

SEVENTEENTH- AND EIGHTEENTH-CENTURY  
BOTTLE GLASS FROM FERRYLAND, NEWFOUNDLAND

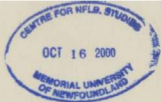
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JOHN WICKS









**SEVENTEENTH-AND EIGHTEENTH-CENTURY BOTTLE GLASS  
FROM FERRYLAND, NEWFOUNDLAND**

by

John Wicks©

A thesis submitted to the School of Graduate  
Studies in partial fulfilment of the requirements for  
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### **Abstract**

In 1621, Captain Edward Wynne (along with 11 settlers) established a colony at Ferryland, Newfoundland, on behalf of George Calvert. Recent archaeological excavations uncovered a number of structures associated with this initial settlement as well as those built later. These excavations also uncovered over 1,000,000 artifacts, including thousands of fragments of wine and case bottles. Although the historical record suggests that the inhabitants of Ferryland were avid consumers of alcohol, there are few direct references to glass bottles or other containers associated with alcohol consumption. Thus, the analysis of bottle fragments will provide answers to several questions relating to consumption as well as social status. Four different glass assemblages representing different functional areas and time periods were examined in order to identify any changes over time. Such an analysis required the formulation of a model that allowed for the accurate dating of fragments. Based on a number of measurements taken on bottles of known dates or those excavated from well-dated contexts, this model provides a means not only for dating fragments uncovered in future excavations at the Ferryland site but on other historic archaeological sites of the period.

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## Chapter One

### INTRODUCTION

#### 1.1 Introduction

Archaeological excavations conducted at Ferryland, Newfoundland (Map 1.1) uncovered architectural features as well as artifacts that span the late sixteenth to late nineteenth centuries. Many of the architectural remains and artifacts are associated with the Colony of Avalon, which George Calvert founded in 1621. In 1637, Sir David Kirke gained control of the colony. It experienced destruction by the Dutch in 1673 and by the French in 1696. Following the French attack of 1705, settlement continued and expanded during the eighteenth and nineteenth centuries.

This thesis has two main goals. First, to describe and analyze a specific class of artifacts excavated from a number of different functional areas at Ferryland. This class of artifacts includes the 3,234 fragments of glass bottles that the inhabitants acquired, used, and discarded during the seventeenth and early eighteenth centuries. Since the Ferryland assemblage includes examples of wine and case bottles that represent the general evolution of each form, the glass description will also be relevant to other sites and will aid in the development of a model for dating wine bottles and fragments. Overall, the analysis of Ferryland's glass will hopefully contribute to a wider understanding of seventeenth- and

eighteenth-century artifact trade, availability and use.

## **1.2 Research Design and Methodology**

Bottles not only provide important information for documenting technological change throughout time but they also serve as an excellent example of an object that, although developed for a specific purpose, became a multi-functional vessel. For instance, among its secondary functions, the wine bottle served as a shipping and storage container, a vessel for maturing wine, and a decanter. As well, the wine bottle offered the symbolic function of a status symbol. Occupied permanently since 1621, except for the winter of 1696/1697, the Ferryland site provides an opportunity for examining glass bottles over an extended period of time. Through an analysis of glass fragments, this thesis will address a number of specific questions relating to bottle use and function. The analysis will employ both archaeological and documentary evidence in order to develop a model for dating pre-cylindrical English wine bottles, as well as an explanation of the function of wine, case and pharmaceutical bottles during different time periods. This goal will be accomplished by examining fragments excavated from a number of seventeenth- and eighteenth-century contexts, which represent different functional areas. These areas include the forge (Area B), waterfront structures (Area C), a possible tavern (Area E) and a midden (Area F) (Map 2.1). In addition, this thesis addresses seven questions:



- (1) When do case, wine and pharmaceutical bottle fragments first appear at Ferryland?
- (2) Did the use of case and wine bottles increase or decrease over time?
- (3) Exactly where at each area were bottles used?
- (4) Were bottles personal possessions or were they (or their contents) shared?
- (5) Was alcohol consumption a private or public activity?
- (6) How were bottles used?
- (7) Is there any connection between social status and the ownership of sealed bottles? Why did certain individuals have their bottles sealed?

Before answering these questions, a number of relevant topics are discussed in Chapters 2, 3 and 4. Chapter 2 presents a brief historical outline of Ferryland. This focuses on the major events associated with the development of the colony. It also provides a brief introduction to archaeological excavations at Ferryland and concentrates on the four areas discussed in this thesis.

Chapter 3, on the other hand, relies on contemporary and secondary sources in order to discuss the glass industry, specifically as it relates to the production of case, wine and pharmaceutical bottles. It focuses on where and exactly when the production of these forms began. Case bottles receive special attention since it is unclear which countries produced them.

Chapter 4 outlines the spirit and wine trade in which the bottle played a role. This chapter focuses on specific wines and spirits that were available or introduced during the seventeenth and early eighteenth centuries as well as the

function of alcohol, in general. It also leads to a discussion of the alcohol trade as it relates to Newfoundland, in particular. The documentary record contains a number of direct references to specific alcohols and their function in Newfoundland and Ferryland.

The material culture analysis spans several sections. Chapter 5 deals with the question of dating bottles. In order to date case and pharmaceutical bottles, previous studies as well as bottles excavated from well-dated contexts were essential. With wine bottles, however, a dating model based on measurements taken on complete and dated bottles in museum collections, was developed. This was necessary because of the conflicting date ranges given to specific forms in the published literature, along with the difficulty of trying to date bottles by comparing them to illustrations in publications.

Chapter 6 relies on primary and secondary documents and contemporary paintings in order to determine how people used bottles during the seventeenth and early eighteenth centuries. It is likely that the inhabitants of Ferryland used bottles in situations similar to those depicted in the paintings or mentioned in the published literature. Chapters 7, 8, 9 and 10 deal with the analysis of bottle glass recovered from Areas B, C, E and F, respectively. These chapters propose answers to most of the questions listed above. For instance, Chapters 6 and 7, which focus on Areas B and C, indicate that the inhabitants of Ferryland first used case bottles around the time that the colony was founded in 1621.

The final chapter (Chapter 11) raises the question of status and sealed bottles. Excavations at Ferryland produced 17 bottle seals. The identification of the owners of these seals indicate that they all belong to the most prominent residents or visitors to Ferryland. The documentary record further reveals the costs involved in purchasing sealed bottles. This offers insight into why certain individuals purchased sealed bottles.

## **Chapter Two**

### **FERRYLAND**

#### **2.1 Introduction**

A brief history of Ferryland is first presented, followed by a discussion of excavation there. The main events associated with the colony, as well as the excavations of areas discussed in this thesis, are the focus of this Chapter.

#### **2.2 Historical Background**

The early seventeenth century witnessed the establishment of a number of English colonies in Newfoundland, starting with John Guy's at Cupids in 1610 (Prowse 1895: 92). Although the colony was unsuccessful, it is notable that Guy planned to manufacture glass. In 1617, Sir William Vaughan established a colony at Renews and in 1618, a group of Bristol merchants founded a colony at Bristol's Hope. However, they too had limited success: Sir William Vaughan, departed Renews in 1619 since he found "the burden too heavy for my weake Shoulders" (Cell 1969: 70-71).

In 1621, Sir George Calvert made a more successful attempt to establish a colony in Newfoundland. Calvert, later Lord Baltimore, was Principal Secretary of State to King James I and an investor in the Virginia and East India Companies (Cell 1969: 92). He also had a colony in County Longford, Ireland (Cell 1969:

92). After acquiring a section of land between Aquaforte and Caplin Bay from Sir William Vaughan, Calvert sent Captain Edward Wynne along with 11 colonists to Newfoundland to establish a colony (Cell 1969: 92). Ferryland was the chosen site and, during the first year, Wynne constructed a number of structures including a 44' by 15' mansion house with a 12' by 14' parlor addition, a 18' by 12' kitchen, tenements, salt-works, forge, brew room, hen house, well and wharf (Pope 1996: 9-11). Surrounding all 4 acres of the plantation was a wooden palizado "...for the keeping off of both man and beast" (Pope 1996: 11). In 1622, the population had grown to 32 people and in 1625, there were supposedly 100 residents, including tradesmen such as tailors, coopers, carpenters, blacksmiths, and stone layers (Pope 1986: 19; Cell 1969: 9). Calvert himself did not arrive until 1627 and his family arrived the following year. However, by 1628, Calvert had experienced a harsh winter, French harassment, religious friction and declining health, and petitioned Charles I to "...remove myself with some 40 persons to your maiesties Dominion of Virginia..." (Pope 1993; 1992: 148).

Although Calvert left Newfoundland in 1629, he remained a proprietor of the colony and sustained a deputy there (Tuck 1996a: 22). In 1637, Charles I granted the Island of Newfoundland to Sir David Kirke. Kirke arrived at Ferryland the following year and displaced Calvert's deputy, Captain William Hill, from the mansion house (Tuck 1996a: 22). Kirke drew a profit from the resident fishery, charged the resident planters rent for their fishing rooms, and collected

license fees for taverns (Pope 1992: 173). Kirke also collected a 3 percent tax from West Country fishing masters who shipped their cargo in foreign vessels. In 1651, the Commonwealth recalled Kirke to London in order to account for his proprietorship (Pope 1992: 159). A series of lawsuits between the Kirke and Calvert families began. In the confusion, the Council of State authorized John Treworgie and others to take possession of "...all the ordnance, ammunition, houses, boats, stages and other appurtenances belonging to the fishing trade..." (Pope 1993). Although David Kirke died in prison before the issues were resolved, Treworgie remained governor of the colony until 1660.

Following the Restoration, Sara Kirke and three of her sons continued to reside at Ferryland. They earned a profit from the fishery and the Ferryland property remained in possession of the Kirke family until 1708 (Tuck 1996a: 22). The Kirkes experienced a number of setbacks during their control. In 1673, four Dutch ships under the command of Nicholas Boes attacked Ferryland. Governor Dudley Lovelace of New York, a prisoner aboard one of these Dutch ships, recorded that "the Enimie plundred, Ruin'd, fir'd & destroy'd the Commodities, Cattle, Household goods, & other Stores" (Pope 1993). Lovelace further mentioned the burning of 30 fishing boats and the taking of "as much fish as the ships could carry away." Despite the Dutch attack, settlement continued and in 1677 Ferryland contained 8 dwelling houses, 15 storehouses, 27 boats and 8 stages as well as 133 residents and servants (Prowse 1895: 699).

A more disastrous attack in 1696 by De Brouillan, who walked overland from Placentia with French and Native forces, resulted in a brief depopulation of Ferryland (Williams 1981: 39). A letter written in 1697 by John Clappe, a Ferryland resident, described the French attack. Clappe reported that the French "...burned all our houses, household goods, fish, oil, train vats, stages, boats, nets, and all our fishing craft to the value of twelve thousand pounds sterling..." (Pope 1993: 144). Again they rebuilt the settlement and in 1700 there were 166 residents at Ferryland. In 1705, Ferryland was subject to another French attack. Contemporary accounts note that the French "destroyed all" and "carried away as prisoners all the inhabitants" (Prowse 1895: 262-263). The settlement recovered and in 1753 some 250 people were wintering at Ferryland (Head 1976: 98). Although a further attack by the French occurred in 1762, settlement continued to grow throughout the remainder of the century.

## **2.2 Excavation Background**

As early as 1880, Bishop Howley made an attempt to locate George Calvert's Colony of Avalon. Howley noted that little remained of the colony, although, the foundations of Calvert's house were still visible (Howley 1979: 124). In 1937 Dr. S. T. Brooks carried out excavations at Ferryland and suggested that the mansion house was located near the present day visitor center. Brooks based his claim on a depression in the ground that had similar dimensions to the

mansion house and a letter written by Daniel Powell in 1622 (Tuck 1996: 24). Powell noted that the mansion house was located "...at the foot of an easy ascending hill, on the south-east, and defended with a hill, standing on the further side of the haven on the north-west..." (Pope 1993). In 1959, J. R. Harper excavated a 2m by 2m test pit around The Pool area at Ferryland. Harper unearthed artifacts spanning the last three centuries and concluded that the lowest strata contained artifacts belonging to "...a wing or outbuilding of the main Baltimore house just to the west" (1960: 111). In the early 1970s, R. K. Barakat became interested in Ferryland and conducted excavations on Bouy's Island, just north of Ferryland Head. Barakat uncovered occupation layers from both seasonal fishers and the later military presence at Bouy's Island.

Beginning in 1984, a series of more intense excavations began under the guidance of Dr. James Tuck of Memorial University. The purpose of these excavations was to test the potential of the site, the degree of disturbance, and possibly to locate some of the structures mentioned in early seventeenth-century documents (Tuck 1993b: 296). During 1984, excavation began at Areas A and B. Area A produced a number of seventeenth-century artifacts and no features and Area B revealed the remains of a forge. In 1986, excavations began at Area C and uncovered the remains of a stone structure and numerous seventeenth-century artifacts. However, due to the complexity and richness of Area C, excavation halted until proper funding became available (Tuck 1996a: 31). In 1991, the



Canada-Newfoundland Tourism and Historic Resources Cooperation Agreement provided funding necessary to continue excavations at Ferryland. Between 1992 and 1997, archaeologists investigated six different areas.

### **Area B**

Excavations continued at Area B in 1994, at which time archaeologists completely excavated the forge. The presence of case bottle glass and other artifacts indicates an early to mid- seventeenth century construction and occupation date (Tuck 1996a: 30). In fact, it is likely that this is the forge Captain Wynne constructed in 1622. The lowest layers of the site revealed a sand and gravel beach that contained stemmed Beothuk arrowheads as well as stone bifaces. The absence of clay tobacco pipes and the presence of ceramics similar to pieces excavated from Spanish Basque whaling stations at Red Bay, Labrador, indicate a date prior to 1580 (Tuck 1993b: 299).

During the 1995 field season, excavations exposed a 30m section of cobblestone road, approximately 4m wide. The presence of seventeenth-century tobacco pipes, bottle glass and ceramics suggests that this is a section of the "prettie street" constructed by Edward Wynne in 1622 (Tuck 1996a: 31). Excavations at the south edge of the street uncovered part of a rough masonry house foundation and fireplace, constructed around 1650. Further excavations indicate that the structure had a wood-frame and fire was responsible for its destruction (Tuck 1996a: 31).

### Area C

Intensive excavations conducted at Area C between 1992 and 1996 uncovered the remains of a number of stone structures. The largest of these structures supported a slate roof and measures approximately 17m by 5m. The architectural features and artifacts, suggest that this building was a storehouse that was in use during the first half of the seventeenth century. The north wall of this structure is incorporated into a seawall that formed a quayside along the southern edge of The Pool (Tuck 1996a: 32). The western edge of the storehouse contained a privy measuring 1.2m by 2.7m and 1.2m deep. Built into the seawall that contained two drains, flushing of the privy took place as the tide rose and fell. Another, later structure excavated at Area C appears to be a byre. The construction of this byre involved the partial demolition of the south wall of the storehouse and likely took place after the Dutch raid of 1673 (Gaulton 1997: 67). The byre contains a raised floor and the western half is covered with cobblestones. A channel in the floor allowed animal waste to flow into a drain that passed though the west wall and eventually into the privy.

