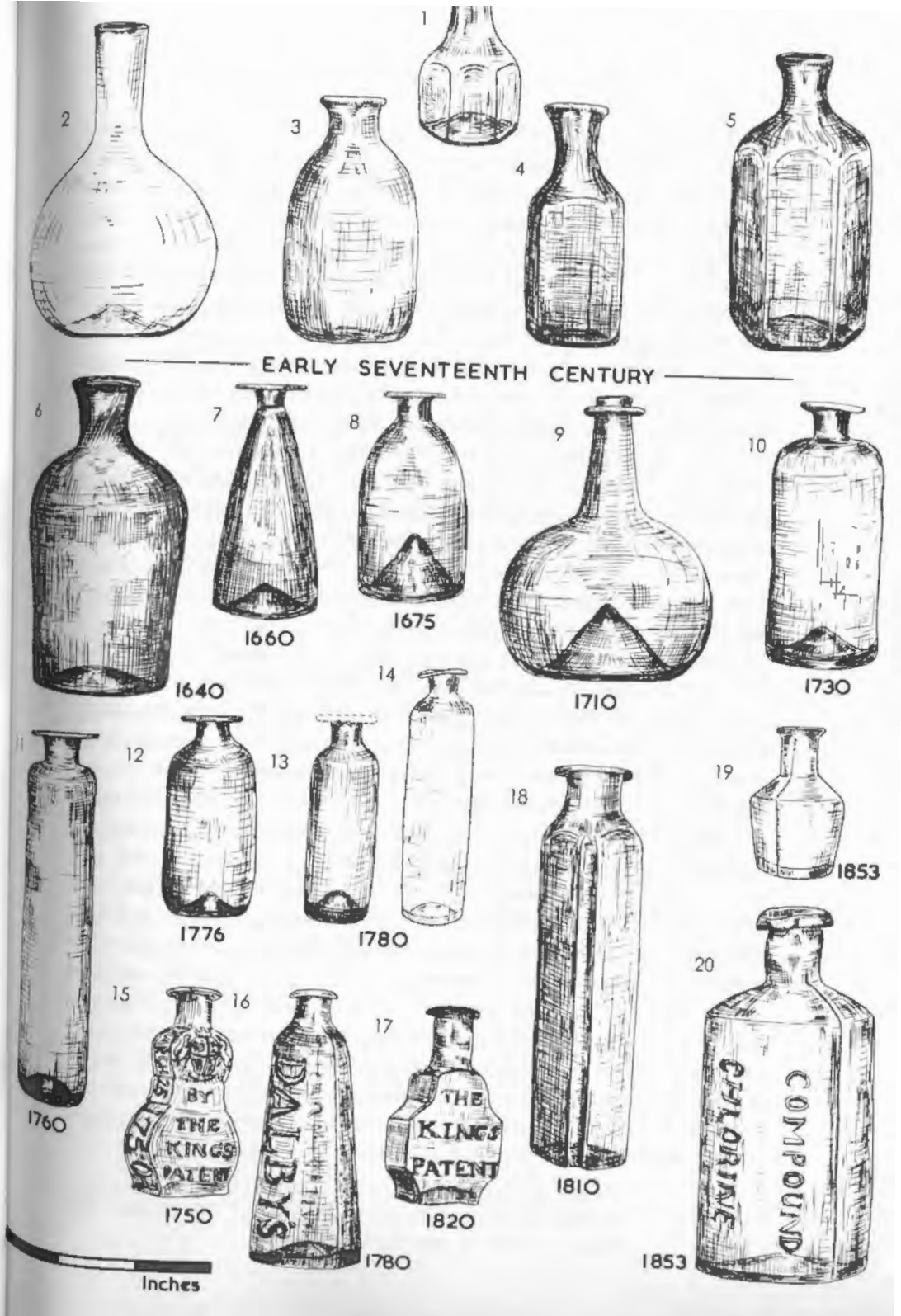
§ *BOTTLES, Glass Pharmaceutical*

Pharmaceutical glassware was manufactured in England from the late sixteenth century onward, and small glass phials are commonly encountered on archaeological sites throughout the colonial centuries. In the period c. 1580–1640 there was much greater variety than at any time prior to the late eighteenth century. (Fig. 17) This was occasioned by the fact that in the years between, the glassmakers made smaller use of molds.

Common in the late sixteenth century was the Germanic "half-post" technique of inserting the first gather or "post" back into the crucible to be partially coated with a second layer of glass. The lower end, or combined posts, was then lowered into a vertically ribbed mold and twisted as it was withdrawn, creating a swirled or writhen effect. This technique, as used for small Tudor medicine bottles, was the same as that employed in making the famous Connecticut "Pitkin" flasks of the late eighteenth and early nineteenth centuries. Similar writhen ornament molded onto a single gather was used to decorate Tudor bottles of carafe type, and some of them survived into the seventeenth century. By and large, therefore, it is reasonable to conclude that when found on American sites, swirling-ribbed molding on thin bottle glass must date either early in the seventeenth century or later than about 1780. Direct-pattern molding, however, was employed by Henry William Stiegel at his factories at Manheim, Pennsylvania, between 1764 and 1774.

The early seventeenth-century English molds produced small

Fig. 17. Examples of pharmaceutical and related bottles from the 17th to the 19th centuries. 1. and 2. Very pale green. 3. and 4. Dark-green. 5. Olive-green. 6. Amber. 7. and 8. Medium-green. 9. Pale-green (occurs in pale blue). 10–13. Medium-green. 14. and 15. Clear. 16. Medium-green. 17. Clear (occurs in pale blue). 18. Olive-green. 19. Clear. 20. Pale-blue. Nos. 1–5 and 7–18 are English; 6, English or Dutch; 19, probably American; 20, American. Except in the case of No. 15, dating is approximate and based on archaeological evidences.



green bottles with four, six, seven, and eight sides, generally with a short neck tooled out at the top to form a lip. From the same period one also encounters very thin globular bottles, pale green or straw in color, with straight necks struck straight from the blowing iron and with no attempt to create a lip. Cylindrical phials were also made in this early period and are characterized by being slightly broader at the shoulder than at the base. Colors range from pale green, through emerald, to a rich amber. The common deep- or blue-green phials so ubiquitous throughout the eighteenth century did not appear before the mid-seventeenth century. At the outset these were markedly weak in the shoulder, sometimes to the point of being conical and thus known to collectors as "steeple" bottles. Later they became more angular, and the broad, flattened lip of the early examples became smaller. The early specimens also possessed a conical basal kick, and this, too, became less pronounced as the form evolved. By the mid-eighteenth century the same types of phials were beginning to be made in clear glass, and these became increasingly common as the century drew to its close.

Molded phials were generally of clear metal, the earliest-recorded example being the cello-shaped bottles made for Robert Turlington's Balsam of Life and embossed with the date March 25, 1750. Turlington had been granted a patent for his twenty-six-ingredient "Remedy for Every Malady" in 1744, but it is not known whether a proprietory bottle was designed and issued at that time. The 1750 bottle is apparently known by only one intact example, that found in Williamsburg. (Fig. 17, No. 15) In 1754 a new and more angular bottle was substituted "to prevent the villainy of some persons, who buying up my empty bottles, have basely and wickedly put therein a vile spurious counterfeit sort."[8] Nevertheless, the pirating continued and was common practice in America in the second half of the eighteenth century and well on into the nineteenth century. American bottlemakers produced vast numbers of spurious Turlington's Balsam bottles, but invariably with longer necks and less pronouncedly everted lips. The later American versions were also often much lighter and thinner than the originals, and were frequently of a pale-blue metal. (Fig. 17, No. 17)

[8] Quoted in James Harvey Young and George B. Griffenhagen: "Old English Patent Medicines in America," *The Chemist and Druggist* (London), June 29, 1957, p. 718.

Square-sectioned bottles bearing molded inscriptions describing the contents became fairly common in the latter years of the eighteenth century. These, too, were of clear metal, and usually exhibited a diagonal mold mark across the bottom. When the contents were patented, the sides were often embossed in high relief with a crowned GR. Archaic in shape, but probably not dating before the last twenty years of the century were the steeple-shaped bottles for Dalby's Carminative. Although made in the usual eighteenth-century phial green, they were mold made, and the name of the contents was embossed vertically down the sides. Rather similar conical bottles were used for Godfrey's cordial, another long-established remedy dating back to at least 1721 and possibly much earlier. A version of this bottle shape was still being used for Godfrey's cordial in the early years of the present century. Other eighteenth-century patent medicines were dignified (but not much protected) by having their own bottles. In 1753, the account book (collection of Colonial Williamsburg, Inc.) of Dr. James Carter of Williamsburg shows that he ordered half a gross of empty "Stoughton Vials" for Stoughton's Elixir, along with "3 Quire Stoughton's Directions" undoubtedly with the intention of making and bottling his own. Unfortunately, I know of no surviving examples of this bottle.

Another anomalous class of bottle had appeared in the second half of the seventeenth century: miniature wine-bottle shapes in a thin, bluish metal. The earliest date from the 1660's, but the majority were made toward the end of the century and in the first years of the next. They were thin-walled, round-bodied, straight-necked, and had broad and flat string rims below the lips. (Fig. 17, No. 9) It would appear from the number that have been found on late-seventeenth-century archaeological sites that they were not uncommon in their period. It seems likely that they were used for oils or vinegar.

In conclusion, a word must be said about a class of phials resembling the typical angular-shouldered, cylindrical green medicine bottles of the eighteenth century (Fig. 17, No. 12) but missing their necks and everted mouths. These were ink bottles or wells. It has not been determined, however, whether they were stoppered and carried about, or whether they were seated in stands or set into the tops of desks as were the ceramic wells of the nineteenth century.

NOËL HUME, IVOR: "A Century of London Glass Bottles, 1580–1680," *The Connoisseur Year Book* (London), 1956, pp. 98–103.

———: "Neglected Glass," *Country Life*, Vol. 116, No. 3007 (September 2, 1954), pp. 716–17.

YOUNG, JAMES HARVEY, and GEORGE B. GRIFFENHAGEN: "Old English Patent Medicines in America," *The Chemist and Druggist* (London), June 29, 1957, pp. 714–22.

§ *BOTTLES, Pottery*

The principal pottery bottle of the seventeenth century was the Rhenish stoneware Bellarmine (*see* BELLARMINES), for it was strong and nonporous. Its shape was copied by the makers of English delftware, predominantly during the period 1640–60, these bottles being of a soft-yellow or pink earthenware coated with a thick lead glaze containing tin oxide that gave them a white (often slightly tinged with pink) porcelainlike surface, though without anything like its strength. The earliest were made in Southwark (London) and were decorated in blue in styles copied from Ming porcelain. Some are dated 1628 in cobalt below the base of the handle. The majority, however, were plain white and inscribed only with the name of the contents—Sack, Whit, Claret—plus the date, recorded examples ranging from 1642 to 1662; they were otherwise unadorned. There are a few exceptions, however, notably the latest-known example which is elaborately cobalt-painted with the arms of William Allen and is dated 1674. If these bottles were developed in the hope of capturing the Bellarmine market, their potters were disappointed, for the prize was quickly surrendered into the hands of the glass-bottle makers.

In addition to the bottles used on the table and in the tavern, there were those popularly known as costrels, some of which were carried when traveling. The most common of these was a completely circular ball, usually in a hard red ware—though examples range from buff to a purplish gray—with a slightly tapering neck protruding from one side. These vessels are thought to be French and were cased in wicker or rushes. They were manufactured in three parts, the body being fashioned as two slightly ribbed hemi-

Fig. 18. Spouted jug (handle missing) of a hard red ware, white slip coated and covered with a green lead glaze; found at Kecoughtan, Virginia. Iberian, second quarter of the 17th century. Ht. 11⅛".

spheres luted together; that done, a hole was pushed through the junction at one side and the neck attached. The handle of rope or rush was attached to the casing. Such bottles were common in the first half of the seventeenth century and go back into the late sixteenth century, while the latest example so far encountered came from a context of about 1670. Another, more elaborate costrel form was made in a red earthenware, coated with marbleized slip in white and green contrasting dramatically with the orange-brown surface produced in areas where the clear glaze lay directly on the red body. These costrels are tall, pear-shaped over a pedestal foot, and have long necks topped by a rounded mouth. There are generally two loop handles on either side, each molded in the form of lion masks through which a cord or leather thong was passed. The bottles are of French or Italian origin and seem to be confirmed to the period c. 1610–60. Equally distinctive are the strap-handled, small-necked, and bulbous-bodied bottles whose principal characteristic is a short conical spout at the shoulder. (Fig. 18) They are thought to be Spanish, are of a hard, thin red ware coated on the outside with a bright glossy-green glaze over a white slip and appear on sites dating as early as the first quarter of the seventeenth century. However, their full date range is not known. Also allegedly from Spain is a group of bulbous-bodied bottles flattened at back

Fig. 19. Typical 19th-century brown stoneware bottles used for: (rear, left to right) blacking, ink, and ginger beer, (front row) ink. These examples English, third quarter of the century.

and front, with narrow necks and pairs of long strap handles flanking them. The ware is usually thick and a very soft and poorly fired yellow, generally coated with the remnants of a lead glaze which seems semi-opaque but which chemical analysis shows to contain no tin. The flat body faces and shoulders may be decorated under the glaze with crude star, flower, or bird motifs in dull red or pale blue. These are found in contexts dating up to the mid-seventeenth century.

The need for pottery bottles quickly declined as the production of glass bottles increased, and in the eighteenth century the only common pottery bottles were of brown stoneware, the English descendant of the Bellarmine. The body was gray and covered to a point below the midsection with an iron-oxide slip that turned to either purple or a rich, brown stipple in the firing. The bodies resembled the late Bellarmines in shape, had a single strap handle, while the necks were generally cordoned below the lip. They came in various capacities from a pint to about five gallons, though the quart and gallon sizes are the most common survivers. No closely datable characteristics have so far been detected, and it is virtually impossible to tell the difference between those made in 1690 or 1770, though this would seem to be the span of their popularity.

Brown stoneware bottles came into their own again in the early nineteenth century, taking advantage of the 1812 doubling of duty

on glassware imposed by the British Chancellor of the Exchequer. Although the incensed glassmen lobbied the Chancellor and caused a tax of five shillings to be levied on every hundredweight of stone bottles holding less than two quarts, the potters were undaunted. Cylindrical brown stoneware bottles were made in England in enormous quantities throughout the Victorian era, and many of them found their way to America. As Figure 19 shows, these bottles varied considerably in size, and not all of them were brown. Some omitted the iron-oxide slip and were buff or even white surfaced. The brown bottles were commonly used for ink, blacking, and mineral waters, each having a different neck and mouth shape. Those for ink invariably had a pouring lip, blacking bottles had wide collarlike necks and mouths, while those for ginger beer and comparable mineral waters were usually thickened and convex at the mouth so that string or wire could be tied below the rims to prevent the corks from escaping. Although the screw stopper was invented in 1872, the majority of mineral-water bottles continued to be made in the old way until the end of the century.

Small ink bottles or wells did not have the pouring spout as they were intended to be dipped into, and these came in two varieties—very squat cylinders or wide-based cones. The latter were also made in large quantities in America, and the best of them are virtually indistinguishable from the English.

Most of the English stoneware bottles of these types were made at Lambeth in London and are often stamped with the names and trademarks of such makers as James Stiff, Stephen Green and Co., and the still-in-business firm of Doulton, whose bottles, prior to 1858, were marked Doulton and Watts. Equally important was the firm of Joseph Bourne of the Denby Pottery near Derby, which was making cylindrical bottles throughout the Victorian era. Not all the stamped marks were those of the manufacturers; purchasers who bought in quantities often had their bottles made to order and stamped accordingly. Thus, bottles for Stephens' ink or Batey and Co.'s ginger beer proclaimed this fact on their sides.

The vast majority of the bottles discussed above were made in the period 1840–90, although some examples of the class were probably a little earlier. The brown bottles of the first decades of the century had been vastly more imaginative and were reminiscent of the early artistry of Fulham and Southwark. Cast in molds, the

bottles were made in the shape of smiling and scowling faces, boots, hats, pistols, civic maces, and the like, while others had relief decoration sprigged on in the eighteenth-century manner. Most of the early examples were rather roughly finished and were boldly mottled, the slipped sections of the body often appearing reddish-brown. Such bottles have continued to be made in more recent years, but the glaze is usually darker and more uniform, while the molding and modeling is much cleaner and consequently lacking the rustic charm of the originals. I have yet to see any of the English decorative bottles on American archaeological sites.

The principal American stoneware bottles of the mid-nineteenth century and thereafter were shaped like glass beer bottles, and emulated the English "Bristol glaze," an off-white stoneware double glazed with a pale ocher slip that extended from lip to mid-section. A few are stamped with makers' marks, but an in-depth study of the American sources has yet to be attempted.

BLACKER, J. F.: *The A.B.C. of English Salt-Glaze Stoneware*. London, 1922.

HURST, J. G.: "Imported Flasks," *Publications of the Thoresby Society* (Leeds, Eng.), Vol. 51, No. 112 (1967), pp. 54–9. Limited to bulbous costrels.

NOËL HUME, AUDREY: "Stoneware Mineral Water Bottles of the Nineteenth Century," *Bottling* (London), No. 129 (July 1956), pp. 123 *ff*.

See also STONEWARE, Rhenish

§ *BRICKS and BRICKWORK*

While bricks are not the most collectible of artifacts, they are among the most common relics of early American domesticity. They have also served as a kind of Rosetta Stone for architects and archaeologists attempting to date old foundations and buildings. The sad truth of the matter is, however, that individual bricks are not nearly as informative as we are often led to believe, though when seen in their original coursing they can offer us a few general guidelines.

The supposed key to the dating of single bricks lies in their measurements, their color, and their hardness. To take the last two characteristics first, one has only to read what Richard Neve in his

Builder's Dictionary (1736 edition) had to say about the burning of bricks to see that neither color nor hardness are consistent through one firing of a single clamp or kiln, let alone through the years in a multitude of different places and with as many different clays. Neve stated that there were three categories of brick to be obtained from each firing:

> The first and best sort for lasting are those which lie next the Fire, and have, as it were, a Gloss on them, which proceeds from the Salt-petre inherent in them, which by the Violence of the Fire, runs and glazes them; these are called *Clinkers*.
>
> The second and most general Sort for Building, are those which lie next in the Kiln, or Clamp, to those before mentioned.
>
> The third and worst sort, are those which lie on the Outsides of the Kilns and Clamps, where the Salt-petre is not digested for want of due Heat; and these, when they come to be exposed to the Weather for some Time, will moulder away like Dirt; and are called *Samel* or *Sandal-bricks*. 'Tis an Observation, that whilst Bricks are burning, those on the windy Side of a Clamp, are the worst of all.[9]

In theory the size of bricks were regulated by statute and for that reason the ordinary wall brick was known as a "Statute, small, or common brick" and according to Neve it "ought to be in Length within 9 n.; in Breadth 4½ n.; and in Thickness 2¼ n."—it ought to be, but it rarely was. A statute of Elizabeth I (1571) had ordained that bricks should measure 9″ x 4¼″ x 2¼″; while another, of George I (in 1725), identified two varieties, place bricks and stock bricks (though Neve said that stock bricks "differ not from Place-bricks in form") and stated that they should measure no less than 9″ x 4¼″ x 2½″ and 9″ x 4¼″ x 2⅝″, respectively. By Virginia standards, however, a nine-inch brick was large, and when it was that long it was often 3″ in thickness; but, according to Neve, so thick a brick should have been 12″ long and 6″ broad and was known as a "Great Brick." By and large, eighteenth-century colonial American bricks were about 8¾″ long, 4″ wide, and about 2⅝″ in thickness, give or take a little in every direction. It is true that bricks from seventeenth-century foundations tend to be larger than those from

[9] Richard Neve: *The City and Country Purchaser's and Builder's Dictionary*, 3rd edn. (London, 1736).

§ *TOBACCO PIPES and SMOKING EQUIPMENT*

The English kaolin tobacco pipe is possibly the most valuable clue yet available to the student of historical sites, for it is an item that was manufactured, imported, smoked, and thrown away, all within a matter of a year or two. Fortunately the shape of the pipe's bowl underwent an easily recognizable evolution that had begun before the start of the seventeenth century and was still going on well through the nineteenth century. In addition, pipes were extremely cheap (selling in 1709 for as little as two shillings a gross), thus making them available to all economic levels of colonial society. They were as expendable as cigarettes, though vastly more durable, ensuring that their fragments survive in the ground in prodigious quantities.

The Indian habit of smoking tobacco by means of a device formed "like a little ladell"[7] became fashionable in England in the 1570's, and by the early seventeenth century the clay pipe had become commonplace. The earliest types, those of the late sixteenth century, were very short-stemmed, some being no more than 1¾" in length, though the average was about 3½". By the third quarter of the seventeenth century the average stem length was between 11" and 12", and by the end of the century many were a little longer still. Lengths of 13" or 13½" seem to have been common during the first half of the eighteenth century (Frontispiece), though advertisements referred to both short- and long-stem pipes. In the second half of the eighteenth century a few pipes were made with stems of enormous length, 2′ and more (popularly termed "churchwardens," a name coined in the nineteenth century), while others

[7] Adrian Oswald: "English Clay Tobacco Pipes," *The Archaeological News Letter* (London), Vol. 3, No. 10 (April 1951), p. 153; quoting from William Harrison's *Great Chronologie* of 1588.

reverted to an earlier and more manageable size and were no more than 9" or so from heel to mouth. Boston newspapers carried advertisements offering "long London Tobacco Pipes" in 1716 and 1742, "Boxes of short Pipes" in 1761, "long and short Pipes" the next year, and "long and midling Pipes" in 1763. More helpful was the advertiser in the *Boston Gazette* (May 28, 1764) who offered his customers "glaz'd 18 inch London Pipes per Box," but whether these were considered long or extra-long remains anybody's guess.

It should be noted that as a rule the length of the stem had no bearing on the size of the bowl, but it did have a very considerable influence on the size of the hole that passed through it. This was made with a wire that was pushed down the solid stem while it was still supported in the mold. When the stem was short, a fairly large hole could be made by using a thick wire, but when the stems became longer and the wire had further to travel a thick wire was more liable to stick through the side than was a thin. In consequence, therefore, smaller wires were generally used as the stems became longer. This, at least, is the theory, though it is possible to find wires of differing thickness in use in the same period by the same maker. (*See* p. 300.) There is no denying, however, that the holes in pipe stems became smaller and smaller through the seventeenth century and on into the second half of the eighteenth, a fact first noticed by Mr. J. C. Harrington of the United States National Park Service. In September 1954, after a careful study of many thousands of pipes both in America and in England, Harrington published a chart showing the percentages of different diameters (gauged in sixty-fourths of an inch) represented among well-dated

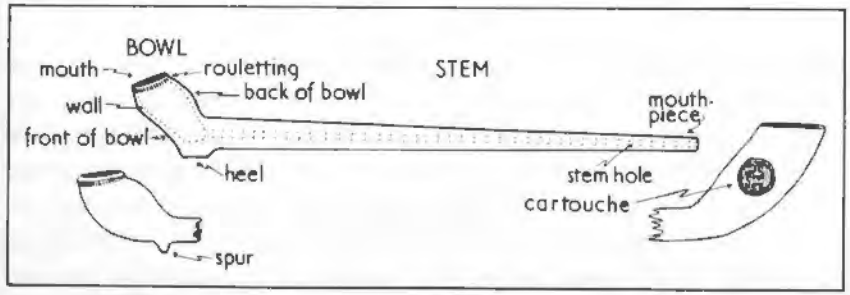


Fig. 95. The parts of a tobacco pipe.