### Area D

In 1993, excavations around a nineteenth-century fireplace uncovered a disturbed deposit that contained a number of seventeenth-century artifacts (Tuck 1996a: 36). Subsequent excavations exposed a layer containing burnt beams and planks belonging to a wood-frame structure. In 1994, a stone fireplace measuring

5.4m wide and a cobble hearth proved this structure to be a house with a chimney in the gable end (Tuck 1996a: 36). Artifacts including clay pipe stems and bowls suggest a construction date sometime around 1650. The destruction date is clearly evident. Two William III (1694 to 1702) coins, recovered from a charcoal layer, suggest that this was one of the structures destroyed in the French attack of 1696 (Tuck 1996a: 36). A 7.6m deep stone-lined well is associated with the house at area D (Tuck 1996a: 37). The few artifacts excavated from the well suggest that it was filled in during the late eighteenth or early nineteenth centuries. Artifacts excavated nearby, though, indicate a construction date similar to that of the house.

#### **Area E**

Area E contains a large man-made mound located at the crest of a hill, approximately 15m above sea level. Considering the superior vantage point over the settlement, it was plausible that excavations in this area would provide information relating to seventeenth-century fortifications (Tuck 1993a: 36). Excavations in 1993, though, uncovered the remains of several structures. The upper layers of the site contained sections of a wall belonging to a structure that measured approximately 3.7m by 9m and contained two poorly preserved hearths, one at each gable end (Tuck 1996a: 39). Large quantities of coarse stoneware Westerwald mug sherds, glass bottle fragments, and clay pipe stems and bowls suggest that this structure served as an early- to mid-eighteenth-century tavern. The lower levels of the site revealed the remains of a retaining wall, mound, and

gate, possibly associated with seventeenth-century fortifications. Further, the presence of a sod structure built upon a sterile humus stratum possibly functioned as a gun platform (Tuck 1996a: 39-40).

#### **Area F**

Excavations which began at Area F in 1996 uncovered a number of seventeenth-century features. The first of these consisted of an end section of a layer of cobblestones. Based on similarities to the cobblestones excavated at Area B, it appears that this layer of cobblestones is the eastern end of Captain Wynne's "prettie street" (Tuck 1996b: 3). East of the cobblestone road, archaeologists uncovered the possible remains of a palisade. Numerous artifacts including ceramics, bottle glass, and pipe stems and bowls suggest a late seventeenth century destruction date. Excavations below this deposit uncovered layers of refuse and fill that contained ceramics, pipe bowls and bottle glass fragments. The relevance of these deposits became evident as archaeologists excavated an area measuring approximately 8m by 14m to sterile subsoil (Carter et al: 1998: 49). Excavations uncovered the remains of a large defensive ditch, measuring approximately 6m wide and over 1m deep. This ditch runs north-south and comprises part of the defences of the eastern boundary. Excavations at Area F also provided evidence for a dwelling occupied by someone of a high social status. Artifacts include high percentages of expensive tin-glazed ceramics and window glass and came, which are often associated with wealth.

**Area G**

In 1996, excavations to the west of Area C exposed a section of cobble pavement. Although archaeologists were unable to determine the exact function of this pavement, artifacts date to the late seventeenth and early eighteenth centuries. Further excavations, along a slipway, uncovered another section of the seawall that was first exposed at Area C (Tuck 1996b: 6). Just outside the seawall, a series of vertical wooden posts or strouders prevented ships and boats from smashing into the stone wall.

## Chapter Three

### THE BOTTLE INDUSTRY

#### 3.1 Introduction

This chapter presents an overview of the pre-1735 bottle glass industry, with specific attention given to the case, wine, and pharmaceutical forms. The focus is on English and Dutch production, since all bottles excavated at the Ferryland site are, most likely, products of these industries. Following is the introduction and evolution of these bottles along with the manufacturing techniques involved with each.

#### 3.2 Materials and Manufacturing Techniques

The seventeenth-century English author, John Houghton, noted "our green glass or glass for bottles is made of any sort of ashes, well powdered, and ordinary sea sand..." (Wills 1977: 33). Specifically, sand (silica), which contains impurities such as lime (calcium carbonate) and iron oxide, is the main ingredient (Godfrey 1975: 157-159). However, each glass component was necessary since it served a specific purpose. Lime, with the addition of soda or potash (alkaline), assisted in the melting process and produced a stronger product, while iron oxide gave the glass its green colour (Dumbrell 1983: 16). Nevertheless, availability often determined the ingredients; for instance, seaweed replaced potash when it

was in short supply. To fuse these ingredients, the glassmaker first placed all the materials into a clay pot or crucible above the fire. He then added "cullet" or broken fragments of discarded glass in order to lower the melting point (Munsey 1970: 31). Upon fusion, the glassmaker skimmed off the impurities and started to make his product.

The techniques involved in bottle manufacturing changed little throughout the seventeenth and eighteenth centuries. The glassmaker relied on a few basic tools: the blowpipe, the shaping-tool, the pontil rod, and the mould marver. The blowpipe was a hollow iron pipe, approximately three feet long, onto which the glassmaker attached a wooden mouthpiece (Powell 1923: 14). To make a bottle, the glassmaker first rotated the end of the blowpipe into the crucible in order to gather up the molten glass. After gathering a sufficient quantity onto the end, he blew into the mouthpiece of the blowpipe, forming a hollow ball (Powell 1923: 14). Occasionally, the glassmaker rolled the bottle across the marver, a flat slab of stone or iron that helped to shape the bottle (Dumbrell 1983: 16). The manufacture of case bottles required the use of a square wooden mould. The glassmaker then employed the shaping-tool (iron tongs with long blades) to elongate the neck and to form any required shape. To add finishing touches to the bottle, the glassblower attached the pontil rod (a solid iron pipe, four to five feet in length) to the base of the bottle using a small amount of molten glass (Douglas and Frank 1972: 9). This allowed the glassblower to hold the bottle while he

reheated the neck and added a string rim, which served as an anchor for tying down the cork (Dunsmuir 1976: 29). He then detached the pontil rod and pushed the area of the attachment up into the base to form the "kick-up," which increased the bottle's strength and stability (Hughes 1958: 90). If required, the glassmaker applied a seal to the bottle. Finally, he placed the finished bottle in the "lehr" or cooling oven where it annealed. At least 10 percent of the completed bottles broke during this process, since the glassmaker could not accurately control the cooling temperature (Munsey 1970: 32).

### 3.3 Case Bottles

By the seventeenth century, Amsterdam had become the primary shipping center and commodity and capital market in Europe (McNulty 1971: 91). As industry flourished, the production of glass began and soon expanded to other areas such as Rotterdam. The Dutch encouraged glassmaking by offering free building sites and firewood, tax exemptions, and restrictions on imported glass (McNulty 1971: 94). In 1642, there is specific reference to the construction of a glasshouse in Amsterdam that will "...make all sorts of bottles..." (McNulty 1971: 94). Slowly, other glasshouses devoted to bottle production formed. With the import of fine glass arriving from Germany, following the Treaty of Utrecht in 1713, most Dutch glasshouses concentrated on the manufacture of bottles (McNulty 1971: 96-98).



Dutch glasshouses commonly produced molded, square-shaped bottles for which two variants exist (McNulty 1971: 103). One has rounded, sloping shoulders and a short neck that was sheared-off, fire-polished and fitted with a pewter cap that screwed into a pewter collared neck. Glasshouses produced these bottles in a number of sizes. The second variant was less costly to produce since it did not contain a pewter cap, but a short neck that the glassmaker sheared-off, fire-polished and tooled out to create a lip (McNulty 1971: 104; Faulkner and Faulkner 1987: 132). Later in the century, the glassmaker everted and thickened the mouth for strength. These were mobile containers that the Dutch used as trade items and usually shipped them in wooden cases or "cellars" of six or 12 bottles in order to protect them from breakage. They have thin, slightly tapering concave sides and a transparent olive-green or straw colour. After 1650, though, a new form emerged. This form had tapered sides, a short neck and a thicker and darker glass (McNulty 1971: 106-107).

Many authors, including Noël Hume (1961, 1969), Godfrey (1975), McNulty (1971) and Fairbanks and Trent (1982), claim that the English produced case bottles identical to those of the Dutch during the early seventeenth century. Assuming this to be so, many authorities see it as impossible to be specific about the country of production. Upon examination of the published literature, though, it appears that the evidence more strongly supports the Dutch production of case bottles during the first half of the seventeenth century. The basis for English

production began with Noël Hume who notes that “while such bottles (case) appear frequently in Dutch paintings, their use was not confined to gin, neither were they all made in the Netherlands” (1961: 106). Further, case bottle fragments “...have been found in English excavation contexts of the first half of the seventeenth century.” From the above, it is evident that Noël Hume based his idea of English production on the presence of case bottle fragments excavated on archaeological sites. Even in later publications, Noël Hume fails to provide any documentary evidence supporting English case bottle production (1969a).

Although subsequent researchers have also suggested that the English produced case bottles during the early seventeenth century, the majority refer to Noël Hume when stating this belief (Harris 1981; Baker 1980; Godfrey 1975, McNulty 1971).

Import records indicate that London imported large numbers of bottles (possibly of the case type) from Amsterdam as late as the 1620s. For instance, “170 doz. uncovered” arrived in 1609 and “72 doz. @ 18d a doz” arrived in 1621 (Godfrey 1975: 231). In 1626, there is even a specific mention of “22 sellers with glass bottles” (case bottles) arriving from Flanders (Godfrey 1975: 231). These import lists suggest two possible scenarios: if the English did manufacture case bottles then they could not fulfill the home demand until sometime after 1630 or the English did not manufacture case bottles until sometime after 1630. The second seems more likely since most of the case bottle fragments excavated on both French, Dutch, Spanish and English sites in North America are identical in

colour and form (see Faulkner and Faulkner 1987; Baker 1980). This may suggest the existence of one specific production center. McNulty, at least, believes that "a large proportion, if not all" of the case bottles fragments excavated at Jamestown came from the Netherlands (1971: 104). The "three Iron bound Dutch Cases full of scrued bottles" in the 1681 inventory of James Rigbie of Annapolis suggest that the Dutch manufactured and shipped bottles to North America during the late seventeenth century (cited in Fairbanks and Trent 1982: 284). Case bottles fragments are also very thin and light-green in colour, suggesting production in a wood-fired furnace (coal-fired furnaces produced glass that was heavy and dark-coloured, such as that found in the wine bottles). Although English glasshouses employed coal-fired furnaces by the 1620s, the Dutch did not build them until the eighteenth century (McNulty 1971: 96). If the English did produce case bottles by the 1620s, why did they not take advantage of this new technology and produce a stronger and darker-coloured vessel? Archaeologists have recovered case bottle fragments from contexts dating between 1670 and 1674 at Fort Pentagoet, Maine (Faulkner and Faulkner 1987: 232). Further, 21 of the 28 case bottles recovered from a 1673 destruction level at Area C, Ferryland, are the thin, straight-sided types, which suggest production in wood-fired furnaces. The other seven case bottles, though, have thick, dark-coloured, tapered sides. This type of case bottle is more likely representative of the English bottle glass industry. If this is the

case, then, perhaps the thin, straight-sided case bottles are products of the Dutch glasshouses and the tapered-sided bottles are products of English glasshouses.

Exactly when the English began to manufacture case bottles is unknown. However, in 1677, a British "Schedule of Wholesale Rates and Sizes of Green-Glass" noted "squares" (possibly case bottles) were available in sizes including the half pint, pint, quart, two quarts, gallons and double gallons. The prices of these bottles varied from 22d per dozen for quart bottles to 7s per dozen for gallon bottles. The manufacture of case bottles declined by the end of the seventeenth century as stronger wine bottles became more popular. It was not until the eighteenth century that their production increased again, as they became popular containers for the storage of gin (Harris 1981: 128).

### **3.4 Wine Bottles**

During the early 1600s, the English Crown was so concerned with the destruction of forests caused by the wood consumed by the glass and iron industries that they promoted a number of experiments in search of a new fuel source (Godfrey 1975: 47-48). The amount of wood required to fuel a glass furnace was enormous. For instance, in the 226 days between June 7, 1585 and January 18, 1586 the Knole Park Glasshouse burnt 43 cords of wood (Vose 1980: 114)! In 1614, the glass entrepreneur Sir Edward Zouche was successful in using coal as a fuel supply and in 1615 James I banned the use of wood-fuel for glass

houses (Douglas and Frank 1972: 13). Coal had an advantage over wood as it produced a higher temperature that allowed for the melting of glass with a higher silica content and less potash and lime (Godfrey 1975: 229). The result was a darker, heavier and stronger glass typical of the wine bottle. In 1623, the retired admiral, Sir Robert Mansell controlled the English glass industry. Mansell received a patent to make "bottles, violls [phials] or vessels whatsoever made of glass of any fashion..." using coal-fuel (Wyatt 1965: 6). It was during the 'Mansell' period that wine bottles of the "shaft and globe" type first appear

A surviving account of an incident that occurred on September 1, 1662, indicates the exact date that wine bottles were first made (Godfrey 1975: 228). Charles II granted Henry Holden and John Colenet, a descendant of a Flemish family of glassmakers, a 14-year patent to produce glass bottles on the pretext that they "first invented, and attained unto the perfection of making glass bottles" (Wills 1977: 44). Within a few months, though, the Crown revoked this patent since two London men signed a petition stating that Colenet had made wine bottles 30 years earlier, under the orders of Sir Kenelm Digby (Dumbrell 1983: 20). It seems likely that Digby was responsible for introducing a new bottle form around 1632. This new form was possibly the "shaft and globe type" wine bottle.

The glass wine bottle was not an immediate success. The traditional leather, earthenware, and stoneware containers remained in common use (Wyatt 1965: 9). The most popular of these were the stoneware Bellarmine or Bartmann

bottles produced at the Cologne and Frechen kilns and later imitated at Fulham, near London (Oswald 1982: 20).

In 1645, it appears that the bottle industry had grown in importance, at least in the eyes of Oliver Cromwell who imposed a tax at the rate of one shilling on the pound sterling on all glassware, including bottles (Buckley 1914: 6; Dumbrell 1983: 19). Still, the industry persevered, and by 1650 glass bottles began to triumph over their stoneware competitors. An additional advancement for the bottle industry came in 1660, with the Restoration of Charles II. Wine consumption greatly increased during his reign and led to an almost universal adoption of the glass bottle (Douglas and Frank 1972: 167). The use of the cork stopper, which provided a tight seal for the contents of the bottle, coincided with this development. In response, production increased. Glasshouses produced a sufficient number of bottles to fill the home market as well as to allow for some export (Dumbrell 1983: 19). The invention of the cone-shaped furnace also facilitated this increase in production (Vose 1980: 115). Since these furnaces reduced the amount of smoke, glass was less likely to discolour and spoil.

In 1695, there was a new threat to the glass industry. In order to raise funds for the French War, King William's government imposed a tax of 20 percent on the best glass and bottles at a rate of one shilling per dozen (Buckley 1914: 6). The effects of this tax on the glass industry, though, were short lived since the government abandoned it in 1699. But the glass industry had gained a

strong foothold in England. In 1696, author John Houghton noted that there were 88 glasshouses operating in Britain, with London and Bristol being the largest centers (Wills 1977: 33). Forty-two of these factories manufactured glass bottles and combined they produced a total of nearly 3,000,000 bottles annually. The English glassmakers also succeeded in satisfying the needs of the home market. Houghton mentioned that for the year 1694, England imported only eight dozen bottles.

In the 1730s there was another advancement in the glass industry as bottle houses began to use a one piece "dip" or "cup mould" to shape the body of the bottle (Jones 1986: 73). These moulds signified greater standardization in the bottle industry and required less time and effort to produce. They also allowed the glass blowers to produce bottles in a variety of shapes, including square, octagonal, and hexagonal (Morgan 1976: 20). Another refinement occurred in 1734, when the Crown granted Humphrey Perrott (of Bristol) a patent for a furnace that provided an increased blast and temperature (Hughes 1955: 18).

### **3.5 Pharmaceutical Bottles**

From the late sixteenth century onwards, glasshouses in England produced a large variety of glass bottles specifically for pharmaceutical use. One form was a small, molded green bottle with four, six, and sometimes seven or eight sides (Noël Hume 1969a: 73-74). These vessels had short necks that are tooled-out to

form a lip. Another form was a cylindrical phial with a conical-shaped kick-up. Glasshouses produced these bottles in colours ranging from pale to emerald green and amber. One of these forms, which occurs at Ferryland, has a small globular body and a straight neck with a string rim. These bottles can be free blown or mould blown and some have no string rims (Fairbanks and Trent 1982: 343).



## Chapter Four

### THE SPIRIT AND WINE TRADE

#### 1.1 Introduction

This chapter discusses the pre-1735 spirit and wine trade. This is necessary since case and wine bottles were a major part of it, serving as shipping containers, decanters and storage vessels for a variety of alcoholic beverages. The following focuses on the specific wines and spirits that were available in England and Newfoundland as well as their function. It is important to remember that during the seventeenth century, Newfoundland's trade was essentially triangular.

"Mediterranean and Iberian ports imported Newfoundland cod and exported wine and fruit to England and Dutch ports, which in turn exported labour and supplies to Newfoundland" (Pope 1996: 1). Later, a similar trade developed with the Atlantic Islands of Madeira, the Canaries, and later Fayal and the Azores.

#### 4.2 Spirits

The consumption of distilled wine such as brandy, originally called 'burnt wine' or 'brand Wein' in Germany, 'brandewijn' in the Netherlands, or 'brandy-wine' in England, was primarily for medical purposes until the end of the fifteenth century (Unwin 1991: 236; Wilson 1975: 58). An early-fourteenth-century Paris doctor, Arnaud de Villeneuve, noted that brandy or aqua vitae, "accomplished the

miracle of preserving youth, dissipated superfluous body fluids, revived the hearth, cured colic, dropsy, paralysis and quartan ague, calmed toothache and gave protection against plague" (Braudel 1979: 241-242). It is conceivable that the widespread consumption of brandy for medicinal purposes had spread across Europe during the Black Death of 1348 as well as later epidemics (Wilson 1975: 58). By the end of the fifteenth century, the consumption of alcohol for non-medical purposes was on the rise. In 1493, for instance, a Nuremberg doctor noted "everyone in the city had got into the habit of drinking aqua vitae" (Forbes 1956: 144). It was the Dutch, however, following their independence from Spain, who became the largest consumers of brandy (Unwin 1991: 237). The reasons for this new interest vary. Aside from the growing demand for cheap alcohol, Spanish imports of wine decreased, forcing the Dutch to find new sources of alcohol (Unwin 1991: 237). Consequently, Dutch merchants established stills in some major wine producing areas of France, especially in the Charente region. From these areas, the Dutch shipped distilled wine to Holland and the countries of the Baltic. With the outbreak of war between France and Holland in 1672, though, the Dutch banned the importation of French goods. Nevertheless, a growing demand for luxury beverages and new drinks in England, especially at London, created a market for brandy (Faith 1986). This demand assured the survival of the producers in the Charente region.

In England, the consumption of distilled alcohol increased steadily during the seventeenth century. As early as the 1620s there were 200 households in London alone who relied on the production of spirits (Clark 1983: 95). Although a large amount of consumption was still medicinal, soldiers and sailors provided an increasing non-medicinal demand. Soldiers became accustomed to consuming distilled alcohol because of the difficulty of keeping fresh water or ale drinkable while on campaigns, especially in hot climates (Braudel 1979: 227; Wilson 1975: 63). During wartime, though, supplying soldiers with alcohol had an additional function, it served to strengthen morale. This is evident in Captain William Holman's claim for expenses incurred while defending Ferryland against the French in 1694. Among the expenses were £12 for "1 hogshead of sherry wine and 20 gallons of brandy and a barrel of strong beer, which I gave the men to encourage them in time to fight" (Pope 1993). Sailors further facilitated the non-medicinal demand for spirits since preserving fresh water during long sea voyages was impossible (Clark 1983: 95). The English navy, in particular, consumed large quantities of alcohol. For instance, in 1657, just two of the many English merchants claimed £2,500 from the Navy Commissioners for brandy supplied by them for use by the navy (Simon 1964: 37).

By the 1670s, the consumption of brandy was widespread among the English population. Evidence for this is based on a 1673 petition against the consumption of brandy, coffee, tea, and chocolate, on the basis that it hindered the

consumption of English barley, malt and wheat. The petition stated that "before brandy which is now become common and sold in every little alehouse came over into England is such quantities as it now doth, we drank good strong beer and ale..." (Simon 1964: 373). In 1694, England produced 1,885,752 gallons of low-wines or 754,300 gallons of spirits. During the same year, London's imports from Holland, Spain, Portugal, and the Canaries amounted to 706 tuns, 233 pipes (1 pipe = 460 litres), 425 casks, 70 hogsheads, 52 butts and 8 pipes of brandy (Simon 1964: 374). Although brandy remained a popular alcohol throughout the seventeenth century, new spirits also came onto the market. Rum distilled from sugar cane in the West Indies became very popular throughout England as well as the staple drink of the English Navy in the eighteenth century (Unwin 1991: 241). Although gin also came onto the market during the seventeenth century, it was not until the eighteenth century that distilleries at Schiedam began to produce it in substantial quantities (McNulty 1971: 100).

#### 4.3 Wine

The American Puritan leader, William Bradford, in writing about the hardships of coming to a new land noted that "The Chang of air, diate, and drinking of water, would infect their bodies with sore sickness, and greevous diseases" (Morison 1993). As further noted by Tobias Venner, Doctor of Physicke, water:

"may be very suitable for people living in hot countries, but in England it is not wise or agreeable, for it doth very greatly deject the appetite, destroy

the natural heat, and overthrow the strength of the stomach; and consequently, confounding the concretion, is the cause of crudities, fluctuations, and windiness in the body" (Simon 1964: 402).

Wine, on the other hand, was considered "...a wonderful restorer of all powers and actions of the body: it very greatly helpeth concoction, distribution, and nutrition, mightily strengtheneth the natural heat..." (Simon 1964: 405). The above comments suggest that wine might appeal to the inhabitants of early English colonies, such as Ferryland.

The areas of wine production and varieties of wine entering England varied throughout the seventeenth and eighteenth centuries. French wines from Bordeaux and La Rochelle gained considerable popularity in England during the early seventeenth century. Between 1600 and 1604, London imported approximately 4,000 tuns annually (Simon 1964: 253). Competing with French wines were those from Germany, although, the destruction of vineyards during the Thirty Years War hampered the production of Rhenish wines (Francis 1972: 47). Similarly, war with France in 1624 hindered the trade in French wines. Around the same time, England's trade with Spain and Portugal increased rapidly and wine became a major trade item. Much of the wine trade in Northern Portugal was founded on the trade in Newfoundland salt cod. This trade was seasonal as "sack ships" loaded with Newfoundland codfish dispatched their cargo in Southern Mediterranean ports and loaded wine and other goods for the English market. The most important of these wines was sack or seck, exported from Spain. Unlike the previous dry and

light wines available on the English market, sack was a sweet wine with a high alcohol content (Unwin 1991: 222).

Discovered in the fifteenth century, the Atlantic Islands of Madeira and the Canaries became important ports for the wine trade during the seventeenth century. These islands owe their beginning to the sugar trade, however, as cheaper Caribbean sugar came onto European markets, merchants and plantation owners in Madeira and Tenerife converted to wine production (Unwin 1991: 246). These merchants shipped wine to both European and American markets. Madeira, named after the island, was a strong, sweet, red wine and by 1646 approximately 2,000 tuns were exported annually (Francis 1972: 52; Banks 1997: 20). Tenerife produced a sweet white malmsey wine that gained great popularity in England as well as a greenish dry wine, and a purplish sweet wine (Steckley 1980). In response to the increasing prices paid for Canary wine, production spread rapidly along the entire northern coast of Tenerife (Unwin 1991: 246). By the 1630s, London marketed roughly half Tenerife's malvasia and two-thirds by 1690. English merchants eventually established themselves in Tenerife, where they sold textiles and other goods and bought wine with their profits. With the decrease in profits because of rising wine duties in London and the outbreak of the war of the Spanish Succession in 1701, English merchants departed the Canary Islands. The English wine trade with the Canaries never resumed its previous levels.

Although gin and cheap wines were readily available to the bulk of the English population, by the end of the seventeenth century, many new wines came onto the market. These wines, including port, champagne and Bordeaux, differed from the previous selection since they required the use of bottles to mature in. Port acquired its name from Oporto, the Portuguese town that exported it. Port is wine fortified with brandy, a practice that the Portuguese established in the Upper Douro valley by the 1670s (Bradford 1969: 1; Unwin 1991: 262). From the eighteenth century onwards, brandy was added to Marsala, Sherry and Madeira (Wilson 1975: 64). The trade in port wine increased rapidly by the end of the seventeenth century. For instance, for the year 1693 alone, England imported a total of 13,011 pipes of red port wine (Bradford 1969: 37). The Commercial Treaty of 1703 also facilitated the port trade (Unwin 1991: 264). This treaty allowed for the export of English cloth to Portugal in return for the importation of Portuguese wine, at a rate of duty one-third less than those on French wines. By the middle of the eighteenth century, roughly two-thirds of all wine entering England arrived from Portugal, the majority of which came from the Douro valley (Francis 1972).

During the seventeenth century, wine producers in the Champagne region of France began to experiment with new techniques of viticulture and vinification. By pressing certain grapes rapidly, to avoid excessive contact with the skin, the fermentation process produced an almost white still wine known as *vin gris* (Unwin

1991: 259). These quality wines became very popular in England following the Restoration. Although shipped in barrels, upon arrival merchants and the nobility began to bottle them. After several months of storage, these wines developed effervescence and became very popular among the elite.

The outbreak of war between England and France in 1678 resulted in the prohibition of French imports into England and the imposition of heavy duties on French wine. In response, producers in Bordeaux halted the production of poor quality wine in order to focus on producing specialty wines. Individual wine producing properties in Médoc made these wines, known as the New French Clarets (Unwin 1991: 257-258). Because of the high duties placed on them, they served as status symbols for the rich in early eighteenth-century England (Unwin 1991: 259).

#### **4.4 Spirits and Wines in Newfoundland and Their Function**

Strong liquors, specifically Dutch brandy, were likely available to the inhabitants of Newfoundland by the early seventeenth century. In the 1620s, Richard Whitbourne noted “divers Dutch and French ships” buying fish at Newfoundland (Pope 1996: 2). Although it is unknown how much alcohol or bottles the Dutch brought to Newfoundland during the 1620s, surviving mid-seventeenth century cargo lists indicate that alcohol was a part of this early trade. For instance, in 1660, the *St. Laurens* of Amsterdam brought a cargo of salt and



brandy from France to St. John's, Newfoundland (Pope 1994: 267). In 1677, 18 tuns of brandy arrived at St. John's, Newfoundland from France (Head 1976: 100). English ships also brought brandy to Newfoundland. The *Unicorne* of London, which sailed to Newfoundland in 1640, carried three tuns of French aqua vitae (Pope 1994: 267).

In addition to strong liquors, wines were also available in Newfoundland by the early seventeenth century. In 1647, the *Jonathan* of Minehead carried a pipe of Fayal wine to Newfoundland. In 1651, William Fishman brought 15 pipes of wine from the Canaries to Sir David Kirke in Newfoundland. In 1676, the inhabitants of Ferryland purchased 4 tuns, 3 hogsheads and 1 [barrel?], 1 hogshead of brandy and 6 barrels of rum (Pope 1993). In 1677, the *John* of Topsham arrived at Ferryland from the Azores with a cargo of Fayal and Bilbao Wines (Pope 1993). In 1698, the *Returne* of Boston brought a cargo of rum and sugar to Ferryland in exchange for 600 quintals (1 quintal = 112lbs) of fish for the Barbados market (Pope 1993).

In 1684, Captain Francis Wheler noted "the intolerable Cold...would make it hard liveing without Strong drink" (Pope 1994: 271). That the inhabitants of Newfoundland consumed substantial quantities of alcohol is evident from the comments made in 1667 by Christopher Selman, who sailed annually from Dartmouth in South West England "to use Newfoundland." Selman noted "the Inhabitants...have ben very distructive & prejudiciall to the said fishing Trade...&

by keepinge of Tipling houses & selling of Brandy & other strong waters, wine Beere & Tobacco deboist [debauch] the fishermen..." (Pope 1994: 261-262). The demand for alcohol at Newfoundland partially related to the emergence of a consumer society. As Pope notes, "mass demand of a modern kind developed early in maritime areas, for seamen had cash incomes and no aversion to standardized goods"(1993: 265). Therefore, it is not surprising that fishermen were consuming wines and spirits, goods previously unknown amongst persons of the same social status (Pope 1994: 266). Also, supplying fishermen with alcohol was possibly one way for employers, such as planters, to recover their wage costs.

Based on the above information, it is evident that certain alcohols came into vogue at specific times in Newfoundland. However, in order to determine whether or not Ferryland vessels contained any of these products, it is important to be able to accurately date them.

## Chapter Five

### DATING AND MEASUREMENTS

#### 5.1 Introduction

This chapter focuses mainly on the dating of pre-cylindrical English wine bottles and fragments excavated at Ferryland. This goal was achieved by recording measurements on complete and dated bottles in museum collections. These bottles were separated according to type and the earliest and latest dates of individual bottles of a specific type were noted. The result was a list of measurements for specific attributes, which was arranged chronologically according to each type. Then, a date of production was determined by comparing the measurements recorded on bottles and fragments in the Ferryland collection to those on the main list. Dating case and pharmaceutical bottles was much more difficult since there is insufficient published information relating to their production and forms. However, by examining bottles recovered from well-dated contexts, it was possible to determine a period of manufacture for each form.