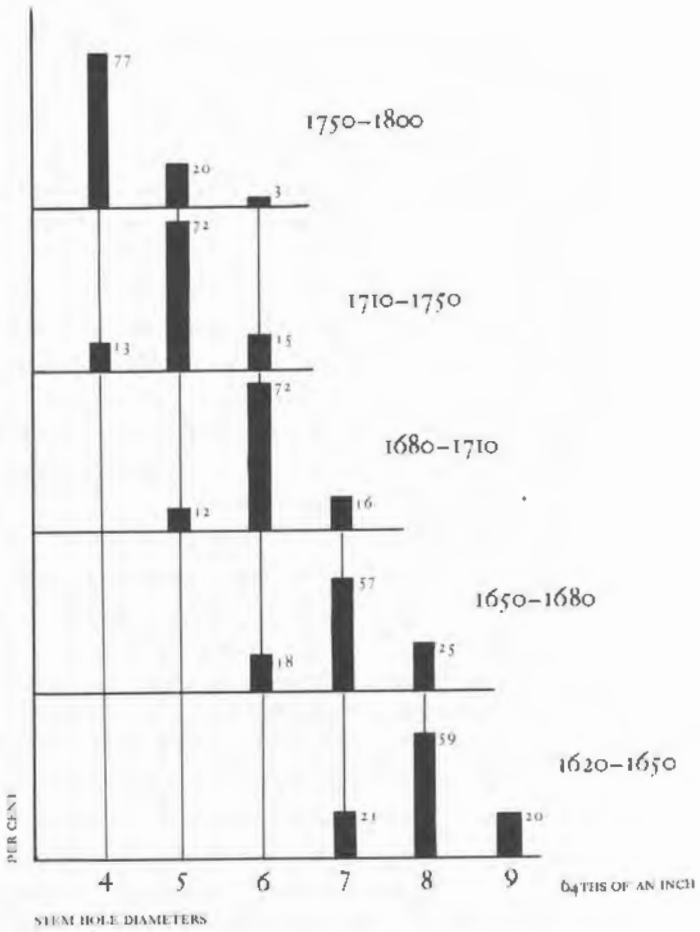


Fig. 96. Chart showing variations in hole diameters through the stems of clay tobacco pipes.

English pipes in five successive time periods from 1620 to 1800. (Fig. 96)

At first, what has come to be known as the "Harrington Theory" was received with considerable merriment among pundits of the pipe, but it soon became apparent to those who took the trouble to test the chart that there was a good deal of truth in it—though Harrington himself had made it very clear from the start that he considered the sampling too small and that much refine-

ment would be necessary when more groups of archaeologically datable pipes became available for study. He also pointed out that associations of only twenty or thirty pipes would probably be insufficient to produce an accurate answer.

So far as I know, no real effort has yet been made to redefine Harrington's date brackets, though much new information has been unearthed in the past decade. However, Dr. Lewis Binford produced a straight-line regression formula based on the Harrington chart enabling a mean date to be arrived at for any assemblage of stem fragments, be it large or small. That formula is as follows:

$$Y = 1931.85 - 38.26X$$

Y being the mean date for the group, 1931.85 the theoretical date when the stem hole would disappear altogether, 38.26 the number of years between each sixty-fourth-of-an-inch decrease, and X being the mean hole diameter for the group. This last is arrived at by first determining the diameter of the bore of each fragment (using a set of wood drills of graduated sizes), multiplying the number of fragments by the number of sixty-fourths, next adding together the total of fragments of all sizes and then all the products, and dividing one into the other, carrying the answer to three places of decimals. Thus:

Hole diameter	*Fragments*	*Product*
7/64	35	245
6/64	79	474
5/64	50	250
4/64	20	80
	184	1049 = 5.701

Extremely helpful though this is, it is still based on Harrington's original chart, and the question remains as to how accurate his dates really are.

In the course of excavations in Williamsburg in the summer of 1963 a large quantity of broken pipe stems was found tramped into the ground to make a walkway, all undoubtedly laid down at the same time and most of them the products of a single maker, for

nearly 150 bowl fragments bore the initials RM astride the heels. There were, in all, approximately 12,000 stem fragments, and on the basis of other archaeological and historical evidence it was deduced that they were deposited in the early 1740's. Using the Binford formula and taking arbitrary samplings from the collection, the following results were obtained:

No. of Pipes	*Formula date*
19	1726.38
35	1738.09
54	1733.67
105	1733.29
129	1742.09
290	1736.59
295	1740.55
296	1738.26
383	1737.74
591	1739.79
932	1740.55
1111	1740.55
4746	1741.70
9272	1740.55
11164	1740.55

It will be seen, therefore, that although 295 fragments produced a "correct" date of 1740.55, five pieces less put it four years earlier, while one more put it two years less. It was not until 932 fragments were used that a more or less consistent answer could be relied upon. Nevertheless, the very fact that the Harrington-Binford system produced a date for the pipe fragments within ten years of that suggested by other means demonstrates its valuable contribution to historical-archaeological studies. Unfortunately, however, its range of acceptable accuracy seems to be restricted to the period c. 1680–1760, with the probability of error increasing rapidly as one moves away from that bracket in either direction. The following short list of samples from sites of various dates will serve as an illustration:

No. of fragments in deposit	*Formula date*	*Date deduced on other evidence*
90	1631	1645–53
924	1636	1645–60
300	1622	1650–60
648	1698	1690–1700
91	1709	1702–10
17	1731	1725–35
271	1751	1745–60
121	1758	1750–65
213	1767	1760–70
485	1747	1762–72
290	1753	1770–80
772	1747	1775–80
51	1755	1775–90
168	1751	1817–20

Although the large quantity of fragments needed to produce a consistent date was present in none of these instances, it is significant that within the period of reliability even quite small groups of stem fragments were capable of producing useful answers, whereas beyond it even the larger groups could provide no greater accuracy than could the small. It should be noted that the foregoing examples show the pipe-dating discrepancies falling consistently earlier than that provided by other evidence. It might be argued, of course, that even a thirty-year tolerance might be helpful in enabling the novice to get a broad idea of the era to which his site belongs, though when I ventured to make this point a lady archaeologist of my acquaintance retorted that if the excavator was unable to pin his site down to such a bracket through his knowledge of other artifacts, he had no business to be digging it.

Among the fallacies nurtured by earlier students of the pipe was the belief that the reason so many stem fragments are found is because smokers passed the pipe from mouth to mouth in the Indian fashion, each smoker breaking a piece off the stem to give himself an unsullied mouthpiece. Broadly speaking, this is nonsense. Pipes were carefully tapered so that the lips easily closed over them, and consequently the removal of more than 2″ or 3″ would have defeated that purpose. Furthermore, broken pipes are found

whose fractured stem has been carefully filed or ground down to shape a new mouthpiece. It is extremely unlikely, therefore, that a smoker would have been satisfied to smoke a jagged-ended, thick-mouthed pipe. The obvious explanation for the prevalence of stem fragments on colonial sites is that pipes were long and fragile, and when dropped or knocked broke into numerous pieces. With this said, however, I must note that Colonial Williamsburg owns a mid-eighteenth-century pair of steel ember tongs (*see* p. 309) having three semicircular notches on the inner faces of the arms just above the pads, which, when the tongs are closed, create three circular holes of two sizes that could well have been used to break very small pieces from the mouthpieces of clay tobacco pipes. On the other hand, the notches could be purely decorative. Before leaving the matter of mouthpieces, I should mention that some were coated with a brown or green lead glaze for a distance of about 1″, while others were dipped for a similar distance into red wax—presumably having first had a plug placed in the hole. Both glazing and waxing appear to have been an eighteenth-century innovation and were by no means common.

Prior to Harrington's study of stem holes, the dating of tobacco pipes had relied on the evolution of the bowl form, and for the seventeenth century this is still the most reliable guide. However, as was demonstrated when more than 12,000 stem fragments were found together in Williamsburg, bowls are comparatively scarce, for the stem fragments were accompanied by only 800 bowls, the stem of each pipe therefore theoretically breaking into fifteen pieces.

The first study of howl evolution (on which nearly all others have been based) was published by the English archaeologist Adrian Oswald in 1951. Figure 96 demonstrates the development of the bowl through the seventeenth into the nineteenth century in a somewhat simplified form.

The shapes were dependent on the mold makers, and each pipe-maker had his own molds. Although the forms followed the same

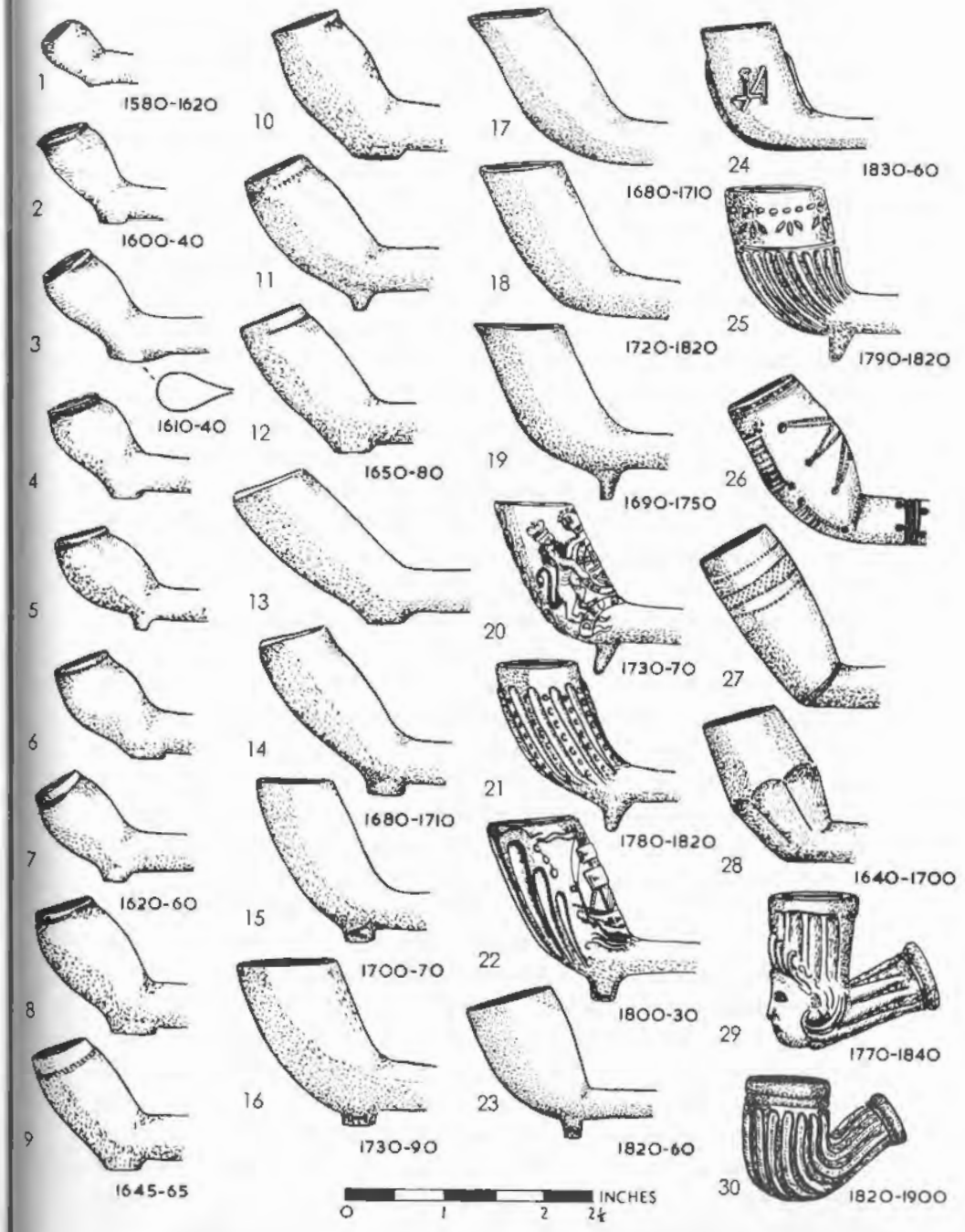


Fig. 97. A simplified evolutionary series of English clay tobacco pipes, plus examples of locally distributed American types. Nos. 1–24 are English; 25 and 30, American of uncertain provenance; 26–8, Virginian; 29, North Carolinian.

general evolutionary trends, it is clear that the pipes made at Chester or Broseley differed from those produced in Salisbury and that the latter were not the same as those made in Bristol—unless the manufacturers happened to buy their molds from the same maker. When one reaches the nineteenth century, decorative bowls were extremely common, and while I have illustrated three examples of styles attributable to different periods I make no pretense that they are adequately representative of the entire class.