#### 5.2 Dating English Wine Bottles: Previous Research and Problems

The dating of pre-cylindrical English wine bottles has been a topic of discussion for many decades. In 1914, E. T. Leeds traced the evolution of the wine bottle by relying on sealed and sometimes dated examples used by Oxford taverns.

More recently, a number of authors have followed Leeds' example in order to develop their own dating chronologies (Noël Hume 1961; Morgan 1976; Dumbrell 1983). Others have taken the study further and developed statistical models for dating wine bottles (Carrillo 1972; Robertson 1976; Baxter 1988). However, these statistical models are both problematic and time-consuming, and therefore, seldom used. Thus, archaeologists are forced to date wine bottles by relying on studies such as Noel Hume (1961) or Dumbrell (1983), which also present various problems.

One of the main difficulties faced by archaeologists is trying to date excavated wine bottle fragments, such as bases and necks, by comparing them to bottles illustrated in various publications (such as Dumbrell's). As Olive Jones notes in her study of cylindrical wine bottles, "...illustrations are generally too small to show details of the bottles..."(1986: 9). This can easily result in a bottle being incorrectly identified and dated. Another problem is the identification of types or forms. Some researchers see a slight variation in bottle shape as an additional type, whereas others fail to recognize a specific shape as a different type. For example, Baker calls a full size shaft and globe bottle "type B" and a half size "type G" (1980: 62-65). This is not so since both bottles have the same basic shapes and date to the same period.

The failure of various authors to recognize or distinguish between different bottle forms leads to the problem of dating. For instance, as evident from Table

5.1, the dates that these authors have assigned to specific types can vary considerably. One example is the date applied to type C wine bottles. Noël Hume (1961) dates these bottles between 1655 and 1670, whereas Dumbrell (1983) dates them between 1670 and 1680. Because of these discrepancies, it is necessary to re-examine the bottles and develop a new or revised chronology based on objective criteria and rigorous standards.

### **5.3 A New Chronology for Dating English Wine Bottles and Fragments**

The chronology developed to date English wine bottles in this study was based on the examination of 60 complete vessels in the collections of the Ashmolean Museum, Oxford, and the Museum of London. Olive Jones of Parks Canada provided data for another ten bottles. Of the 70 bottles, 58 had seals with the owner's name, initials, and date; initials and date; or name and date. Other bottles, especially those at the Ashmolean Museum, had seals with initials, dates and tavern ciphers. Dating the 12 unsealed bottles was possible since they were recovered from dated archaeological contexts or were identical in form to a number of sealed and dated examples.

Each bottle was photographed and sketched; and up to twenty different attributes were identified and measured. Based on these measurements, the 70 bottles were then separated according to shape or form. The result was the identification of six types, each represented by four or more bottles (Figures 5.1 to

5.6). Next, bottles with a dated seal or seal with a known date were used to place each of the six types into a chronological sequence (the end date was used to determine the order). Bottles within each type were further separated according to capacity. The results of this exercise were then compared to the published literature in order to determine whether or not previous researchers had recorded the same six forms and chronological sequence. As expected, many researchers recognized the same forms, however, only Morgan recorded the same chronological sequence, with the exception of type D (1976: 24). It is likely that these six types may accurately reflect the general evolution of the English wine bottle.

After establishing the different wine bottle types, the problem of dating was readdressed. This was necessary because of the limited sample size. In order to solve this problem, the published literature was examined for images of sealed and dated bottles that were similar to each of the six types previously identified. The dates on these bottles were added to those recorded in the Museum collections in order to define more accurately the production period for each of the six types. The dates of each type as well as their defining characteristics are as follows.

**Type A: Shaft and globe, pre -1652 to 1665** (Plate 5.1). Bottles dating to this period have a long parallel neck, 106mm to 140mm in length, that tapers gently into the body. The string rim is disc-shaped and situated well below the lip, usually 10mm to 15mm. The body is bulbous-shaped and the base diameter is narrow, 90mm to 110mm. Pontil marks are also narrow, usually 25mm to 33mm in diameter

and the indent height is 5mm to 10mm deep. Of the 20 bottles examined for this period, eighteen have bottle heights ranging between 200mm and 231mm and resting point diameters between 43mm and 70mm.

**Type B: Shaft and globe, 1660 to 1675** (Plate 5.2). By 1660, the neck becomes shorter and more tapered, usually 111mm to 118mm in length, while the string rim is situated closer to the lip, usually 7mm to 10mm. The shoulders and body are more defined than the previous form, while the base diameter remains small, usually 93mm to 103mm. The indent height is similar to the previous form, the resting point diameter is 54mm to 66mm and the bottle height decreases. The six bottles representing this form have heights ranging between 181mm and 223mm.

**Type C: 1670 to 1688** (Plate 5.3). The necks on bottles dating to this period are distinctively shorter than the previous two forms, ranging in height from 71mm to 95mm with a lip height of 5mm to 10mm. The resting point diameter increases, usually 64mm to 91mm, as does the base diameter, usually 100mm to 115mm. The indent height also increases, usually 18mm to 25mm and the pontil mark widens, usually 41mm to 49mm. The bottle height, on the other hand, decreases, ranging between 150mm and 191mm.

**Type D: 1689 to 1700** (Plate 5.4). Although only four type D bottles were examined, their shape is very distinct. The neck is shorter than the previous form, between 52mm and 57mm and the lip height is 6mm to 7 mm. The body is very globular and the shoulders are less angular. The base diameter and indent height

increase, ranging from 109mm to 117mm and 22mm to 33mm, respectively. The resting point diameter is very distinct, ranging between 80mm and 85mm and the bottle height decreases sharply, ranging between 150mm and 158mm.

**Type E: Onion, 1682 to 1705** (Plate 5.5). The neck is longer than the previous type, usually 77mm to 88mm in length and the lip height is 7mm to 8mm. The shoulders are less angular and the base diameter increases, 125mm to 130mm. The resting point diameter and bottle height also increase, usually 88mm to 96mm and ranging between 169mm and 183mm, respectively.

**Type F: Squat Onion, 1698 to 1721** (Plate 5.6). The neck and lip height decrease, usually ranging from 55mm to 65mm and 4mm to 6mm, respectively. Since the body is oval-shaped and squat, the base diameter increases, ranging from 125mm to 148mm. The indent height is deeper, 20mm to 30mm and the pontil mark is wider, 50mm to 65mm. The bottle height decreases again, usually ranging between 128mm and 160mm, whereas the resting point diameter increases, ranging from 95mm to 115mm.

#### **5.4 Measurements and Dating English Wine Bottle Fragments**

Besides relying on "type" to date complete wine bottles, I also wanted to ascertain whether measurements alone could facilitate in the dating of fragments. For this purpose, up to 20 separate measurements were conducted on each of the 60 complete bottles (see Section 5.4.1). These measurements were arranged



chronologically according to capacity within each of the six types. The result was a list of measurements to which measurements taken on the Ferryland vessels could be compared (Table 5.2). This exercise produced a number of interesting patterns. For example, the base diameter, resting point diameter, indent height, and pontil mark diameter all increase over time whereas measurements such as neck height and bottle height decrease over time.

When dating the Ferryland wine bottle fragments, as many measurements as possible were taken on each fragment (Table 5.3). These measurements were compared with those on the comparative list in order to determine a production date. For example, vessels 1, 3 and 6 recovered from Event 19, an early eighteenth century destruction level, have identical resting point diameters of 111mm and very similar indent heights as well as pontil mark diameters. These measurements are identical or closely match those found on comparative vessels 62, 64 and 68, which are type F wine bottles. Therefore, they date between 1699 and 1721, which seems accurate within the 1705 destruction context. It was possible to date the majority of Ferryland wine bottles using this method.

Some measurements, such as neck and body diameter, are less useful in dating bottle fragments, since they remain fairly constant over time. However, they can be used in combination with other measurements. It is important to note that the most important and time-sensitive measurement is resting point diameter. Using a series of concentric circles, obtaining the resting point diameter on

fragments smaller than half a base is even possible. This measurement is of further importance since wine bottle bases usually survive archaeologically as they are the strongest part of the bottle.

#### 5.4.1 Measurement Definitions

The majority of measurements taken are similar to those used by Olive Jones (1986: 120-3). The basic tools required are: Vernier calipers (with inner and outer diameter capabilities), a depth measure, a metric ruler, a 500ml/cc cylinder and a recording sheet. The methods employed were also similar. The Vernier calipers or ruler were held in a straight line with the attribute being measured.

**Bore diameter 1:** This measurement was taken at the beginning of the bore using the inner diameter of the Vernier calipers.

**Bore diameter 2:** The method is similar to bore diameter 1, except that the inner diameter of the Vernier calipers was inserted into the bore as far as possible.

**Lip to string rim height:** This measurement was taken from the top of the string rim to the outer edge of the lip. In cases where the string rim was not straight or curved, the measurement was taken at the lowest point on the rim.

**Lip height:** This measurement applies only to the bottles with lips as described in the previous measurement. It was taken from the top of the string rim to the top of the lip using the outer diameter of the Vernier calipers.

**String rim height:** This measurement was taken from the top to the bottom of the string rim using the outer diameter of the Vernier calipers.

**Finish height:** The finish height was taken from the bottom of the string rim to the top of the lip using the outer diameter of the Vernier calipers.

**Neck diameter 1:** This measurement was taken directly under the string rim using the outer diameter of the Vernier calipers.

**Neck diameter 2:** Neck diameter 2 was taken at the mid-point between the top of the lip to the bottom of the neck using the outer diameter of the Vernier calipers.

**Neck diameter 3:** This measurement was taken at the bottom of the neck using the outer diameter of the Vernier calipers. Neck diameter 3 was often difficult to determine since the neck often curved gently into the body. In this case, the measurement was taken at the mid-point of the curve.

**Neck height:** This measurement was taken from the top of the lip to the bottom or base of the neck (where it meets the body) using the inner diameter of the Vernier calipers. A ruler was placed on top of the lip and the edge of the inner diameter of the calipers was placed under it. This enabled the measurement to be taken parallel to the vertical plane of the neck.

**Body diameter 1:** Body diameter 1 was taken at the neck body junction using spreading calipers or the outside diameter of the Vernier calipers.

**Body diameter 2:** In order to be consistent, the measurement was taken at the widest point on the body using spreading calipers.

**Body diameter 3 or base diameter:** Body diameter 3 is basically the same as base diameter, especially on bottles of the "shaft and globe" type. In order to be consistent, this measurement was also taken at a fixed point. A ruler was placed across the bottom of the bottle. Then, a mark was placed at 7mm from the edge (both sides) on the outside diameter of the Vernier calipers. The marks were then lined up with the edge of the ruler. The calipers were slowly closed (keeping the marks in line with the ruler) until both edges touched the sides of the bottle.

**Body height:** This measurement was taken from the resting point to the point where the body curves upward into the neck, using the inner diameter of the vernier calipers.

**Resting point diameter:** The point on the base, which the bottle rests on when placed upright, was measured using a ruler or the outer diameter of the Vernier calipers. The measurement was taken at the centre of the resting point which is usually easily identified since it is worn.

**Indent height:** To determine indent height, a ruler was placed across the bottle base. From the edge of the ruler, the maximum depth of the pushup was determined using the depth measure of the Vernier calipers.

**Pontil mark diameter:** The width of the pontil mark was determined with dividers, which were placed upon a ruler.

**Bottle height:** The bottle height was determined by placing the bottle on a flat surface and laying a ruler on top of the lip. A level was then placed on the ruler to

level it. The distance from the ruler to the table (bottle height) could then be determined by using another ruler which had the mark at the beginning of the edge.

**Capacity:** A dry measure of rice was used to determine the capacity. The rice was poured into the bottle using a funnel. Each bottle was then carefully agitated a number of times in order to facilitate the settling of the rice and eliminate any air pockets present in the shoulder area. This step was then repeated until each bottle was filled to within 40mm to 50mm of the bore opening, which would have allowed enough space for a cork. The rice was then poured into a 500ml graduated cylinder and re-agitated. The results of this method appear to be fairly accurate since the capacities determined on five of the same bottles examined by Younger, are identical or vary by only 14ml (1966: 473-474).

Although both the pint- and quart-size wine bottles were recognized in the museum collections, it was assumed that the bottles representing each size would have similar capacities. However, this was certainly not the case since bottles which visually appear to be "quarts" ranged in capacity from approximately 680ml to 1140ml. Likewise, "pints" varied from 369ml to 596ml. There are a number of different reasons for such variations. Most obvious is the fact that during the period in question, England used a number of liquid capacity measures. Table 5.4 lists these capacities and the approximate period of usage. In addition to the "official" capacities was the "reputed quart," which probably came into use during the late seventeenth century (Jones 1986: 108). This quart held approximately

750ml. Another reason relates to fact that glassblowers manufactured bottles without the use of moulds. This is not to say that a particular glassblower could not produce a number of similarly sized bottles. More likely, a variation in size may result from individual glassblowers who each had a different notion of what a specific bottle size should be. In essence, wine merchants not only recognized but took advantage of the different sized bottles. This is evident from a statement found in a guide for servants of the 1740s: "Let your Corks be of the longest Kind you can get, which will save some Wine in the Neck of every Bottle: As for your bottles, chuse the smallest you can find...for a Bottle of Wine is always a Bottle of Wine, whether it hold more or less..." (Cited in Jones 1986: 111).

### 5.5 Dating Case Bottles and Measurements

Dating case bottles was achieved by noting changes in form as observed by past researchers as well as differences between fragments recovered from well-dated contexts at Ferryland. The Ferryland glass collection contains two distinct forms of case bottles. The first, called type A, has thin, straight sides, a neck that is sheared-off and tooled out, and is pale green in colour (Plate 5.7). A variant of this form, type A1, has a neck that is sheared-off and fitted with a pewter cap (Plate 5.8). The second, type B, has a thicker, darker glass with tapered sides (Plate 5.9). Noël Hume notes that type A case bottles were common in the period from 1625 to 1675 (1969a: 69). This is certainly true with reference to the Ferryland site, since

all six case bottles recovered in the pre-1673 occupation levels of the storehouse are type A forms. Further, 21 of the 28 case bottles excavated from the 1673 destruction level at Area C are type A forms. Archaeologists also recovered identical forms from contexts dating between 1670 and 1674 at Fort Pentagoet, Maine (Faulkner and Faulkner 1987: 232). This suggests that glasshouses manufactured type A case bottles as late as the third quarter of the seventeenth century.

As evident from the storehouse destruction level, type B case bottles were certainly in production by 1673. It is unknown when glasshouses began to produce these bottles, however, the limited number of vessels in the destruction level suggests a date not much earlier than 1673. The byre destruction level of 1696, however, produced four type B case bottles and no type A forms. This indicates that type B case bottles replaced type A forms sometime between 1673 and 1696.

While examining case bottles in the Ferryland collection, a number of measurements were recorded on each bottle (Table 5.5). These measurements allowed for the identification of bottles with similar or different capacities. Further, by taking measurements on two type A vessels that were nearly complete, it was also possible to determine the approximate capacity for bottles with two different base sizes. Type A case bottles with base dimensions around 70mm had a capacity of approximately 700ml while those with measurements around 90mm held roughly 2000ml of liquid.

## 5.6 Pharmaceutical Bottles

The pharmaceutical bottles excavated at Ferryland represent a number of different forms, including small, single dose size, free-blown cylindrical forms of various colours to small, mould-blown square forms. There is only one large capacity vessel in the glass collection. These bottles were dated by relying on the context in which they were found (see Chapters 7 to 10).



## Chapter Six

### BOTTLE USAGE

#### 6.1 Introduction

This chapter relies on the historical record and contemporary paintings in order to determine how people used case, wine, and pharmaceutical bottles during the seventeenth and early eighteenth centuries. This is important since it is very probable that the bottles excavated at Ferryland contained the same products as noted in the documents or were employed in situations similar to those depicted in the paintings.

#### 6.2 Case Bottles

In 1663, James Yonge, a Plymouth Surgeon, set sail for Newfoundland. Although Yonge noted in his journal that he did not have the "common necessities that every sailor had," among the few items he did take along were "6 quarts of brandy"(Poynter 1963: 52). Once at Newfoundland, Yonge further noted that, while traveling from Renew's to Fermuse "I used to leave a bottle of brandy hid behind a tree, which I would mark, and take a dram in my way" (Poynter 1963: 56). Based on Yonge's account, it is evident that the bottles he brought to Newfoundland were of an equal size and number. This suggests that they were probably fitted into a wooden case or cellar holding six bottles. A sectioned cellar

pkmfd would be necessary to protect the bottles from breakage during the long voyage to Newfoundland. If James Yonge is referring to case bottles, then it is apparent that they served as storage and shipping containers for liquors, such as brandy. Contemporary accounts support this idea. For instance, included among the items that the *New Englander*, Samuel Sewall sent his family and friends, while traveling in England in 1689, were "1 Small Case Liquors; 1 Great Case Bottles" (Thomas 1973: 235). The small case of liquors probably resembled the one depicted in Nicolaes Lastmans' (1586 to 1625) painting titled "De goede Samaritaan (Plate 6.1).

Seventeenth-century Dutch paintings provide insight into how people utilized case bottles and what they contained. The pewter-capped bottles (type A1) are the most commonly portrayed variant and they usually contained alcohol, however, other products were suggested. For instance, "Le Desserte," painted by Jan Davidsz de Hemm in 1640 (Plate 6.2), and "Der Maler mit Seiner Familie," painted by David Teniers the Younger, both depict two large pewter-capped case bottles standing in ceramic or pewter water coolers. Identical bottles occur in numerous other Dutch paintings that depict similar scenes. McNulty suggests that people used these bottles for transporting wine from the cask and for filling decanting jugs (1971: 104). A 1661 painting by Jan Steen and a painting by Nicolaes de Bruyn (? to 1656), both show a person using one of these large bottles to fill a decanting jug (Plates 6.3 and 6.4). The majority of Dutch paintings,

however, show that case bottles usually contained a liquid with a high alcohol content. Most eminent of all these paintings is "The Liquor Store" (Plate 6.5), painted in 1661 by Q. Brekelenkamm, where rows of pewter-capped case bottles of various sizes are depicted. The title of the painting and the alembics for distilling suggest that these bottles held strong liquors, possibly brandy. Pewter-capped square bottles also appear in many paintings that depict dentists at work. For instance, "The Dentist" drawn by Lambert Doomer, shows one such bottle (Plate 6.6). It is likely that this bottle contained alcohol, which the dentist would give to the patient to ease the pain.

Of further interest are a number of Dutch paintings that illustrate pewter-capped case bottles placed high upon a shelf. Jan Steen's "Tavern Interior" and another painted in 1669, as well as "Peasants at An Inn" by Joos van Craesbeeck depict such bottles (Plates 6.7 to 6.9). McNulty suggests that the location of the bottles may indicate their value, as such bottles were "fit for a burger" while "the laboring classes had little contact with them"(1971: 104). However, Steen's "Tavern Interior" depicts a peasant scene, as does Egret van Heemskerck's 1667 painting titled "Grace Before Dinner" (Plate 6.10). It may be that the fragility of case bottles also had something to do with them being placed upon a high shelf. Aside from containing alcohol, many paintings indicate that pewter-capped case bottles contained other products. One such vessel illustrated in a mid-seventeenth-

century etching of an engraving studio likely contained ink, dye or acid (McNulty 1971: 104).

In addition to the pewter-capped case bottles, a number of Dutch paintings portray case bottles with necks that have been sheared-off and tooled out (type A). Notable is Adriaen Brouwer's "The Bitter Draught," painted between 1635 and 1638 (Plate 6.11). A small square case bottle is visible and judging from the title and the expression on the man's face, it contained a strong alcohol or bitter medicine. Another small capacity case bottle, likely to have contained alcohol, appears in Ludolf de Jongh's 1657 painting, "Man Reading a Letter" (Plate 6.12). The contents of some of these bottles are unknown. For instance, "Peasant Interior" painted by David Teniers shows a large case bottle stopped with paper. Similar to the pewter-capped variants, the flared-lip bottles appear to have contained other non-alcoholic products. For example, a small square-sided vessel appears in Adriaen van Ostade's 1662 painting of a schoolmaster (Plate 6.13). Located upon a high shelf, it is conceivable that this bottle contained ink. Another case bottle stopped with paper is situated on a shelf in "The Doctor's Diagnosis" by Joos van Craesbeeck (Plate 6.14). This bottle could have contained medicine.

### 6.3 Wine Bottles

In 1731, Bristol, one of the main glass centres in England, recorded exports of 4,120 glass bottles to Newfoundland (Head 1976: 104-105). The advantage of

wine bottles, as well as one of their uses, is noted in "Worldidge's Treatise of Cider" written in 1676:

"Glass-bottles are preferr'd to Stone-bottles because that Stone-bottles are apt to leak, and are rough in the mouth, that they are not easily uncork'd; also they are more apt to taint than the others; neither are they transparent, than you may discern when they are foul, or clean: it being otherwise with Glass-bottles, whose defects are easily discern'd..." (cited in McKearin 1971: 126).

This account makes it easy to understand the increasing popularity of glass wine bottles in the second half of the seventeenth century.

The documentary record indicates that during the seventeenth and early eighteenth centuries, wine bottles served mainly as containers for the shipping, storage, and serving of wine. Evidence also suggests that people bottled cider and beer. Merchants usually shipped these products to markets and households in large casks, from which bottles were filled on an as needed basis (Fairbanks and Trent 1982: 281). Further, households used bottles to carry small quantities of wine to the table and as decanters for serving it (Ruggles-Brise 1949: 18). Tavern- and inn-keepers also stored wine in the cask, yet the contents were drawn into bottles for the use of the customers (Powell 1923: 74). Customers who could not afford to purchase wine by the cask usually bought it by the bottle from these taverns (Campbell 1954: 25). The storage of alcoholic beverages in bottles is also suggested by the fact that gentlemen often purchased bottles with quantities of wines. An extract from the expense book of James Master in 1657 lists the purchase of ten bottles of white wine, two of sack and 12 glass quart bottles and

corks (cited in Noël Hume 1961: 97). In 1662, a Mr. Hale purchased a quantity of Canary, White and Claret wine, in addition to "2 Gross of Glass-bottles" (Anon. 1933: 6). Even more suggestive are the glass sellers' bills for Woburn Abbey, which list the quantities of wine and bottles purchased by William Russell, the Fifth Earl of Bedford (Thorpe 1938). These bills show that the Earl purchased more than 1,070 dozen-glass quart bottles between 1670 and 1692 aside from his wines (Thorpe 1938: 201). Direct references to the storage of wine in bottles also occur during the seventeenth century. For instance, in October of 1663 Samuel Pepys mentions having five or six dozen of his new sealed bottles filled with wine (Latham and Matthews 1971: 346). During the London fire of 1666, Pepys further mentions removing his bottles of wine from the cellar and burying them in his garden (Latham and Matthews 1971: 274). Ten days later, Pepys notes that he retrieved his wine from his garden

In addition to wine, contemporary accounts refer to bottled cider and beer. Worlidge's 1676 treatise recommended putting cider into glass bottles. In this period, one of the main products of a bottle glass factory at Leith was bottles for the brewing trade (Donnachie 1979: 4-6). Of further interest is the 1717 inventory of Jean Morot's tavern in Williamsburg Virginia. Among the contents of the tavern were 621 bottles of wine, 62 bottles of brandy and 57 bottles of English Beer (Noël Hume 1957: 450). Undoubtedly, people recycled bottles for various purposes. Recycling is evident for a number of bottles sent to the Earl of Bedford in 1678.

The Earl received “7 doz: quart glass bottles washt...” The low price as well as the fact that they were washed suggest that they were recycled bottles (Thorpe 1938: 193). Archaeological excavations at Wetherburn's Tavern in Williamsburg, Virginia indicate how one resident recycled bottles. Excavations uncovered 15 early eighteenth-century wine bottles, each containing as many as 249 cherry pits (Noël Hume 1969b: 22). Another bottle, recovered from Bray's Littleton well (1735 to 1750), Virginia, contained milk (Kelso 1984: 157).

Contemporary seventeenth century accounts indicate that wine bottles also served as shipping containers. This was a regular practice between friends and business associates (Jones 1986: 17). In 1651, for instance, a Phineas Andrews sent “two doussen glasse bottles of the best Canary...” to his friend Henry Oxinden (McKearin 1971: 125). In January, 1660, Sir Edward Mountagu sent Samuel Pepys a gift of one dozen bottles of sack (Latham and Matthews 1970: 4). The commercial use of bottles as shipping containers began during the seventeenth century and increased rapidly during the early eighteenth century. For example, wine merchants' accounts list purchases of small quantities of beverages, such as the “1 Quart Candia, 2 Quarts Claret and 4 Bottle” purchased by a Mr. Morris in 1666 (Anon. 1933: 8). The reference to bottles and quarts (the most common glass bottle measure) suggests that wine merchants used bottles as shipping containers. For example, on board the *Rising Sun*, which set sail for the East Indies in 1703, were more than 5,174 bottles of liquor, at least 2,500 containing beer (Noël Hume

1961: 111-112). An increase in bottle usage by wine merchants is further suggested by Daniel Defoe in 1725, when commenting on Bristol's export trade. Defoe noted "they have indeed a very great expense of glass bottles by sending them fill'd with beer, cider and wine to the West Indies..." (Morgan 1976: 14).

Based on the comments made by Samuel Pepys in his diary in 1663, after visiting the wine cellar of Mr. Povys, it is likely that some wine was possibly matured in bottles. Pepys noted that "upon several shelves there stood bottles of all sorts of wine, new and old, with labells pasted upon each bottle, and in that order and plenty as I never saw books in a bookseller's shop" (Latham and Matthews 1971: 18).

#### **6.4 Pharmaceutical Bottles**

From the late sixteenth century onwards, doctors, apothecaries and most households used small bottles to hold medicines. For example, a 1656 account for "Mr. Stephens water for the Eyes" says to "take four ounces of white Rose water, and two drams of Tutia in powder, shake them well together in a glass vial, and drop a little into the eyes..." (Fairbanks and Trent 1982: 344). The inventory of Thomas Smith, a Boston apothecary who died in 1681, refers to a number of "glasses" or bottles. Included among these were "Ohym Oyle glasses" and "twenty-three round bottle glasses" (Fairbanks and Trent 1982: 343). As well as medicines, people used small vials or bottles to hold perfumes and oils (Harris 1979). Among



the possessions of Elizabeth Rose of New Haven, who died in 1677, was "a little glass bottle with sallet Oyle" (Fairbanks and Trent 1982: 344).

## Chapter Seven

### AREA B GLASS

#### 7.1 Introduction

This chapter deals with the analysis of bottle glass fragments associated with a seventeenth-century forge (Figure 7.1). Although Carter has previously examined Area B's glass, his objective was to date the forge by noting the absence of wine bottle fragments (1997). The focus of this analysis is on bottle form, capacity, and function.

#### 7.2 The Forge

In July of 1622, Captain Edward Wynne, the first Governor of the Colony of Avalon, noted in his letter to George Calvert "the forge hath been finished this five weeks..." (Pope 1993). Archaeologists uncovered the remains of the smithy during the 1984 and 1985 field seasons, yet it was not until 1994 that they completely excavated it. Constructed by digging directly into the side of an "easy ascending hill" that fringes on the area around The Pool, the smithy measured approximately 3m by 5m (Carter 1997: 31). Upright planks, placed into the ground along the parameter, formed three of the smithy's walls. The remaining side or front of the smithy was either left open or fitted with two large doors. A slate roof covered the entire structure. Constructed of stone, the forge itself measured approximately 1 m

by 2 m. The analysis of all artifacts suggests that the structure was in use from 1622 until sometime around the mid- seventeenth century (Carter 1997: 132).

### 7.3 Stratigraphy

Although the excavation of the smithy produced thousands of glass bottle fragments, this study mainly focuses on the analysis of sherds associated with the utilization of the structure. A small number of other fragments may also relate to the time of abandonment. The excavation of the smithy began in 1984 and finished in 1994, and both the Level and Event systems were used. To avoid any confusion, it is necessary to describe the stratigraphy associated with both of these systems.

One of the oldest stratigraphic layers associated with the forge is Event 163, which consists of a small number of artifacts incorporated into the layers of stone during its construction. Adjacent to and south of the forge is Event 154 or Stratum 3b which is a rich black deposit believed to be the smithy floor. The 98 tobacco pipe bowls recovered from the smithy floor are typical of those produced before 1650 (Carter 1997: 87). Associated with Event 154 or Stratum 3b is Feature 31, a concentration of iron, slag, charcoal and artifacts found directly east of the forge. This deposit dates to the time that the smithy was in use. Overlying Feature 31 is Stratum 2c, which consists of a small deposit within the stone forge and may represent its abandonment. Based on pipe bowl styles, Pope dates this level to 1660 (1986: 92).

#### 7.4 The Glass

The occupation levels associated with the smithy produced a total of 274 glass bottle fragments (Table 7.1). The majority or 273 of these are case bottle sherds while the remaining fragment is from a pharmaceutical bottle. This sub-assembly represents a total of 12 vessels, of which 11 are type A case bottles and one is a pharmaceutical bottle.

Although Event 163 produced only five case bottle body fragments, their presence in the forge structure is very important. These fragments undoubtedly indicate that the residents of Ferryland utilized case bottles from the time that the colony began. Exactly how these fragments ended up in the forge is unknown, however, there is one possible explanation. Some of the colonists involved in the construction of the blacksmith shop possibly consumed a bottle of brandy and broke or discarded the vessel into the partially-built stone forge.