There is, unfortunately, a great deal that we do not yet know about the so-called evolution of bowls and stems, and there is reason to suspect that present stylistic and dating criteria have been oversimplified. According to Randle Holme's *An Academie or Store House of Armory & Blazon* (c. 1682) there were then no fewer than ten pipe types, for which there were "seuerall Molds for seuerall fashions as. Lark heele pipes, Flat heele pipes, Round bolls or head, Long Bolls, Long shanks, Midle shanks, Short shanks or ends, Wrought pipes in the head and shank, Smooth pipes, [and] Gleased pipes."[8] The last two almost certainly refer to styles of finishing after removal from the mold; i.e., burnishing and glazing. It would appear that in the latter part of the seventeenth century there were three stem lengths, long, middle, and short, a revelation which casts doubt on the validity of the theory that the stem-hole wire (or "Shanking Wyer" as Holme called it) became progressivly smaller as stems grew longer. Holme's "Lark heeles" were probably what we term *spurs* (e.g., Fig. 97, No. 11), while his "Round bolls" are paralleled by my example in Figure 97, Number 10, and the "Long Bolls" by Number 12. As for the "Wrought pipes in the head and shank," they were almost certainly those with relief decoration.

In addition to the evidence of stem holes and bowl shapes, pipes may also be dated through the correct identification of makers' marks. Here again Adrian Oswald's published work provides the fullest available information. In the first half of the seventeenth century, marks were generally stamped on the flat base of the heel and took the form of initials, full names, or occasionally a rebus. In the third quarter, marks were less common, but they became plentiful again in the last quarter of the century. At this time they were normally reduced to two initials, one on either side of the heel or

[8] Holme, op. cit., p. 271; for full citation, see fn. 1, p. 37.

spur, or occasionally more fully on the back or side of the bowl in incised circles or relief-molded cartouches. These last are particularly characteristic of Bristol pipemakers. The side cartouches extended into the first quarter of the eighteenth century, but the heel-flanking initials as well as the back circles went right on through the eighteenth and nineteenth centuries. By about 1690, Bristol pipemakers were producing pipes without either heels or spurs (apparently in imitation of the traditional Indian styles) for export to the American colonies. Some of these were embossed with the makers' initials on either side of the bowl base. Although such plain bowls continued to be made until the latter years of the eighteenth century, the majority of marked examples belong to the years c. 1690–1730.

Makers' initials are also found straddling the stem, running around it as part of ornamental bands, and stamped in circles on the top—all occurring in the first half of the eighteenth century. In the second half, and on through the nineteenth century, one often finds Liverpool, Glasgow, and Irish makers' names in rectangles stamped on one side of the stem and that of the town along the other.

Stems were sometimes decorated with large, multiple, diamond-shaped fleur-de-lis stamps, a style most popular in the mid-seventeenth century. Toward the end of the century and into the early 1700's, Chester pipemakers decorated stems with bands of ornament that sometimes included spiral fluting and cartouches containing tavern signs or the arms of the City of Chester. The most striking stem decoration yet encountered comes from a mid-eighteenth-century site in Delaware where fragments of two pipes were found coated with a thin brown slip around multiple, irregular reserves exposing the white pipeclay beneath and creating a dramatic, though none-too-pleasing, polka-dot effect.

A few English pipe bowls of the seventeenth century were decorated with groups of raised dots in the shape of trees or bunches of grapes, while on rare occasions the fronts of the bowls were pinched and pared into the shape of a human face. Decorative bowls became much more common in the eighteenth century, a considerable number of them being molded with the arms of the monarch or with the crest of the Prince of Wales. Because the British royal arms appear not only on pipes, but on slipware pottery, on coins, tokens, etc., engraved on glass, and molded on iron firebacks, it may be

useful to enumerate the changes made to the royal arms in the seventeenth, eighteenth, and early nineteenth centuries.

From 1403 to 1603, when James I became king, the arms were divided into four quarters (reading from top left to bottom right) comprising the three fleur-de-lis of France in the 1st and 4th and the three lions passant guardant (leopards) in the 2nd and 3rd. From 1603 until the flight of James II, the charges of the previous arms were compressed into the 1st and 4th quarters, while the 2nd received the lion rampant of Scotland and the 3rd the harp of Ireland. With the accession of William III the arms of Nassau were added as an escutcheon on the center of the shield, these arms comprising a lion rampant with rectangular billets around it. From 1702 to 1707, until the union with Scotland, the Stuart arms were restored in the form established in 1603. But after the Union and until the death of Queen Anne, the three leopards of England shared the 1st and 4th quarters with the lion of Scotland, while the fleur-de-lis occupied the 2nd quarter and the Irish harp retained the 3rd. In 1714, with the accession of Hanoverian George I, quarters 1 to 3 remained the same, but the 4th was divided into four elements to accommodate the arms of the Electorate of Hanover. These comprised: (1) two Brunswick leopards; (2) a Luneberg lion rampant surrounded by hearts; (3) (below) a Westphalia running horse; and (4) in the center an escutcheon charged with the crown of Charlemagne. There were no further changes until 1801, when the Hanoverian arms of the 4th quarter were moved onto a central escutcheon surmounted by the Elector's cap and replaced by the three English leopards which then appeared in both the 1st and 4th quarters, the lion of Scotland ousting France from the second quarter. Another minor change occurred in 1815 when the Elector's cap was replaced by a crown in keeping with Hanover's change from electorate to kingdom. Because Queen Victoria could not succeed to the kingdom of Hanover, the Hanoverian escutcheon was removed in 1837, thus creating the simplest royal arms since the death of Elizabeth I. There have been no changes since.

The majority of armorial tobacco-pipe bowls bear the 1714–1801 Hanoverian arms, but a few have been found bearing the post-Union arms of Queen Anne. So many ornamental devices were used in the nineteenth century that it is likely (though I have not seen

one) that the Victorian arms were also used. The arms of London were frequently borrowed in that period, those being a shield charged with a cross and with the sword of St. Paul in the 1st quarter.

Pillar-molded or gadrooned bowls became popular in England and America in the late eighteenth century and continued into the nineteenth, but by mid-century English styles had become much more adventurous and the bowls were decorated with arms and crests of counties, with the insignia of Freemasonry or of the Royal Order of Buffaloes, with figures of soldiers or of ships. Sometimes the whole bowl was cast in the shape of a barrel or even a boot.

In addition to English pipes, a small number of Dutch specimens are found on eighteenth-century American sites, most of them in Florida and the Gulf States but some of them in other areas during the Revolutionary War. These Dutch pipes have somewhat egg-shaped bowls very often with evidence of vertical paring on the sides, thin walls, narrow stems, and generally highly burnished buff surfaces. Makers' marks are stamped on the backs of the bowls, on the bases of small heels, or on either side of spurs, nearly always in diminutive letters or minuscule shields of arms. Equally small pictorial marks were impressed on the bases of the small heels, among them a fish, a windmill, a milkmaid carrying two buckets, and a figure whom the Dutch describe as the "lady of easy virtue." The thin stems are often elaborately molded with fleur-de-lis, rosette, and foliate motifs, and the name GOUDA (their principal place of manufacture) is frequently included in the embossed decoration.

A few French pipes are found on early Federal sites and may be identified by the superior quality of their molded bowls, which may be shaped as faces, figureheads, or other elaborate devices. Pipes made either in the United States or for the American trade occur in large quantities in the first quarter of the nineteenth century, usually with pillar-molded or gadrooned lower bowls with broad collars above adorned by thirteen stars.

Large numbers of locally made pipes occur on Virginia sites from the second quarter to the end of the seventeenth century, some of them of great elaboration involving the use of blended clays to produce "agate" effects and employing stamps and rouletting wheels to create various impressed devices. Many of the latter are distinctly Indian in character, giving rise to the strong possibility

that they were made by the Indians and smoked by the colonists. By mid-century, cruder copies of the plain English pipes were also produced in Virginia and New England, but as no positively identified kilns have yet been found we do not know exactly where or by whom they were made. It may also be noted that very crude hand-rolled, red-clay copies of late-seventeenth-century English pipes (though with stamped ornament) are found in appropriate contexts in Jamaica. It is reasonable to suppose that the continuing exploration of early sites in others of the erstwhile British colonies will produce more evidence of local pipemaking.

Similar studies are needed in the area of nineteenth-century pipemaking in America. Until recently it was assumed that the so-called Indian-head pipes with reed stems were unknown before the early 1800's, but excavations at the Moravian settlement site at Bethabara in North Carolina have revealed similar bowl types (Fig. 96, No. 29) in a potter's waster pit dating at least as early as 1771. No doubt other such surprises are in store for us.

As well as pipes of clay, a few were of metal. There are silver examples dating from the second quarter of the seventeenth century whose stems unscrew in the middle for portability; but the majority of metal pipes belong to the latter part of the eighteenth century, when they were made of either iron or brass. They are said to have been designed for travelers and huntsmen, for whom the clay pipe was too fragile. However, the metal pipes could be painful if jolted into someone's eye, and they were not widely used. Nevertheless, fragments have been found in American excavations. In addition, the remains of a pewter pipe of uncertain date were found at Jamestown.

Supplying the smoker with fuel for his pipe proved to be one of history's most influential endeavors, and the changes wrought by it have left their mark on the world in which we live. While it would be possible to write an entire book on the artifacts, from anchors to wire, that were employed in the service of tobacco, we are here only concerned with those that kept the pipe going during the actual smoking process. Next to the weed itself, the fire was the most important accessory, coupled, of course, with a means of bringing the two together. While lighting one's pipe from a candle was probably the most convenient method (e.g., Hendrick Terbrugghen's

Boy lighting a Pipe, 1623), the embers from domestic hearths were frequently used, picked up by a pair of long steel tongs, the ends resembling those of ordinary fireplace tongs but the handles separate above a pivot with a spring between them to hold the ember-seizing pad ends together. Such tongs were used in both the seventeenth and eighteenth centuries, and some have removable tampers and even whistles as terminals. Dated examples occur from the late seventeenth to the mid-eighteenth century.

Much smaller tongs, also with spring grips, were often used, generally through the seventeenth and into the early eighteenth century. They were normally about 3¼" long and of steel or brass. The ember-seizing ends were almost pointed and together somewhat resembled the beak of a heron. The two arms were linked and pivoted in the same manner as their larger counterparts, the thicker of the two having a small spring against which the other pressed. These tools are frequently found broken, at which times the thicker of the two arms often resembles a miniature ice skate, an appearance partially derived from the flat disc at the handle end. The other handle also ended in a disc, though turning outward and intended for use as a pipe tamper. This small, and by no means rare, tool has rightly been described as a "smoker's companion," but more often than not it fails to be identified or is classed as a surgical instrument.