Excavations along the smithy floor (Event 154 and Feature 31) uncovered 230 bottle fragments or 84 percent of the total number. While there were several mends between fragments, the extensive fragmentation of body sherds limited the amount of reconstruction. The 230 fragments represent a total of ten vessels, of which nine are case bottles and one is a pharmaceutical bottle. All case bottles are similar, in that they are type A forms. Four of these, vessels 1, 2, 3 and 6, have similar neck measurements which suggests that they held equal capacities. Vessel 4, on the other hand, consists of half a base and neck, belonging to a small capacity

bottle. Vessel 5 also consists of a base but much larger than the others. Measurements suggest an approximate capacity of 700ml. Vessel 7 consists of a small sheared-off and fire-polished neck that had a pewter collar, as small fragments of white metal remain concreted to the neck and lip. Considering its small size and the fact that this bottle had a pewter collar, it may well have contained a private stock of alcohol.

The excavation of Feature 31, the slag deposit, uncovered two bottles, vessels 1 and 2, each represented by only half a base. Stratum 2c, a deposit associated with the abandonment of the smithy, produced the remaining two case bottles. These are both type A case bottles. One, vessel 2, consists of half a lip fragment while the other, vessel 1, includes a neck, base and numerous body fragments. The presence of so many fragments in one place indicates that vessel 1 was a complete bottle that was broken and left undisturbed.

## 7.5 Interpretation

The presence of seven case bottles and other artifacts in the forge room is not surprising. After all, a blacksmith shop was not only a place of work but also a social center, a warm place where clients could drink, eat or relax (Light and Unglik 1984: 12; Pope 1989). In plotting the distribution of glass bottle fragments along the smithy floor, two main clusters are evident (Figure 7.2). The first of these is in the southwest area of the smithy, around the two post molds that held the

bellows. Excavations in this area accounted for over 150 fragments or four case bottles, vessels 1, 2, 3 and 7, including the one that had a pewter cap. The uneven number of necks and bases as well as the lack of mends, suggest that the smith or his clients may have collected these fragments from other areas of the smithy after breakage and deposited them at this location. With the bellows in place, the extra space underneath and around it could serve as an ideal place for the quick disposal of sherds. Aside from glass, the recovery of many clay pipes and ceramics indicate that this was probably the case. The second concentration of artifacts occurs in the northeast corner of the smithy, around the two post molds for the anvil.

Excavations at this location produced approximately 40 glass fragments, representing three case bottles, vessels 4, 5 and 6, and one pharmaceutical bottle. Again, this area would provide an ideal and safe location for the disposal of broken bottle glass. The excavation of a clinker pile (Feature 31), found directly east of the forge itself, produced another two case bottle bases and three body sherds. The lack of body fragments suggests a secondary deposit. Since these bases usually remain intact after the bottle breaks, they would pose a risk if left on the floor. Therefore, it is likely that the smith or one of his clients picked them up and deposited them into the slag pile. Archaeologists recovered the remaining two case bottles from a deposit (Stratum 2c) found above the forge, which represents its abandonment. While one of these bottles consists of a lip only, the other consists of a base, neck and many body fragments, which suggest that it was broken and left

at this location. This bottle, along with the fact that excavations produced no wine bottle fragments, indicate that the smithy went out of use during the early 1650s.

## Chapter Eight

### AREA C GLASS

#### 8.1 Introduction

This chapter focuses on the analysis of glass bottle fragments excavated at Area C (Figure 8.1). These fragments were examined in relation to the various construction and destruction phases outlined in Gaulton's study of stone construction at Ferryland (1997). Further, Gaulton's dating of Area C's events through the analysis of clay pipe bowls and stems, provided one method for the dating of glass bottles.

The events examined for Area C contained a total of 1,846 pre-1735 glass bottle fragments, representing 89 vessels (Table 8.1). Wine bottles comprise 49 percent of the total number of vessels while case bottles represent 46 percent. Pharmaceutical bottles are less frequent, accounting for only 5 percent of the total. All Area C's vessels are discussed according to their spatial distribution.

#### 8.2 Overview: First Construction and Destruction Phase

The construction, occupation, and destruction of Area C's first structures date between 1621 and 1673. The excavations of these structures produced a total of 1,253 glass fragments, of which 806 or 64 percent are of the case bottle type and 435 or 35 percent are of the wine bottle type. The remaining 12 fragments or 1



percent are pharmaceutical bottle sherds. This sub-assemblage represents a total of 61 vessels. Of these, 34 are case bottles and 25 are wine bottles. The remaining two bottles are pharmaceutical vials.

### 8.3 First Construction and Occupation Phase

As evident from the documentary record and noted by Gaulton, the initial building phase at Area C occurred between 1623 and 1629 (1997: 49) (Figure 8.2). Construction began with the placement of a massive stone seawall that served as the colony's quayside. Parallel to the seawall was a rectangular, stone, slate-roofed storehouse with an interior space measuring 5m by 17m. The western half of the storehouse contained a flagstone floor, while the eastern half contained a hard-packed earthen floor. During the same construction phase, a stone privy was incorporated into the seawall, directly against the west wall of the storehouse. The north wall of the privy (seawall) contained two drains at floor level that, with the help of tidal action, flushed out deposited materials. However, it is apparent that the privy drains did not serve their intended function for any length of time, considering the large quantity of artifacts dating to the 1620s. The recovery of a red wax seal from a stamp or signet ring, bearing the impression of the Immaculate Heart of Mary, may support this idea. The seal possibly arrived at Ferryland during the mid-1620s when Roman Catholic settlers resided there (Tuck 1996a: 34).

The function of Area C's first structure, the storehouse, is evident when considering its location and size as well as the types of artifacts recovered during excavations. Its location, parallel to the seawall, suggests that it was a structure where goods from ships could be loaded, unloaded and/or stored. Along with clay pipe bowls and stems, glass bottle fragments, and many ceramic storage vessels, the presence of crucible fragments, a lead scale weight and cooper's tools indicate that this building served a variety of functions.

Events 6, 44 (storehouse) and 50, 111, 114 and 116 (privy) represent occupation levels associated with the storehouse and privy. The excavation of these levels produced 361 bottle fragments, of which 332 or 92 percent are the case bottle type and 29 or 8 percent are of the wine bottle type (Table 8.2). Of these 361 fragments, 250 were recovered from the storehouse, whereas the privy produced 111. In total, excavations produced six case bottle bases and four necks, all representing type A vessels. Although excavations failed to unearth any wine bottle bases or necks, the presence of 29 body fragments suggest that they were utilized sometime before the Dutch attack of 1673. Perhaps someone removed the heavier wine bottle base and neck fragments, since they would pose more of a risk than the smaller case bottle fragments. The fact that the construction of the storehouse and privy date to the early 1620s also explains the lack of wine bottles in the early occupation levels. Case bottles were in use at this time. However, it is not until the 1650s that wine bottles began to appear in any notable numbers. This

leaves a period of twenty years, in the 1650s and 1660s, for wine bottle fragments to accumulate.

The six case bottles recovered from the storehouse and privy have similar characteristics such as their light green colour, thin sides, and rough pontils. Four of the bases, vessels 1, 3, 5 and 6, are comparable in size, having dimensions ranging from 66mm to 71mm and resting point dimensions ranging between 50mm and 58mm. A measurement taken on a partially reconstructed vessel suggests that bottles with resting point and base dimensions within the above mentioned range contained a capacity of approximately 700ml. The two remaining bases, vessels 2 and 4, have base dimensions of 95mm and 97mm, and resting point dimensions of 75mm and 76mm. The capacity of these two bottles is approximately 2000ml.

The distribution of bottle fragments and vessels along the storehouse is of further note (Figure 8.3). Excavations along the eastern half of the storehouse floor accounted for only 11 percent or 28 of the 250 bottle fragments, compared to 89 percent or 224 fragments in the western half. The fragments excavated in the western half of the storehouse were also clustered around three case bottle necks and three bases, representing three bottles, vessels 1, 2 and 3. The high percentage of joins between fragments as well as one partial reconstruction suggests that these bottles saw little disturbance after breakage. There are a number of possible explanations why there are so many bottle fragments in the western end and so few in the eastern end. The fact that the western section of the storehouse contained a

flagstone floor provides part of the answer to this question. This floor would provide a dryer and cleaner working area in comparison to the earthen floor in the eastern section. The presence of coopering tools in the storehouse and numerous barrel parts (head pieces, cut staves, hoop fragments and shavings) in the privy, suggest that a cooper was working nearby prior to the 1673 destruction. It is also possible that the loading door for the storehouse was located along the north wall in the western half. The flagstone floor would have been a main activity area since ships would be loaded and unloaded in this area. Along with work-related activities, the recovery of the three case bottles may suggest that alcohol consumption took place. However, it is also possible that the bottles were part of a cargo that broke.

The privy contained 109 or 30 percent of the 361 bottle fragments recovered from Area C's initial occupation levels. Again, the recovery of four wine bottle fragments suggests their limited utilization in the years prior to the Dutch destruction. Of the three bottles recovered, two, vessels 5 and 6, consist of bases only. The lack of body and neck fragments indicates that these two bottles were broken elsewhere. Someone then collected the larger fragments and bases and deposited them into the privy. This also suggests that at least some of Ferryland's inhabitants found the sharp edges of glass bottles a risk. The reconstructed case bottle, vessel 4, on the other hand, indicates a different set of events. If someone broke this bottle elsewhere, then it is likely that they would only collect the largest

fragments and throw them into the privy. However, since all fragments of this bottle are present, it was most likely complete when its owner threw it into the privy. This is important since it demonstrates that at least one resident of Ferryland did not recycle bottles!

## **8.4 First Destruction Phase**

### **8.4.1 Privy and Storehouse**

Four Dutch ships, under Nicholas Boes, attacked Ferryland in 1673.

Governor Dudley Lovelace of New York, a prisoner aboard one of the Dutch ships, recorded that “the Enimie plundered, Ruin’d, fir’d & destroy’d the Commodities, Cattle, Household goods, & other Stores” (Pope 1993). Feature 1a, levels 1, 2, 3 and Event 49, along with Events 9, 13 and 16, are associated with the Dutch destruction of the privy and storehouse. The excavation of this destruction layer produced 892 glass fragments, of which 53 percent are of the case bottle type (Table 8.3). Approximately 46 percent of fragments are wine bottle sherds, and 1 percent are pharmaceutical bottle sherds. This sub-semblage represents a total of 55 vessels, or 28 case bottles, 25 wine bottles and two pharmaceutical bottles. Excavations within the storehouse and privy accounted for 22 of these bottles, while the excavation of building rubble found north of the seawall produced another four bottles. Excavations south of the privy and storehouse accounted for 29 bottles.

The privy contained 105 glass fragments, 12 percent of the total number recovered from Area C's destruction level. The majority of these, 97 percent, are case bottle fragments, while only three percent are wine bottle sherds. In total, excavations produced three case bottle bases and four necks which represent four vessels. Three of these bottles, vessels 1, 2 and 3 (Feature 1A), are type A forms since they have straight sides and are light green in colour. Vessel 1 consists of a large neck, lip and shoulder fragment, and, considering its size, would likely have a capacity equal to or greater than 2000ml. Although no measurements were obtainable, the base of vessel 2, appears similar to those having capacities within the 700ml range. Vessel 3 consists of a base fragment and, although no measurements were obtainable, it is similar to the base of vessel 2. The remaining bottle, vessel 5 (Level 1A), is represented by a dark-green coloured base and body fragment that has thick, tapered sides. This is a type B case bottle manufactured after 1650 (McNulty 1971: 105). Excluding one partially reconstructable bottle, vessel 2, there were few mends between the majority of case bottle fragments excavated from the privy destruction layer. If any of these vessels were complete when deposited into the privy, there would likely be a high percentage of mends. The fact that there were only a few mends suggests that the privy served as a midden where people deposited their broken bottle fragments immediately before the 1673 destruction.

The storehouse contained 391 glass sherds, representing 44 percent of the total number of bottle fragments recovered from the destruction level. Of the 391 bottle fragments, 213 are case and 176 are wine bottles. The remaining two bottle fragments are typical of the pharmaceutical type. Unlike case bottle fragments, there was a high percentage of mends (25 percent) between wine bottle sherds. The severe fragmentation of side sherds, as well as the extent of deformation caused by burning, limited the number of mends between case bottle fragments.

In total, excavations within the storehouse produced 18 bottles, comprising 11 case, six wine and one pharmaceutical phial. All eighteen vessels appear to date to or before the Dutch attack of 1673. Of the 11 case bottles, nine, vessels 3, 4 and 8 (Level 1A), vessels 4, 6 and 7 (Event 9), and vessels 1, 2 and 3 (Event 16), are type A forms and are identical to those excavated from the occupation level. Six of these bottles, vessels 7 and 8 (Level 1A), vessels 6 and 7 (Event 9), and vessels 2 and 7 (Event 16), consist of a single base or neck fragment and a number of body sherds, therefore, no measurements were obtained. Considering the fact that these are isolated fragments, it is almost certain that they were already lying on the storehouse floor at the time of its destruction. Two case bottles, vessel 3 (Level 1A) and vessel 1 (Event 16), are represented by complete necks, while another two, vessel 4 (Event 9) and vessel 4 (Level 1A), have base measurements that suggest a capacity smaller than 700ml. Vessel 4 (Level 1A) also differs from the others in that its neck is almost straight. It is likely that this bottle was fitted with a pewter

cap (type A1). The remaining bottle, vessel 7 (Event 16), is also different from the others such that it is almost emerald green in colour and has a capacity of approximately 2000ml. It is unclear whether or not this bottle is a type B form.

The six wine bottles excavated from the storehouse are all products of English glasshouses and appear to represent type B and C forms. Four bottles, vessels 7 and 8 (Level 1A), and vessels 1 and 2 (Event 16), consist of a small number of base and/or neck fragments only. This indicates that the residents of Ferryland broke and discarded these bottles prior to the Dutch attack. The remaining two bottles, vessels 1 and 4 (Level 1A), on the other hand, were probably broken during the Dutch attack of 1673. One of these bottles, vessel 1 (Level 1A), consists of a complete base and body. This bottle has base and body measurements that are almost identical to comparative vessel 33, a type C wine bottle that dates between 1670 and 1688. The remaining bottle, vessel 4 (Level 1A), consists of a burnt and deformed base. Although it was impossible to obtain any measurements on the bottle, the evidence of a fire is consistent with breakage in the Dutch attack of 1673.

The distribution of bottles along the storehouse floor is also noteworthy (Figure 8.4). Case bottles are more equally distributed compared to those excavated from the occupation level, with six vessels excavated from the western half of the storehouse and five from the eastern half. Five of the six wine bottles, on the other hand, were located on the earthen floor in the eastern half of the



structure, compared to one in the western half. Another wine bottle, vessel 4 (Level 1A), offers compelling evidence of the Dutch Attack. Partially reconstructable, although burnt and deformed, archaeologists found this bottle near a doorway located in the south wall of the eastern half of the storehouse. It was probably situated on a shelf, located on the south wall, at the time the Dutch burned the structure. Excavations in the same area as the burnt vessel uncovered another five bottles, comprising three wine, one case and one pharmaceutical. Although not burnt, it is possible that someone stored these five bottles in the same location as the burnt one. Either the Dutch broke these bottles in 1673, or the residents of Ferryland broke them just prior to the attack. The one pharmaceutical bottle, vessel 1 (Level 1A), excavated from the storehouse, is typical of those described by Noël Hume and dates to the second half of the seventeenth century (1956: 102-103). This is a large cylindrical bottle with a resting point diameter of 66mm. The bottle is pale emerald green in colour and has a tall, conical kick-up.