In the seventeenth century the embers into which the small tongs were dipped were generally contained in earthenware braziers or chafing dishes and were stood on the table. However, the same kind of burner was used as a heater for wooden foot warmers, the boxes being open, or having a door in one side and holes or slots in the top. Good examples of both types are to be seen in seventeenth-century Dutch paintings, notably Jan Miensz Molenaer's *Tavern of the Crescent Moon* (before 1668), Jan Steen's *Twelfth Night* (1688) and *Welcome for the Visitor* (before 1679), and Cornelis de Man's *The Chess Players* (before 1706). The pottery braziers were of two shapes, the most common being roughly triangular with three short legs and a single looped or cylindrical handle. These are generally of lead-glazed red earthenware, and both ware and handle types are clearly shown in two of Molenaer's paintings, the already cited *Tavern of the Crescent Moon* and *Peas-*

ants in the Tavern. The second and more elaborate type of brazier comprised a bowl with a slotted or punctured bottom over a hollow pedestal foot, the latter generally having a triangular aperture in the side to encourage an upward draft. One such foot in "Metropolitan" slipware was found at Jamestown and, being decorated, was clearly not intended to be hidden in a foot warmer. Smokers' braziers were also made in more expensive and ornamental materials, such as brass and even silver gilt. An example of this chafing dish type is shown in Willem Pietersz Buytewech's *A Merry Party* (about 1615). Small sheet-brass braziers with a turned wooden handle attached to one side were common in the eighteenth century. They generally stood on a cast-brass collarlike foot, made in at least two sections and decorated with patterns of circular holes and crescents. Parts of these feet are found on American archaeological sites of the mid-eighteenth century—and are generally classed as *unidentified.*

Next to the means of lighting his pipe, the smoker's most important tool was the tamper or stopper. These were commonly of brass, and from at least as early as 1660 they were cast with elaborately ornamental handles. (Fig. 98) Close dating is not always as easy as it looks, for the designs were frequently retrospective; for example, a profile of Charles I would have been popular in the reign of Charles II, while a coin mounted on the handle might already have been old (and therefore interesting) when it was so used. The best clue to an early date is provided by the size of the tamper itself, for those that were of small diameter (Fig. 98, No. 1) fitted small bowls—and small bowls were generally early. A sophisticated type appeared in the early eighteenth century (and continued through it) in the form of a closed-ended tube topped by a signet ring; the tube served both as a tamper and as a case for a pocket corkscrew attached to the ring handle.

Sometimes mistaken for a corkscrew is another smoker's aid, this one in the shape of a miniature steel hatchet. Attached to the handle end was a double "corkscrew" resembling the "worm" for extracting debris from gun barrels; it served a comparable purpose in extracting plugged tobacco from pipe bowls. At the other end of the tool was a small blade with an unsharpened edge to break up tobacco without cutting it, while behind, at what might be termed

Fig. 98. Brass pipe tampers. 1. Amorous couple; third quarter of 17th century. 2. Profile of Charles I; late 17th or 18th century. 3. Nude boy; 17th or 18th century. 4. Hand with pipe, probably early 19th century. 5. Handle in the shape of a Queen Anne coin; early 18th century (?). Ht. of No. 1: 3".

the poll of the hatchet, was a round-sectioned tamper sometimes decorated with multiple collars and grooves. The small diameter of the tampers suggest that these tools may date from the seventeenth rather than the eighteenth century, but unfortunately I know of no examples from dated archaeological contexts.

Tobacco boxes fall into two classes, those used to carry it around on one's person and those to keep it in the home. Pocket boxes are sometimes impossible to distinguish from large snuffboxes, and cheap varieties of both were made of tin, pewter, and brass. Copper boxes with brass lids having stamped and engraved decoration were made in the Netherlands throughout much of the eighteenth century and are identified by the presence of Dutch inscriptions describing designs of ships, harbors, towns, and convivial or Biblical scenes. The majority of such boxes were oblong, but the earliest examples seem to have been oval with both top and bottom of brass. (Frontispiece)

Nonportable tobacco boxes used in the home and in taverns or other public buildings were most commonly of lead, usually with poorly defined cast decoration (tavern scenes, shields of arms, etc.) on the sides; they had removable lids and a press inside to keep the tobacco tight and away from the air. These boxes were often gaily painted, particularly in the early nineteenth century. The archaeologist who finds scraps of lead with molded, paneled ornament would do well to consider the possibility of its having been part of a tobacco box. They were also made in iron, brass, and pewter. In the nineteenth century brown stoneware jars with flat lids were widely used, some of the more elaborately decorated jars coming from the Rhenish potteries of Nassau in the Rhineland as part of their Gothic revival.

Although clay tobacco pipes were relatively cheap, tavern keepers who provided them for their customers were wont to re-use them as long as they remained unbroken. In the interests of hygiene they baked used pipes in what were known as "kilns," iron racks comprising three hoops held together by horizontal straps and with a suspension ring in the mid-section of the second hoop. Slung in this rack, the pipes were baked over the kitchen fire or sealed in the bread oven. Iron feet in the form of bent lengths of strapping were usually attached to the bottom horizontal strap so that once cleansed, the pipes and rack could be stood beside the hearth to cool. Thus skeletal iron tubes found in excavations may well have been pipe "kilns." It is worth remembering that such items listed in household inventories do not necessarily mean that the owners manufactured pipes!

BINFORD, LEWIS R.: "A New Method of Calculating Dates from Kaolin Pipe Stem Fragments," *Southeastern Archaeological Conference Newsletter* (Cambridge, Mass.), Vol. 9, No. 1 (June 1962), pp. 19–21.

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§ *TOYS*

In the seventeenth and eighteenth centuries, and earlier still for that matter, the word *toy* meant not only a plaything but also a trifle, a small article of little intrinsic value. Thus such items as buttons, cheap jewelry, and odds and ends that today one might buy at a notions counter in an American store could be classed as toys, as could pottery ornaments, money boxes, and the knicknacks and gewgaws sold at fairs and now collected under the category of *fairings*. I am here concerned, however, only with toys in the sense of children's playthings.

The majority of eighteenth-century toys were miniature versions of well-known objects whose dating criteria can generally be applied to them. This is particularly true of dollhouse furnishings in pottery, glass, pewter, and occasionally silver. Delftware potters made miniature bowls and dishes, but the ware did not lend itself as easily to them as did white-saltglaze stoneware. The latter was much used for this purpose in the period 1730–65, and, as might be expected, it was followed by similar dollhouse items in creamware. Miniature wine glasses are rare, but there is a good range of early-eighteenth-century examples in the Victoria and Albert Museum,

Sheffield plate was invented by cutler Thomas Bolsover in 1742, and, as previously noted (p. 90), it was superseded in England almost exactly a century later by electroplating, the latter being marked EPNS—electroplated nickel silver. Pewter also fell before the advances of technology, being at least partially superseded by Britannia metal, which was developed in about 1795 and which contained 90 per cent tin and 10 per cent antimony. In the nineteenth century this new alloy was generally plated, but at first it was used simply as an improved pewter. Spoons and other household items made from Britannia metal were generally so stamped. It may also be noted that Britannia-metal spoons were often reinforced by an iron wire around which the handles were cast. This also occurred in some pewter spoons, but not, as far as I can determine, before the 1770's.

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§ *DRINKING GLASSES and DECANTERS*

Drinking glasses in delicate and elaborate forms were well known to the English before the first of their colonists set foot in America, but the glasses themselves were rarely of English manufacture, the best of them having come either from Venice or Antwerp. However, an English glass industry had existed since the thirteenth century, though its products had been confined largely to window glass and bottles. It was not until 1571 that the first successful venture into the making of Italian *cristallo* was launched in England by the Venetian Giacomo Verzelini. His products were direct copies of current European styles, having stems molded in the shapes of lion masks (Fig. 64, No. 1), or inverted balusters, some of the latter vertically and horizontally ribbed and known as "ladder" stems.

The bowls were either funnel- or bell-shaped, and the extant examples are usually elaborately diamond engraved, probably by Anthony de Lysle, the only known glass engraver working in England in the late sixteenth century. Verzelini retired in 1592, at which time Sir Jerome Bowes was granted a patent to be the sole maker and importer of glasses into England. In 1615 a similar patent was granted to Sir Edward Zouche, on whose board of directors sat Admiral Sir Robert Mansell, who thus became interested in glass and who, in 1623, obtained letters patent from Charles I authorizing him to carry on where Zouche had left off. The glasses produced in London in this early period were frequently extremely tall, standing on elongated inverted balusters known as "cigar" stems (Fig. 64, No. III) or, alternatively, on very small chestnut-shaped balusters. (Fig. 64, No. II) The soda metal was very thin and therefore very fragile; it inclined to a pale straw color. Although more complicated designs were attempted during the period of the Mansell monopoly (1623–c.1649), the elaborate dragonesque and butterfly stems using entwined clear rods and applied wings in other colors which are occasionally found on early colonial sites must be classed as either Venetian or Flemish.

A certain amount of Rhenish glass was also imported into England in the first half of the seventeenth century and some of it also came to America, though whether it did so in trade or among emigrants' personal possessions is uncertain. The principal types were cylindrical-stemmed goblets ornamented with "raspberry" prunts and with conical feet encircled by thin glass trails. These vessels with their balloon-shaped bowls were produced in a deep-green metal characteristic of the German *Waldglas*, or forest glass. The second form was that of a cylindrical beaker (humpen) with a padlike base slightly conical in the middle and surrounded by a notched or "rigaree" trail; such pieces were often elaborately enameled with heraldic devices, wedding processions, or scenes of rural crafts. Dated examples run through most of the seventeenth century.

The Mansell glass industry came to grief during the English Civil War, and little or nothing was done to revive it until the restoration of the monarchy in 1660, whereupon various patents were issued, the most important being that granted to the Second

Duke of Buckingham in 1662. By then the old Venetian styles and metal were no longer as popular as they had been, and there was a pressing need for something new and exciting. It was for this reason that the London Glass Sellers Company sponsored researches into the making of a new and more brilliant "Christall de roache," first by Frenchman Jean de la Cam and then by the Englishman George Ravenscroft. Under contract to the Company, Ravenscroft produced a new clear metal of considerable promise, but unfortunately it was subject to crazing, or "crizzling" as it was termed. By reducing the proportions of salts and adding lead oxide, Ravenscroft was able to solve this problem, and in June 1676 the Glass Sellers Company issued a certificate of excellence for the new "flint glasses." These new glasses were subsequently marked on their stems with a small glass seal, first plain, and then embossed with Ravenscroft's rebus, a raven's head. Although fewer than forty such sealed vessels are yet recorded in England, either broken or intact, at least one example has been unearthed at Jamestown, and three other seals found there are too decayed to be safely identified. A fifth seal is clearly stamped with a bell; this has tentatively been identified as the rebus of John Bellingham, who managed the Duke of Buckingham's glass factory at Vauxhall from 1671 to 1674. It is reasonable to suppose that any glasses found with a single glass seal (not to be confused with decorative prunts) are likely to be English and of the period c. 1670–81, ending with the death of Ravenscroft. The majority of Ravenscroft's drinking glasses possessed simple, more or less conical bowls over an inverted baluster stem, the baluster pinched into four segments and known as a "quatrefoil" stem. (Fig. 64, No. VI) The feet would seem always to have been folded at the edge. Unfortunately, Ravenscroft did not entirely overcome the crizzling problem. After his death his factory at the Savoy in London was run by his manager, Hawley Bishopp, and glasses believed to have been made there in this later period are sometimes badly crazed.