#### **8.4.2 South of the Storehouse and Privy**

The excavation of the 1673 destruction layer, located south of the privy and storehouse, produced 348 glass bottle fragments, representing 39 percent of the total number of fragments recovered from the destruction layer. In total, excavations produced 29 vessels, comprising 11 case bottles, 17 wine bottles and one pharmaceutical bottle. Of the 11 case bottles, seven, vessels 1, 2, 6, 7 and 9

(Level 1A), and vessels 8 and 9 (Event 9), are type A forms. Measurements taken on the bases of two of these bottles, vessels 6 and 9 (Level 1A), suggest that they have a capacity smaller than 700ml. Another bottle, vessel 8 (Event 9), has base measurements similar to those with a 2000ml capacity. A very small neck represents an additional case bottle, vessel 1, Level 1A, which may indicate that it contained a small amount of liquid. All the other type A case bottles, vessels 6 and 9 (Level 1A), and vessel 9 (Event 9), were too fragmented to obtain any measurements. The remaining four case bottles, vessels 1, 2, 3 and 5 (Event 9), are type B forms and are identical in colour. Although a number of measurements were taken on these forms, no comparative data exists.

Of the 17 wine bottles recovered during excavation, only two, vessel 5 (Level 1A), and vessel 12 (Event 9), were unidentified because of the lack of fragments. The majority of the other wine bottles, vessels 2 and 9 (Level 1A), and vessels 1, 6, 8, 9 and 11 (Event 9), are type C forms which date between 1670 and 1688. Another two bottles, vessel 6 (Level 1A), and vessel 7 (Event 9), are type B forms and the remaining wine bottle, vessel 2 (Level 1A), is a type A form. The only other vessel recovered during excavations is a pharmaceutical phial. This bottle, vessel 1 (Event 9), consists of a square-shaped base that is pale green in colour. Noël Hume noted that glasshouses produced such bottles from the late sixteenth century onwards (1969a: 73-74). It is unclear whether or not any of the 29 vessels is associated with the occupation or destruction of the storehouse since

there were no mends with fragments excavated within the structure. It is possible that the residents of Ferryland broke and discarded some of these bottles on the storehouse floor before the Dutch attack. These fragments then became mixed with those broken and discarded by the Dutch in 1673. It is also likely that many of the 29 vessels are associated with an additional structure which the Dutch burned. Archaeologists exposed a number of wall sections and a cobblestone floor at the southern and southwestern portions of Area C. However, without further excavation it is impossible to make any connections.

Overall, the glass fragments recovered from Area C's destruction layer all date to or before the Dutch attack of 1673. The 11 type C wine bottles, in particular, coincide with the 1673 destruction date. However, evidence of a fire was only found on two of the 11 wine bottles, vessels 3 and 5 (Event 9), and one pharmaceutical bottle, vessel 1 (Event 9). These three bottles, and 14 others, were concentrated within a six square meter area located directly south of the first flagstone floor in the storehouse. Mends, with fragments up to three meters apart, suggest a connection between the vessels in this area. If the destruction level that contained these vessels is associated with a structure then perhaps the Dutch threw them around before destroying it. It is also possible that these vessels were located upon a shelf that collapsed with the fire, dispersing the fragments over a wide area. The collapsed building rubble and other objects possibly covered these bottles, protecting them from the fire.

### 8.4.3 North of the Storehouse

Excavations north of the eastern half of the seawall produced 54 fragments or 6 percent of the total number recovered. These fragments represent two case bottles, vessels 4 and 5 (Event 16), and two wine bottles, vessels 3 and 4 (Event 16). However, one wine bottle, vessel 4, represented by a neck, is intrusive since it is identical to those produced during the end of the seventeenth century. The other three vessels, two case and one wine, are typical of those produced around or before the 1670s. The two case bottles are type A forms while the wine bottle, vessel 3, is a type B form which dates between 1660 and 1675. Found among the rubble of the collapsed north wall and seawall, all three of these bottles were likely inside the storehouse at the time of its destruction.

### 8.5 Second Construction and Destruction Phase

Shortly after the Dutch raid on Ferryland in 1673, a new construction phase began at Area C (Figure 8.5) and involved the modification of the remains of the southern wall of the storehouse. This process involved the dismantling of the western corner of the southern storehouse wall and the construction of two new north-south walls, running perpendicular to it (Gaulton 1997: 68). Separating these two north-south running walls was another wall, which divided the structure into two bays. The eastern bay appears to have functioned as a byre and contained a raised, well-laid cobblestone floor. East of this floor was a rough cobblestone floor

that continued east to the northeast corner, where it met a slate-floored alcove/animal stall (Gaulton 1997: 68). The raised cobblestone floor contained a channel or drain that passes through an opening in the partition wall. This covered drain eventually led to the privy, which the inhabitants rebuilt in order to incorporate the drain opening. The privy now served as a dung pit for animal waste. The western bay of the new structure served as a storage shed or barn, and contained a dirt floor which covered the capped drain leading to the privy. The recovery of four upright slates aligned in a square formation probably served as a brace, used to secure a center post for a set of double doors (Gaulton 1997: 70). As evident from the analysis of clay pipe bowls and stems, both the storage shed and privy remained in use until 1696, when the French attacked and destroyed the settlement (Gaulton 1997: 53-54).

Events 33, 45 and 47 represent the approximate twenty-year period between the initial time of occupation and destruction of the byre. Combined, these three events produced a total of 316 bottle fragments, of which 211 sherds or 67 percent are the case bottle type (Table 8.4). Excavations uncovered 103 wine bottle fragments (32 percent) and only two pharmaceutical bottle sherds. Overall, the 316 fragments represent 13 vessels, comprising six case bottles, six wine bottles and one pharmaceutical bottle. All vessels are characteristic of those produced during the late seventeenth century, specifically the wine bottles which are type D forms.

Although case bottles are more difficult to date accurately, five of the six bottles are type B forms, which suggests a manufacturing date of sometime after 1650.

Of the 13 vessels excavated from the byre, the three wine bottle, vessels 2 and 3 (Event 33), and vessel 1 (Event 47), and two case bottles, vessels 1 and 2 (Event 33), each consists of a single base and/or lip fragment, and numerous possible body fragments. All forms could be determined with the exception of vessel 1 (Event 47). It is probable that the inhabitants of Ferryland broke these five bottles sometime prior to the French attack of 1696. Broken glass on the floor of the byre would likely pose a risk to certain animals, therefore, the majority of larger fragments were collected and disposed of elsewhere, leaving only a few base and body fragments. A large number of these fragments are also small, indicating that animals trod upon them. Although it is unknown exactly when the inhabitants of Ferryland discarded these bottles, two of the wine bottles, vessels 2 and 3 (Event 33), appear to be type D forms, which suggest a post 1689 date. One type B case bottle, vessel 2 (Event 33), could also coincide with this date. The remaining case bottle, vessel 1 (Event 33), represented by a base fragment, is a type A form. Although, it is unknown how long production of this form continued many of these vessels appear in the 1673 destruction level. This base fragment indicates that the residents of Ferryland constructed the byre shortly after the Dutch attack of 1673.

The three remaining type D wine bottles, vessel 1 (Event 33), and vessels 1 and 2 (Event 45), and four type B case bottles, vessel 3 (Event 33), vessels 1 and 2

(Event 45), and vessel 1 (Event 47), suggest a different set of events. Of these seven vessels, a fire is evident from two of the wine bottles. Although partially reconstructable, the extent of deformation prevented a complete restoration of these bottles. A large number of mends were also found between fragments of the unburnt wine bottle and two case bottles. The wine bottle, in particular, is approximately 90 percent complete. The one pharmaceutical bottle base, vessel 1 (Event 33), recovered during excavations, has a conical kick-up and is light green in colour. All seven bottles appear to have been broken in the French attack of 1696.

There are two plausible scenarios to account for the presence of bottles in the byre. One, is that they did not contain alcohol and the inhabitants of Ferryland recycled them for other purposes. There is another more convincing explanation, especially when considering the fact that excavations also produced large quantities of ceramic sherds as well as 25 tobacco pipe bowls and 500 stems. Some of these artifacts may have been associated with the possible existence of a loft, used to accommodate seasonal fishing servants (Gaulton 1997: 73-74). The existence of a loft could account for the presence of glass bottles in the byre destruction layer, not to mention the clay tobacco pipes on the cobblestone floor. Once broken or clogged, clay pipes could easily be discarded by throwing them down onto the byre floor. The five glass bottles, specifically the reconstructable vessels, possibly contained alcohol belonging to the servants residing in the loft and were burned

there by the French in 1696. This assumption would account for the burning and deformation of a number of vessels. The existence of the loft would further account for the other bottles in the byre, especially those represented by small fragments. People could have discarded bottles by throwing them down onto the cobblestone floor. Then, someone collected the larger fragments and disposed them elsewhere. The distribution of fragments and vessels suggest that the loft was probably located above the cobblestone floor in the western half of the byre (Figure 8.6).

### **8.6 Early-Eighteenth-Century Destruction**

In the course of excavations at Area C, archaeologists uncovered a number of glass bottles associated with eighteenth-century occupation or destruction levels. Events 19 and 31, in particular, produced 277 early-eighteenth-century glass bottle fragments (Table 8.5). The majority of these, 255 or 92 percent, are wine bottle fragments, whereas only 22 or 7 percent are case bottle sherds. The remaining two glass fragments are body sherds belonging to a pharmaceutical phial. The 255 fragments represent a total of 15 vessels of which the overwhelming majority, thirteen, are wine bottles. Excavations produced only one case and one pharmaceutical bottle. Each of these vessels is described according to the event they are associated with.



Event 19, a layer of charcoal that overlies the 1696 destruction layer, contained ten wine bottles and only one case bottle. Of the ten identified vessels, four (vessels 1, 2, 3 and 6) are type F wine bottles which date from 1699 to 1721. All four of these bottles are burnt, although partially reconstructable. Vessels 1, 3 and 6 have their bases reconstructed and the resting points show moderate wear. This suggests at least some use prior to breakage. These three vessels are noteworthy since they have identical resting point diameters of 111mm as well as very similar indent heights, pontil mark diameters, and base diameters. These measurements are very similar or identical to those found on comparative vessels 62, 64 and 68, which have a capacity of 795ml to 950ml. The type F wine bottle, vessel 2, has light wear marks on the resting point, suggesting little use. This vessel has an identical neck height of 63mm and a bottle height of 140mm also comparative to vessel 62. Vessel 2 is of further note since it has a recognizable initial, the letter "P," scratched onto its body.

The distribution of the four type F wine bottles reveals an interesting pattern. While archaeologists excavated vessels 1, 2 and 3 within close proximity of each other, vessel 6 was located six meters to the north. Fragments of all four vessels were also dispersed over a five to eight meter area. Taking into consideration the similarities in measurements, dispersal patterns, and the fact that these four bottles are burnt and partially reconstructable, it is evident that all four vessels were broken at the same time. The presence of charcoal as well as the

dispersal pattern further suggests that they were broken during a violent episode. This event likely occurred in 1705, when the French attacked Ferryland and “destroyed all” as well as “carried away as prisoners all the inhabitants” (Prowse 1895: 262-263). The fact that excavators recovered these bottles from a charcoal layer may further indicate the existence of a wooden structure. The bottles may have been situated upon a shelf or table that collapsed with the fire. As the bottles fell to the floor, their fragments were dispersed. This scenario could certainly account for the breakage of vessels 1, 2 and 3, whose fragments were mixed together in the same area.

Each of the remaining six wine bottles recovered from Event 19, consists of a small number of base or neck fragments, among numerous body fragments. The lack of base and neck fragments precluded the identification of three of these bottles, vessels 7, 8 and 10. The remaining three wine bottles, vessels 4, 5 and 9, as well as the one case bottle are typical of mid- to late seventeenth-century forms. Vessel 4, a type C form, consists of a base that has considerable wear marks on the resting point. This bottle has a similar shape and measurement to comparative vessel 35, which dates between 1675 and 1690 and has a capacity of 852ml. Vessel 5 is unusual in that it has a small resting point diameter of 50mm and a base diameter of 76mm. This vessel appears to be a miniature version of the “shaft and globe” type bottle. The heavy wear marks on the resting point of this vessel indicate extensive usage prior to breakage. Such bottles were most likely used in

the pharmaceutical trade. It is also possible that they contained oils or vinegar (Noël Hume 1969a: 75). The remaining bottle, vessel 9, represented by a base and neck fragment, is typical of the type B "shaft and globe" form and dates between 1660 and 1670. The one case bottle recovered from Event 19 is a type A form which would certainly pre-date the 1705 destruction.

Considering the date of vessels 4, 5 and 9, it is obvious that they were not part of the 1705 French destruction layer. It is likely that the small fragments for each of these vessels was already present on the ground at the time of the French attack. The fragments belonging to the three unidentified vessels may have also been discarded before the 1705 attack, however, it is impossible to be certain without the positive identification of each form. Event 31 consists of a 5cm to 10cm thick layer of dark grey soil with large fragments of wood charcoal. Although this event has not been associated with any structure, it appears to represent a post-1696 occupation level with charcoal from the overlying 1705 destruction level. This would date the occupation level to an eight year period. During excavations, archaeologists recovered three wine bottles and one pharmaceutical bottle, of which all four of which are identified. Vessel 1 is a type D wine bottle and is approximately 80 percent complete. This bottle has the initials "N W" scratched onto the shoulder of the bottle. Although impossible to identify, the presence of these initials suggests that the bottle was the private possession of a resident of Ferryland. The resting point of this vessel exhibits moderate wear

marks, attesting to its use prior to breakage. Vessel 2 consists of a neck and a number of base and body fragments. The style of the neck and a number of measurements are comparable to those found on type F wine bottles, which date from 1699 to 1721. The remaining wine bottle, vessel 3, consists of a lip fragment that is typical of those found on type F wine bottles. The pharmaceutical bottle is cylindrical-shaped, has a blow-pipe pontil mark, is a pale blue in colour, and has a conical-shaped kick-up. Although common throughout the eighteenth century, this form appeared in the mid-seventeenth century (Noël Hume 1969a: 74).

## Chapter Nine

### AREA E GLASS

#### 9.1 Introduction

This chapter focuses on the analysis of bottle glass fragments recovered during the excavation of a structure at Area E (Figure 9.1). Situated at the crest of a hill at the southern edge of the known site, the structure measures approximately 3.5m by 9m and has two gable-ended fireplaces. Aside from bottles, other artifacts associated with the structure include drinking vessels (at least 25 stoneware mugs) and tobacco pipes. The fact that artifacts are skewed toward objects associated with alcohol consumption suggests that this structure is a tavern or dwelling used as a tavern.