In the years of experimentation prior to Ravenscroft's alleged perfection of the lead crystal, London glass sellers imported considerable quantities of glasses from Venice (Murano), and fortunately the records of one of these importers, the firm of Measey and Greene, are preserved among the Sloane Manuscripts in the British

Museum. The papers include carefully measured drawings of the designs (popularly known as the Greene designs) which were sent as patterns to be used by their Murano manufacturer, Allesio Morelli. They began in 1667 and ended in 1673, by which date Measey and Greene had arranged to have their glass made for them in London. Plentiful among the Greene designs are glasses whose principal stem feature is a vertically ribbed knop (Fig. 64, No. IV), sometimes drawn up into a baluster, though both types were described simply as "wrought buttons." They were also made with "pla[in] ring & button,"[8] the ring being the trailed band around the base of the bowl which was otherwise ornamented in a rigaree pattern. The bowls of most of the knopped-stem glasses were generally wide, truncated cones, except in the case of beer glasses, whose bowls tapered almost to a point at the junction with the stem and whose mouths were almost as wide as the bowls were deep. As far as can be determined from the drawings and from excavated examples, the feet were never folded and were therefore made thicker to give the necessary strength—strength which Greene specifically demanded. Examples of both the beer- and wine-glass forms are common on colonial sites of the period c. 1670–85. Also encountered from time to time are fragments of tumblers or beakers with small, molded, diamond-shaped bosses patterned over the walls, presumably as an aid to gripping the vessel. Such beakers were included in Greene's designs of January 1668 and were there ordered to be made in two thicknesses, for beer and for French wine.

Plentiful and seemingly popular though the Greene-type glasses were in the years up to about 1680, the Ravenscroft revolution successfully ousted them in very short order. By 1690, the new lead crystal was well established in the American colonies, and one finds fragments in archaeological contexts every bit as handsome as the best available in England. Romers having raspberry prunts on their stems and with bulbous bowls with trailed threads tooled into a

[8] Papers in the British Museum (Sloane MSS 857) relating to the Glass Sellers Company, 1670–1690; and John Greene's correspondence and drawings, 1667–1672. Illustrating letter of January 26, 1668.

network of diamond-shaped ridges (a technique described in 1679 as "nipt diamond waies"[9]) were among Ravenscroft's more distinguished products, and although I have yet to see a fragment from an American site, the quality of other pieces found certainly suggests that they may have reached here.

The glass made by Hawley Bishopp and by other London and provincial glassmakers in the 1680's and early 1690's is impossible to pin down to any one factory, and it runs the gamut from magnificent to dreadful. On the one hand we find elaborately gadrooned glasses with complicated halustroid stems in a heavy and brilliant icelike metal, while on the other we encounter many quatrefoil-stemmed glasses whose mix was so poor that they have broken down into a substance little more stable than sugar. It may be noted that this collapse of the glass structure seems to be confined (as far as English glass is concerned) to examples made in the period 1685–1700. English pieces thus decayed generally have a yellow or brownish appearance that spreads inward from the fractures. A rather similar effect occurs among excavated French glasses dating as late as the second half of the eighteenth century, but in these the fractures and "sugar" areas tend to be pink.

With the advent of lead crystal the English glass industry clambered to its feet and launched into the eighteenth century freed from the shackles of patents and monopolies. By 1696, there were already twenty-six glasshouses in the London area alone, though not all of them were making table glass. Thus, it becomes impossible to attribute the products to individual factories, for they all catered to the popular taste of the time. We can do no more than to follow these trends through the eighteenth century (Fig. 64) trying to determine an approximate date at which each began. It is important to note, however, that there is reason to believe that taste in glassware developed more slowly in the colonies than it did at home. Thus, styles losing favor in England in, say, the 1740's may have continued to be popular in America until ten or even fifteen years later. It is uncertain, whether (if this is true) the English factories continued to produce for the colonial taste or whether

[9] W. A. Thorpe: *History of English and Irish Glass* (London, 1929), I, 127.

those markets were served from glass sellers' existing stock. Indeed, it is possible that the English merchants deliberately manipulated the colonial trade to enable them to dispose of their outdated inventories. It may well be significant that no style time lag is discernible from the study of glass found in dated contexts of the seventeenth century. It is not until the eighteenth century that it becomes noticeable, by which time the potential colonial market for glass had been appreciated by the English traders.

While bowl shapes are certainly significant to the student of glass, so few are found intact that I do not propose to devote space to them here. Similarly, feet exhibit differing characteristics, but they cannot be dated with any accuracy. As a rough rule of thumb it may be said that plain and folded feet are equally common on glasses of soda metal during the seventeenth century up to about 1680, that glasses of lead metal generally had folded feet up to the mid-eighteenth century, and that in the second half of the century plain feet gradually increased in popularity, particularly for the cheaper glasses. It is the stem form, however, that is the most datable part of any glass, and fortunately they are the most substantial and therefore the best preserved when found on archaeological sites.

The more elaborate products of Ravenscroft and his immediate successors reflected the "busyness" inherited from the earlier Venetian tradition, the stems being put together from a combination of balusters, inverted balusters, knops, and collars of all shapes and sizes. But just as the elaborately turned furniture styles of the late seventeenth century settled down into the simpler and cleaner lines of the Queen Anne period, so the stems of drinking glasses did likewise. Plain inverted balusters, either solid or containing a single large tear and with a collar separating it from the thick base of the bowl, appeared in about 1690 and by 1700 had been somewhat elaborated upon, the baluster often being constructed to give the top a mushroomlike appearance while the bottom spread out either into a ball knop or into a true baluster. The latter resembled a pear as it hangs from the tree, while the vastly more common inverted baluster was turned the other way up. (Frontispiece) These heavy baluster stems are found on most colonial sites up to the 1740's, though their popularity in England had waned some years earlier.

By about 1710, the inverted baluster appeared in a molded pedestal form, most commonly with four sides, but often with six, and with round or diamond-shaped bosses molded onto the shoulders. (Fig. 64, Nos. XV and XVI) The period of popularity for these glasses was c.1710–30; a number were made to commemorate the accession of George I (or possibly George II) and are molded on the shoulders or sides with such slogans as GOD SAVE KING GEORGE or sometimes merely the initials GR. These molded pedestal stems (as purists prefer to call them) are popularly known as "Silesian" stems, though they have nothing to do with Silesia. Although the form lost favor as a wine-glass stem around 1730, it did continue much later as the stem for sweetmeat glasses and even for large

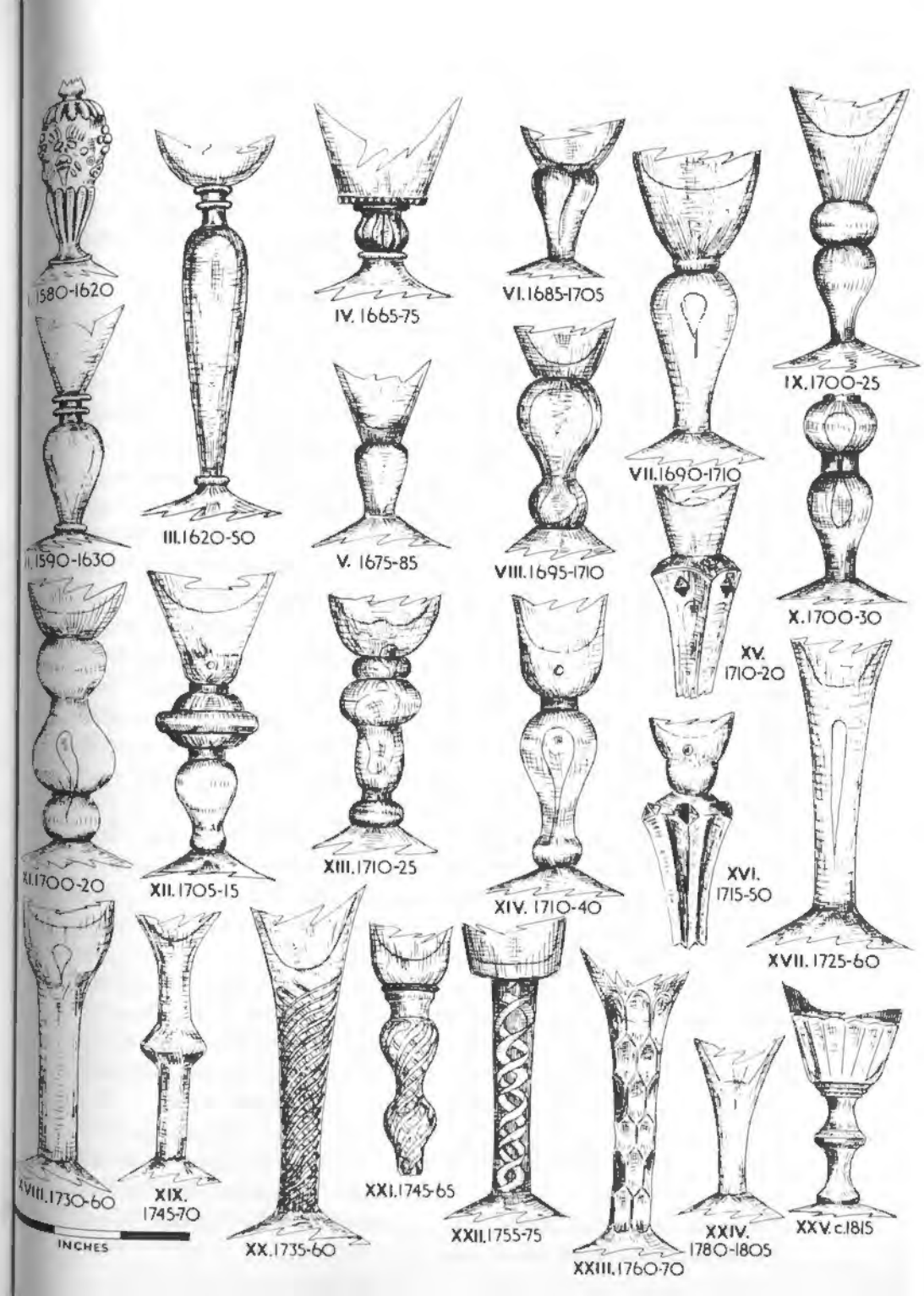


Fig. 64. Examples of drinking-glass stems likely to be found on colonial and early Federal sites. **I.** Lion mask. **II.** Invested baluster. **III.** "Cigar" stem. **IV.** Greene design, ribbed knop with "rigaree" decoration at base of bowl. **V.** Solid, truncated and inverted baluster. **VI.** Quatrefoil. **VII.** Heavy, inverted baluster with tear. **VIII.** Waisted and inverted baluster. **IX.** Solid, inverted baluster with knop above. **X.** Heavy, inverted baluster with ball knop parted by a collar, hour glass tear within. **XI.** True baluster with ball knops above and below, the latter separated from the baluster by a narrow collar; single tear. **XII.** Solid, inverted baluster separated from a large, annulated knop by a collar. **XIII.** Acorn knop with tear, plus flattened knops above and below. **XIV.** Inverted baluster with large tear and with marvered ball knop below. **XV.** Molded "Silesian" stem, four-sided with diamonds in high relief, plus embossed crowns on the shoulders. **XVI.** "Silesian" stem, octagonal, and with embossed diamonds on the shoulders. **XVII.** Drawn stem with elongated tear. **XVIII.** Straight stem with tear in base of bowl. **XIX.** Straight stem with an angular knop in its midsection, generally classed as balustroid. **XX.** Drawn stem decorated with air twist. **XXI.** Balustered air twist. **XXII.** Straight stem decorated with opaque-white ribbon twist. **XXIII.** Straight stem cut with hexagonal faceting. **XXIV.** Short, drawn stem of a type seemingly produced in quantity by the Amelung factory in Maryland. **XXV.** Typical early 19th-century stem form with angular (often bladed) knop and stepped junction with faceted bowl. The dates given cover the range of the general types and are not necessarily the same as the terminals for the life of the illustrated examples.

pedestal-based salvers made in sets of decreasing size to be stacked as "pyramids." These later examples generally have a triple- or quadruple-ringed collar at the base of the molded stem, which itself is usually eight-sided and somewhat fluted. Examples of such late "Silesian" stems have been found amid a cargo of glass discovered on a wreck site off Bermuda dating no earlier than 1784.

In the second quarter of the eighteenth century, taste prompted the glassmakers to move away from the heavy lead stems of the early years and to produce balustroid forms of greater delicacy. This trend was given an economic push in 1745–6 with the passage of the Glass Excise Act taxing glass by weight. Whereas the baluster glasses were built up from a number of welded components, the second quarter of the century saw the development of the drawn stem, which extended down in one piece from the bowl and whose only separate attachment was the foot. (Fig. 64, No. XVII) The stems of such glasses were plain except for the frequent insertion of a single large tear, and the majority of the examples found in excavations seem to have had trumpet-shaped bowls. Such glasses run the gamut from the extremely delicate (often classified as toasting glasses) to the monumentally heavy. The latter are common on tavern sites, and nearly all of them have thick, plain feet, the majority dating in the period 1740–60. It should be noted that the same drawn stem and more or less trumpet-shaped bowl continued in smaller sizes through the eighteenth into the nineteenth century. It figured prominently among the products of the Amelung glass factory in Maryland (1784–95), the first American glasshouse to compete in quality with the comparable products of English and Irish houses.

The popularity of the straight, drawn stem wooed most English glassmakers away from the hollow balusters, but they were not long content with the new simplicity and they soon began to ornament the solid stems with round and flattened knops at the top, base, or midsection (Fig. 64, No. XIX), and sometimes at all three. These are known as balustroid glasses and are sometimes indistinguishable from late examples of the baluster group discussed earlier. The balustroid glasses belong roughly to the period c. 1725–60, and the later they got the worse they became. The stems became increasingly heavy and the knops were distributed with little obvious consciousness of design. These, too, became common, cheap tavern glasses of the mid-eighteenth century.

The desire to decorate plain stems with something other than a single tear prompted glassmakers to insert more air traps into the glass and to draw them out into spiral patterns, creating what are known as "air-twist" stems. (Fig. 64, Nos. XX and XXI) There is disagreement as to the date of their introduction, but current thinking puts them back to c. 1730 and perhaps even five years earlier; they continued to be made until about 1760. The later air twists are frequently contained within elaborate balustroid stems. (Fig. 64, No. XXI) In the eighteenth century these air-twist glasses were known as "worm'd" glasses and were advertised in that way in the *Boston News-Letter* of March 13, 1746.

In the mid-eighteenth century another internal stem ornament was developed, or rather redeveloped, adapting the Venetian *latticino* technique of decorating the walls of vessels with opaque white threads and using them to create spiral and gauze designs within the stems. These opaque or "enamel twists" appeared in the early 1750's but achieved their greatest popularity in the period c. 1760–75. (Fig. 64, No. XXII) Although plain white patterns were by far the most common, colors were also occasionally included, and examples combining green, blue, and red have been found on colonial sites dating from the years immediately prior to the Revolution.

Although, in Europe, the ornamental cutting of wine-glass stems can be traced back to the early years of the eighteenth century, it did not become common in England until about 1760, when stems were decorated with either diamond or hexagonal faceting. (Fig. 64, No. XXIII) Shortly thereafter, these facets were elongated into flutes which often extended the full length of the stem and ran up onto the base of the bowl, the latter characteristic being known as bridge-fluting. In the mid-1760's the straight stem was joined by a knopping or expansion of the midsection and the fluted cutting was deftly adapted to emphasize these contours. Cutting in much more elaborate forms continued through the nineteenth century on all sorts of English and Irish glassware, though it was confined largely to the glass of the wealthy, the lower orders being admirably, though later, served by the pressed "cut" glass invented in the United States in about 1827.

Enamel decoration had been popular in Europe since the fifteenth century, but it never found much favor in England, though

the celebrated Beilby family of Newcastle-on-Tyne produced many handsomely ornamented pieces in the period c. 1762–78. In the same period Michael Edkins was decorating opaque white glass in enamel colors at Bristol. I have yet to see, however, any English enameled glass from a colonial site. Nevertheless, enameling does occur on glass from American sites and most of the examples (generally light tumblers and flasks) are claimed as products of the Henry William Stiegel glasshouses at Manheim, Pennsylvania (1763–74). However, the style of ornament, the colors used (white, yellow, blue, green, brick red, and black), and the German inscriptions make it impossible to visually distinguish with certainty between the Stiegel products and those from Bohemia, the Rhineland, or the northern Netherlands.

Wheel-engraving became a popular English form of decoration in the mid-eighteenth century and is best remembered by the large number of surviving glasses engraved with the rose and bud, thistle, or oak tree motifs of the Jacobites. Few excavated glasses are engraved, however, and the majority of those that are date no earlier than about 1770. One normally expects to find them in contexts of the period c. 1780–1820, though at least one elaborately engraved tumbler with a ship design has been found in a mid-eighteenth-century context in Virginia, and, according to the *Boston Gazette*, "best engrav'd flower'd wine glasses and decanters" had reached Boston by June 1761.

It is often suggested that eighteenth-century Americans were content to receive and use whatever glassware their English agents cared to buy for them or whatever happened to be in the local colonial shops. While doubtless this was true of the majority of colonists, there were notable exceptions. In September 1771, the Virginia lawyer and plantation owner Peter Lyons wrote to John Norton & Sons in London ordering a great variety of goods ranging from a pound of "Jesuits Bark powder'd in two ounce Bottles" to a Dutch oven, and amongst them were listed "Two dozen wine glasses (as pr pattern sent by Captn Robinson)." A postscript to the covering letter read:

> Colo. Snelson & myself have an inclination to taste some good Burgundy & Champaign Wine, and therefore shall be obliged to you to purchase for me two dozen Bottles of each sort the best that can be had in London, and have it carefully packed and sent by the first of your Ships. I have given Captn. Robinson a Wine Glass as a pattern for two dozen mentioned in the Invoice to be sent me.[1]

It is evident, therefore, that Peter Lyons knew what he liked in glass and went to considerable trouble to get it. It is unfortunate that he had a sample to send, otherwise he might have drawn or described what he had in mind and thus revealed whether it was the shape or style of decoration that he was trying to match.

In the last quarter of the eighteenth century a new fashion in table-glass design captured the English market and spread to America in the 1790's and thereafter. These glasses were longer in the bowl than in the stem and wider at the mouth than at the foot, and because of their proportionately massive bowls were known as "rummers," being reminiscent of the German *roemers* of the seventeenth century. Nothing else about them harked back to anything, and they mark the end of elegance in English glass. The bases are generally thick and almost flat—some are square—and the stems often feature a central angular or bladed knop, while the bowls are generally truncated cones. Such glasses are often engraved with ships, masonic emblems, and similar devides, but not with sufficient frequency to make them common on archaeological sites. The rummer is most often found in contexts of the early nineteenth century, but it actually spans the period c. 1780–1830. Molded examples (the marks visible on stem and foot) continued through to the mid-nineteenth century.

Not to be confused with the late-eighteenth-century rummer are the earlier firing glasses that are common on colonial tavern sites of the third quarter of the century. The principal characteristic of these small, thick-stemmed glasses was their remarkably heavy feet, which were sometimes as much as ½" in thickness. Such glasses are said to have been used in responding to toasts by banging them on the table to produce a noise like musket fire. They were much used

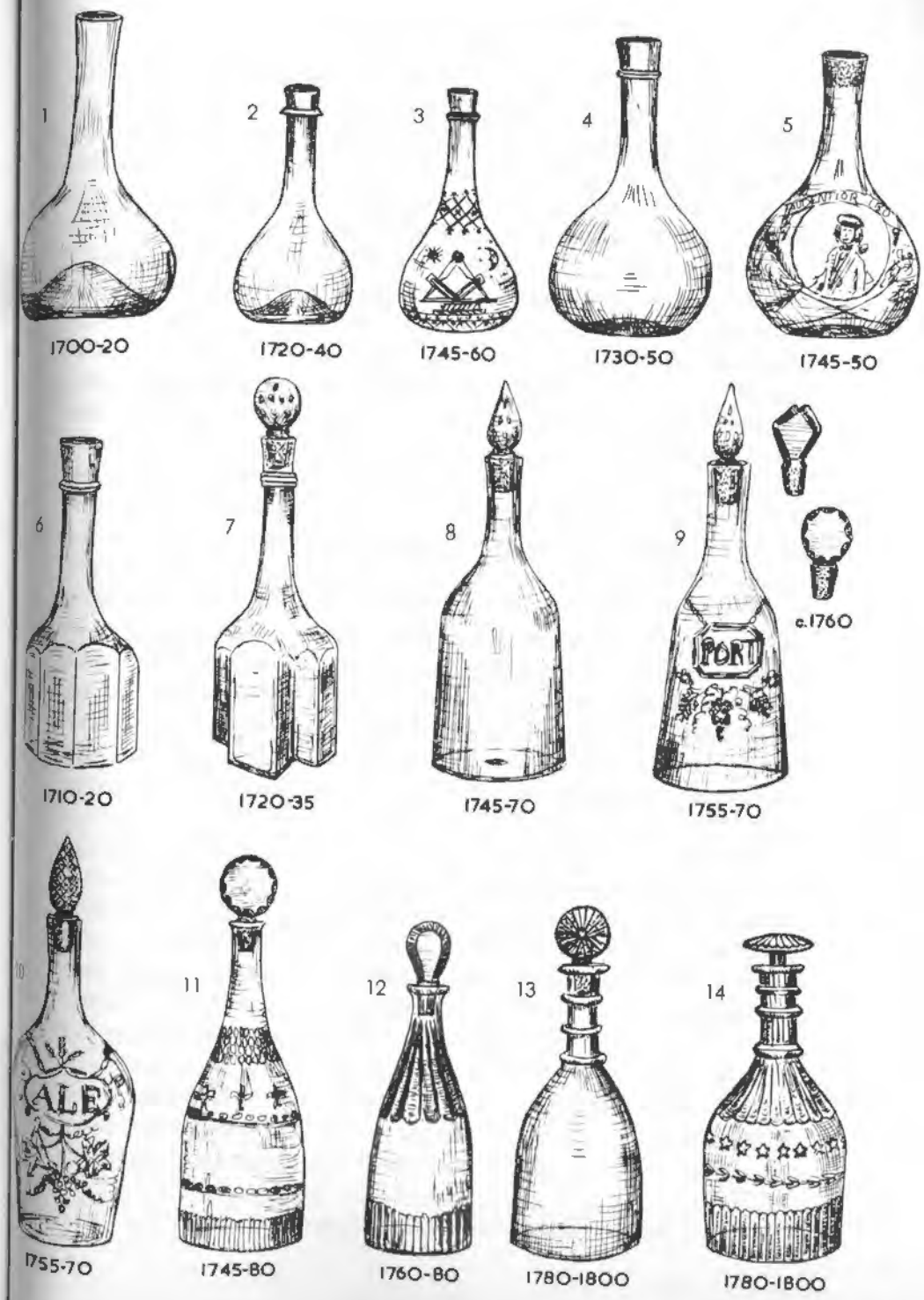
[1] Francis Norton Mason, ed.: *John Norton & Sons, Merchants of London and Virginia* (Richmond, Va., 1937), pp. 189–91.

by masonic lodges, and a number of extant examples are engraved with the symbols of freemasonry.

Colored glass became popular in the 1750's and continued to be so through the third quarter of the century. The technique of making it, however, can be traced back to Egypt before 3000 B.C., and it was being used and made in England in the sixteenth century. The principal "colors," blue and opaque white, were specialities of Bristol, though both were produced elsewhere, notably at Birmingham, Stourbridge, Newcastle, and London. The so-called "Bristol blue" is said to have been developed in 1763 when a supply of fine cobalt (smalt) from Saxony became available to Bristol glassmakers. The English blue metal is so closely akin to the first American products that it is generally impossible to distinguish between them. The latter were made in the Manheim, Pennsylvania, factory of Henry William Stiegel between 1769 and 1774.

Although it is true that colored metals did not become major features of English glass production until the mid-eighteenth century, there is evidence that they were being made and exported earlier, if only in small quantities. On January 24, 1731/2, Mrs. Rebecca Abbot of Boston advertised in the *New England Journal* that she had for sale "fine white Glass Japann'd." Six months later she was selling "Tea Setts of White, Blew and Japann'd Glass." Opaque-white, derived from the inclusion of a small quantity of tin oxide in the mix, was being made in the London borough of Southwark in 1743; but it is Bristol that became famous for it, and production seems to have commenced there in about 1745, with the output accelerating during the following twenty years, perhaps in an effort to compete with the rapidly developing English porcelain factories. Opaque-white, sometimes described as "enamel," was made in other centers, but their products lacked the density of whiteness achieved at Bristol and more closely resembled the *Milchglas* imported from Germany. Like porcelain and white salt-

Fig. 65. 18th-century, lead-glass decanter shapes with stopper types commonly associated with them. Nos. 1–4 and 6 are without grinding; 5, wheel-engraved Jacobite; 9 and 10, wheel-engraved "label" decanters; 11, 12, and 14, cut. Nos. 1, 4, 5, and 12–14, ht. 9½". Nos. 2 and 3, ht. 7½". Nos. 6 and 7, ht. 8½". Nos. 8, 9, and 11, ht. 11". No. 10, ht. 12".



glazed stoneware, opaque-white glass was frequently decorated with enamel colors, notably at Bristol by Michael Edkins, who had come there in about 1762 from Birmingham, where he had been an apprentice enameler. His surviving ledger shows that he enameled opaque-white wares and gilded blue, while an undated list reveals that he supplied cases of both for shipment abroad.

In studying opaque-white products one should beware of accepting contemporary documentary references to "white glass" or "White Flint Glass" as necessarily referring to opaque-white. "White glass" simply distinguished between clear and green metals; thus John Frederick Amelung notified in the *Maryland Journal and Baltimore Advertiser*, February 11, 1785, that he made "white and green Bottles." The term "White Flint" seems to have been coined by a Bristol glassmaker, Humphrey Perrott, who, in 1736, obtained a patent for a new and better furnace that imparted a greater brilliance and clarity to the metal than had hitherto been possible. When Perrott died in 1752, he was described as being the proprietor of "the White Flint Glasshouse at Bedminster,"[2] and there is reason to suppose that "White Flint" referred to his improved clear lead metal, a belief supported by the fact that by the end of the century there were several "white or flint glass houses" in and around Bristol; yet there was no great quantity of opaque-white being made at that time. Just to add a final note of confusion, it is worth remembering that the term "flint white" was used to describe English white salt-glazed stoneware.

The evolution of the decanter was far less involved than that of the drinking glass, though it too developed through a combination of improved technology and a lingering reliance on tradition. (Fig. 65) The first decanters, or serving bottles, were no more than green-glass wine bottles with green-glass handles, and their evolution progressed exactly as did their prototypes. Such handled wine bottles are known from the 1660's to about 1720, by which date they were replaced by decanters in clear, flint glass. The flint- or lead-glass forms do go back earlier, however, back in fact to the bottle shape of the period 1650–70 which was given, in addition to a handle, a gadrooned lower body and a thin and purely decorative string rim

[2] W. A. Thorpe: *English Glass* (London, 1949), p. 203.

well below the lip. Regardless of their antiquated shape, such bottles could not date much before 1680 and possibly as late as 1700. Belonging to the same period are a group of flint jugs with gadrooned or "nipt diamond waies" bodies and pan-shaped mouths that may have been made by Ravenscroft.

Ravenscroft advertised his decanters as being available with and without handles, and fragments of flint-glass carafes without handles or string rims have been found in archaeological contexts of the period 1720–35. These bottles have bulbous bodies and straight necks with slightly flaring mouths, and are known as the shaft-and-globe form. It is reasonable to assume that such bottles (perhaps with handles) bridged the gap between Ravenscroft and the same types of bottle which became common in the mid-eighteenth century. (Fig. 65, Nos. 1–5) Unfortunately, very little is known about these early decanters other than that they were made and sold. In August 1710 *The Tatler* advertised that the "Flint Glass-House in White Fryars" in London had available "all sorts of decanthers of the best Flint."[3]

At some date in the first quarter of the eighteenth century a very distinctive decanter form appeared, having a molded, six-or-more-sided body slightly broader at the shoulder than at the base and with the long neck and low string rim of its predecessors. The body somewhat resembled a carpenter's mallet, and they are consequently known as mallet decanters. (Fig. 65, No. 6) In the period c. 1730–45 the molded mallet took another step and became cruciform in plan, the idea being to enable its wine contents, when set in water or an ice cooler, to come in as close contact as possible with the cooling agent. (Fig. 65, No. 7) The cruciform type are usually decorated on their otherwise plain necks by the application of a triple-ring collar placed well below the lip. Although the form is generally supposed to have been obsolete by 1750, fragments of a less angular version are present in the large quantity of glass recovered from the c. 1784 wreck off Bermuda previously cited in connection with the "Silesian" stems. (Fig. 66) Mallet decanters are usually quite thick-walled and when found in small fragments

[3] H. J. Powell: *Glass-Making in England* (Cambridge, Eng., 1923), p. 81; quoting *The Tatler*, August 9, 1710.

might be mistaken for pieces of wet battery cases. Stoppers allegedly associated with mallet decanters were generally ball-finialed, the balls ornamented with numerous carefully arranged tears. (Fig. 65, No. 7)

By the mid-eighteenth century, the square shoulders characteristic of the earlier mallet decanters had weakened and the body had become taller, much in the manner of the French wine bottles of the period; the neck had become shorter and had lost its string rim. (Fig. 65, No. 8) Such decanters were usually fitted with a faceted conical stopper, and both the interior of the neck and the walls of the stopper were ground—a technique known as early as 1675 but apparently little used prior to c. 1718. The range of such vessels may tentatively be placed in the period c. 1745–75. Decanters of this type were often wheel-engraved; in about 1755 it became fashionable for them to be decorated with wine labels surrounded by floral and botryoid motifs, and with linking lines running around the necks simulating the chains from which silver labels were suspended. (Fig. 65, No. 9) Such fine pieces were not for the gentry alone, and an excellent example of less than half-bottle size (known as "one-go" decanters) marked MADEIRA has been found in excavations at Wetherburn's Tavern in Williamsburg. The next step in the decanter's evolution was for the shoulder/base relationship to be reversed, the latter becoming broader than the former; at the same time the body became considerably taller. This development had occurred by about 1760. (Fig. 65, No. 10) Shortly thereafter, the shoulder disappeared altogether and the neck simply flowed uninterrupted into the body. (Fig. 65, No. 11) The type was common in the last quarter of the eighteenth century, when a great many examples were decorated above the base with vertical-cut fluting and with wheel-engraving on the upper body in foliate and floral festoons. Some of these are attributed by collectors to Amelung (1784–95), and it is likely that he did produce decanters of this then-popular shape. Most of these late eighteenth-century vessels sport a slightly outturned and flattened lip, a characteristic not common before 1770. Stoppers were generally conical or disc-shaped, the latter often decorated at the edge with cut facets known as lunar slicing. (Fig. 65, No. 11)

By the last quarter of the eighteenth century one had come to

Fig. 66. A late mallet decanter developed from the cruciform type, Fig. 65 (No. 7), and similar to fragments from a cargo of glass lost off Bermuda in the 1780's. English, probably third quarter of 18th century. Lead metal. Ht. 10¾".

the age of Irish glass, the decanters of which were among the most impressive of their period. The bodies were shorter and more bulbous than the previously discussed shoulderless variety, and the lips were broad and flat. (Fig. 65, No. 14) The bodies were decorated from base almost to midsection with vertical fluting, while around the necks were three broadly spaced rings. Some examples are helpfully molded on the base with the words, CORK GLASS CO., a firm in business from 1783 to 1818. It should be noted that the prosperity of the Irish glass industry really dates from about 1780, at which time the British ban on exporting it was lifted. Very similar decanters to those from Cork were made at both Belfast and Waterford and it is hard to distinguish between them. A possible clue is provided by the fact that Waterford necks taper slightly toward the top, whereas those from Cork are virtually straight. Stoppers for Irish decanters are similar to those of the comparable English forms from which they were copied—by English workmen. The most common styles are variations on the flat vertical disc, either cut or molded in target or sunflower patterns. (Fig. 65, No. 13) Also

encountered from this period are stoppers with flat, horizontal discs cut in radiating grooves or convex with ribbing spreading out and down like the spokes of an umbrella, the latter known as "mushroom" stoppers. (Fig. 65, No. 14) Another variant of the mushroom has the disc rising to its convexity by means of a triple step.

Before leaving decanters, a word must be said about the simple, straight-sided, square lead-glass bottles that were stored in cases and were commonly used as containers for gin or medicines. Such bottles generally had a rough pontil scar on the gently rising base, were thick-walled and short-necked (little more than a collar), and possessed an everted, flat rim sometimes thickened with an additional trail of glass, the mouth usually ground on the inside. Such bottles were being made by 1740 but seem to have been most common in the third quarter of the century. They did, of course, continue well into the nineteenth century, when they were often elaborately cut and housed in wooden cellars holding three, and sometimes more, bottles. Much thinner, square bottles in soda glass, roughly wheel-engraved with tulip designs, are frequently described as being of "Stiegel type," though they could equally well be European. Case bottles heavier than these, with bolder shoulders and decorated with much neater engraving in the form of floral wreaths, were made at New Bremen by Amelung between the years 1788 and 1795.

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§ *DRUG POTS, JARS, and PILL TILES*

When Jasper Andries and Jacob Janson petitioned Queen Elizabeth for a patent in 1567 they described themselves as makers of "Gally Paving Tiles, and Vessels for Apothecaries and others."[4] The latter products had been popularly known in England as gallipots since the fifteenth century. The etymology has been explained as pots brought by galleys from the Mediterranean, presumably made from the tin-enameled maiolicas of Italy and Spain. Regardless of the validity of this debatable interpretation, the fact remains that the earliest delftware potters to set up their kilns in and near London devoted much of their energies to producing vessels for apothecaries. These ranged from jars for storage some 7″ or 8″ in height to miniature versions of no more than 3″ or 4″, in which salves and elixirs were sold. Such vessels resembled cylinders constricted above the base and below the rims, in the manner of the Italian *albarelli*, and were decorated over their white tin glazes in polychrome, generally blue, orange, purple, and occasionally green. (Fig. 67, No. 1) For many years these colorful pots and jars were considered to date from the late sixteenth and very early seventeenth centuries, but more recent archaeological evidences recovered both in England and in Virginia indicate that they continued to be used (and probably made) as late as c. 1640. While the small English pots of this early period were generally taller than they were broad, the storage jars were squat and wide—unlike their Italian and Netherlandish counterparts that followed the same proportions in all sizes.

English polychrome pots and jars of the period c. 1580–1640 were commonly decorated in the manner of Figure 67, Number 1, but some were adorned in the midsection with a zone of interlock-

[4] John Stow: *A Survey of the Cities of London and Westminster and the Borough of Southwark*. 6th edn. (London, 1755), II, 327; first pub. 1598.