#### 9.2 The Glass

The excavation of the tavern produced 883 glass bottle fragments. The overwhelming majority of these, 853 or 97 percent, are wine bottle sherds. Excavations uncovered only 23 case bottle sherds and 6 pharmaceutical bottle fragments. These 883 fragments represent a total of 30 vessels, comprising 26 wine bottles and 2 pharmaceutical bottles (Table 9.1). The identification of the two remaining bottles was not possible.

Area E's glass is associated with four main events, the most recent being Event 51, the plough zone. Although disturbed, the analysis of glass from this event, assisted in dating the site. Cultivated to a depth of approximately 30 cm, Event 51 produced 130 bottle fragments, of which 17 are recent. The 113 eighteenth-century or earlier bottle fragments represent at least five wine bottles, of which one, vessel 5, was not identified. Vessels 1 and 2 each consist of a partial base that has a deep and rounded kick-up. These bottles are early cylindrical forms that have marvered sides and extensive wear marks on their resting points. While they are comparable to forms that Dumbrell dates to the 1720s (1983: 30), measurements are similar to forms that Jones dates to the 1730s (1986: 134). Vessel 3, which consists of several base, body, and neck fragments is a later cylindrical form that has a resting point diameter of approximately 60mm. It is likely that this bottle dates to the last quarter of the seventeenth century. The remaining bottle, vessel 4, consists of a small lip fragment that has measurements typical of the type F form.

The transitional level connecting Events 51 and 52 contained 71 wine bottle fragments, comprising two vessels. The first vessel consists of a neck belonging to a cylindrical bottle. Jones' (1986: 116) neck fragment formula, yields a date of  $1761 \pm 22$  years. The second bottle, represented by a base, lip and numerous body fragments, has a date of  $1792 \pm 33$  years.

Event 52, found directly below Event 51, consisted of a greyish, loam-like soil that comprised the bulk of the mound at Area F. The excavation of this Event uncovered 423 glass fragments, comprising 12 bottles. While ten of these are wine bottles, the remaining two, vessel 11 and 12, were not identified, although vessel 11 is a possible case bottle. Only one wine bottle, vessel 2, was not identified or dated. Represented by base fragments, two additional wine bottles, vessels 1 and 10, were cylindrical in shape, therefore dating after 1735. Vessels 3 and 4 each consist of a neck belonging to a cylindrical bottle. Jones' neck fragment formula, indicates bottle dates of  $1754 \pm 22$  years and  $1760 \pm 22$  years, respectively. Although consisting of base and neck fragments, vessels 5 and 7 are likely type F forms which date between 1698 and 1721. Vessel 6, represented by half a lip, is similar to styles dated to the early 1760s (Jones 1986: 60). Vessel 8, represented by a neck, is similar to an example dated 1767 (Jones 1986: 58, figure 30). Vessel 9 consists of a lip fragment that has an up-tooled string rim. Examples with this type of string rim date between 1770 and 1796 (Jones 1986: 59).

Along with bases and neck, the excavation of Event 52 uncovered three bottle seals. The earliest dated seal is that of "Wm. Smith 172?," a planter operating out of Trinity, Newfoundland (Matthews 1987). The second seal belongs to "Thomas Holdsw[orth] in Da[rtmouth] 17??" Holdsworth owned extensive properties at Ferryland during the first half of the eighteenth century (Ruggles-Brise

1949: 20, 113). The remaining seal is that of "Wm. Saunders [Ferr]yland," a planter operating in and before 1763 (Pope 1993).

Event 66, an occupation layer possibly associated with the tavern, is situated directly east of the eastern fireplace and below Event 52. Excavations uncovered 167 bottle fragments, comprising four wine bottles and two pharmaceutical bottles (Figure 9.2). The four wine bottles include at least three different forms. Vessel 1 is a complete type F base that has heavy wear marks along its resting point, indicating extensive use prior to breakage or disposal. Vessel 2 is a squat cylindrical wine bottle. Jones' body/base fragment formula, yields a date of  $1782 \pm 33$  years (1986: 116). However, the form of the bottles as well as other artifacts indicate that a date around the 1750s is more likely. Vessel 3 consists of a partial base that has a deep kick-up as well as a base diameter that is larger than the 1750s cylindrical forms. This bottle is similar to a type that Dumbrell dates to the 1720s (1983: 63). This form has straight sides that taper in toward the neck. The remaining wine bottle, vessel 4, is also a cylindrical form and is similar to that of vessel 2.

The two pharmaceutical bottles recovered from Event 66 have a similar capacity since their base diameters are both 35mm. Vessel 1 is a moulded, cylindrical-shaped vial that has a shallow kick-up and a pale blue colour. Such bottles were in common production throughout the eighteenth century (Noël Hume 1969a: 74). The second pharmaceutical bottle is similar, except that the resting



point is more rounded and the colour is a lime green. Unlike the other pharmaceutical type bottles excavated at Ferryland, the resting point on vessel 2 also shows signs of wear on the resting point. Noël Hume, in discussing moulded cylindrical pharmaceutical bottles, notes that over the course of the eighteenth century, conical-shaped kick-ups become less pronounced (1969a: 74). This statement appears to be correct since the kick-up on a cylindrical phial excavated from the 1705 destruction layer at Area C (Event 33) is deeper than those on the two vessels recovered from Event 66. Therefore, these latter two vessels are likely to have a post-1705 date.

Event 95, also located directly east of the eastern fireplace yet below Event 66, is a clay lens that contains fragments of charcoal, wood and burnt bone. It is possible that this event represents a midden associated with the tavern. Along with fireplace ashes and charcoal, occupants also discarded clay pipes, Westerwald mugs and 95 wine bottle fragments, comprising four vessels. The wine bottles comprise two distinct forms. Vessel 1, which consists of a base, body and lip fragment, is a typical type F form and dates from 1698 to 1721. The resting point of this bottle indicates extensive use prior to breakage. Vessels 2 and 3 both consist of partial bases, and both are possible type F forms. The remaining bottle, vessel 4, consists of many base and body fragments belonging to a cylindrical wine bottle. The production of cylindrical-shaped bottles began during the mid-1730s (Jones 1986: 9).

Event 103, a brown-coloured soil that underlies Event 66 in Unit E97 S35 yielded one other wine bottle. Represented by a base fragment only, this bottle has a high indent and a resting point diameter of approximately 90mm. Although unidentified, it is a post-type F form.

### 9.3 Interpretation

The earliest level associated with Area E's structure is Event 95, a possible midden. The distribution of the four bottles recovered from this event is noteworthy since they were all found in the same 1m unit. This suggests that someone disposed of them together and may have collected them from the tavern floor. The presence of a cylindrical bottle form, vessel 4, would put the date of disposal to no earlier than 1735. Although manufactured no later than the early 1720s, vessels 2 and 3 can fit in with this date, since they consist of partial base fragments. These two vessels could have been still lying around the tavern floor as late as the 1730s. Vessel 1, however, consists of a complete type F base and body. It is unlikely that this bottle would have remained on the floor of the tavern for any length of time. It is possible, though, that it remained in use until the 1730s when it was broken and discarded. The heavy wear marks on the resting point of this bottle also suggest that it was in use for a long period of time.

Event 66, the occupation level associated with the structure, is also of note since excavations within the interior space of this structure produced only 28 bottle

fragments. This is not surprising since bottle fragments lying around the floor of the structure would pose a risk to occupants. It appears that someone collected most of the fragments and deposited them in the same location as the midden (Event 95) or directly west of the western fireplace. Overall, the bottle glass recovered from Event 66 dates the structure from roughly 1700 to the 1760s.

After the tavern fell into disuse, sometime during the 1760s, the residents of Ferryland filled it in, possibly to reclaim the land for cultivation. In order to cover the tavern remains, they used nearby soil (Event 52) that contained artifacts that someone previously discarded from the tavern. The severe fragmentation of the glass sherds as well as the lack of mends between them also indicates that Event 52 represents a secondary deposit. Overall, Events 51, 52 and 66 each contain bottles that date from roughly 1700 to the 1760s. The three bottle seals recovered from Event 52 further confirm this date. These three events suggest that the abandonment and filling in of the tavern occurred about the same time, circa 1760.

## Chapter Ten

### AREA F GLASS

#### 10.1 Introduction

This chapter deals with the analysis of bottle glass fragments recovered from a charcoal layer located within a ditch at Area F. The ditch runs north to south and measures approximately 6m wide and over 1m deep. It likely comprised a portion of the defences of the eastern boundary of the colony. Aside from glass sherds, excavations uncovered large quantities of pottery fragments as well as hundreds of clay pipe stems and bowls. One of these ceramics, a North Devon Sgraffito sherd, carries the number "98," presumably for the year 1698. The majority of clay pipe bowls recovered from this layer are Ferryland type P forms, which date between 1660 and 1710 (Pope 1988: 32; Gaulton, pers. comm.).

Excavations at Area F produced 232 bottle glass fragments associated with six related Events (290, 293, 294, 297, 303 and 304) (Table 10.1). The overwhelming majority of fragments, 171 or 73 percent, are wine bottle sherds. Excavations uncovered only 54 case bottle sherds and 7 pharmaceutical bottle fragments. These 239 fragments represent a total of nine vessels, comprising five wine, two case and two pharmaceutical bottles.

## 10.2 Case and Pharmaceutical Bottles

A small number of neck and base fragments represents each of the two case bottles recovered from Area F. One of these, vessel 1, is a type B bottle base which is identical to those recovered from the 1696 byre destruction level. The other bottle, vessel 2, has a typical type A neck and lip and is similar to those excavated from the storehouse and privy occupation levels. One of the two pharmaceutical bottles excavated at Area F, vessel 2, is complete, although partially melted from being exposed to fire. This free-blown bottle is medium-green in colour and has a capacity of approximately 28ml. The other pharmaceutical bottle, vessel 1, consists of a pale green base fragment. Its large base diameter suggests that it had a fairly large capacity, certainly greater than 28ml.

## 10.3 Wine Bottles

Excavations at Area F produced five wine bottles. One bottle, vessel 5, consists of only half a lip fragment; making identification impossible. The remaining four bottles are type E and F forms. Vessel 1 (type E) specifically appears to have all its fragments, although the extent of deformation caused by burning limited the amount of reconstruction. Vessel 2 (type F) is approximately 90 percent complete, with only the lip showing signs of burning. Although not mendable, a bottle seal with the name "John Strang" matches and likely belongs to this vessel. Vessels 1 and 2 have no wear marks on their resting points which may

indicate that they saw little use before breakage. Vessel 3 (type E) consists of a neck and large amount of the body, yet most of the base is missing. This bottle is of further interest since the unidentified initials, "H \* H," are scratched into the body. Both vessels 2 and 3 were likely personal possessions of two residents or visitors at Ferryland during the late seventeenth century. The remaining type F bottle, vessel 4, consists of a neck, base, and three body fragments. Vessels 3 and 4 both have heavy wear marks on their resting points, indicating extensive use prior to breakage.

#### 10.4 Interpretation

The two burnt wine bottles and one burnt case bottle suggests that a fire caused the breakage of three of the nine vessels recovered in the trench. Considering the fact that all identified wine bottles are type E and F forms dating from 1682 to 1721, this was likely the fire of 1696, when the French attacked Ferryland and "burned all." It is probable that the rebuilding of the settlement involved cleaning up of the 1696 fire rubble and disposing it in the trench at Area F. The trench would have provided an easily accessible location to discard the burnt remains of nearby structures. This scenario accounts for the heavy charcoal layer in the trench as well as the burnt artifacts, including the three bottles. The likelihood that this charcoal layer represents a secondary deposit is suggested by the distribution of artifacts. For instance, fragments from two of the burnt wine bottles

were dispersed over a 12m area within five different strata. This suggests that the residents of Ferryland deposited one load of rubble on top of another and in different areas of the trench.

The recovery of a number of unburnt bottles and artifacts within the charcoal layer, however, suggests a different set of events. It is possible that some of the residents involved in the rebuilding of the settlement, or some inhabitants living near the trench, used it as a midden. This would account for the presence of a type A case bottle base as well as a number of post-1696 destruction level artifacts. For example, a North Devon pottery sherd with a [16]98 date and a bottle seal marked with the name "John Strang" were found in this deposit. John Strang was master of the ship *Ann*, of Barnstaple, that was fishing at Ferryland in 1698 and 1699 (Pope 1993). Strang was also a merchant at Bideford and Barnstaple and in 1707 he petitioned the Board of Trade for protection of the fishery at Ferryland (Pope 1993). It is likely that Strang broke one of his personalized bottles while at Ferryland in 1698 or 1699 and that he, or another resident, collected and deposited the fragments into the trench at Area F. The bottle glass supports the idea that a section of the trench at Area F represents a secondary deposit of 1696 fire rubble as well as a midden used by the residents of Ferryland during the last years of the seventeenth century and possibly during the early eighteenth.

## Chapter Eleven

### SEALED BOTTLES

#### 11.1 Introduction

The Ferryland bottle glass collection includes nineteen bottle seals, comprising seventeen different types. The following chapter attempts to identify the owners of these seals and to provide some insight into the practice of sealing bottles.

#### 11.2 Bottle Sealing

The practice of sealing began shortly after the introduction of the wine bottle. The seal consisted of a molten glob of glass which the glassblower placed on the shoulder of the bottle and impressed with a circular seal matrix. Inscribed on this seal matrix was a name or initials, sometimes a date, coat of arms or crest (Ruggles-Brise 1949: 15). It appears that gentlemen, followed by taverns, were the first to use sealed bottles. By the 1720s wine merchants adopted the practice and around 1740 institutions such as Oxford colleges even began to have their bottles sealed (Morgan 1976: 16; Noël Hume 1969a: 61).

#### 11.3 Cost and Function

Over the years, many researchers have questioned the purpose of bottle



seals. Buckley assumes that gentlemen and taverns adopted the practice of sealing in order to protect their bottles from theft, especially when they sent them to the vintner for filling (1932: 191). Dumbrell supports this idea, noting that "with so many bottles arriving at the vintner's for filling it was an obvious precaution to have them marked" (1983:19). It is likely that the tavern keeper had his bottles sealed for this reason since it encouraged customers to return the bottles to the same establishment. Such a seal would also serve as a form of advertisement. However, it is unlikely that theft of a gentleman's bottles was common enough to warrant the extra cost involved in having his bottles marked.

The household account books of William Russell, the Fifth Earl of Bedford at Woburn Abbey, suggest that it was an expensive yet common practice for the gentleman to purchase large quantities of sealed bottles (Thorpe 1938). For instance, on March 5, 1671, bottle manufacturer Edmond Lewin supplied the Earl with "12 dozen glass bottles with my Lords Coat upon them at 5s per dozen" In July of 1672, the Earl received "2 dozen of marked quart glass bottles at £3 6s" and in September he acquired "6 dozen of marked quart glass bottles at £1 13s." Mr. Green supplied both of these second orders, however, the prices were 6d per dozen higher than those from Mr. Lewin in 1671. Mr. Apthorpe provided the Earl's next orders of bottles possibly because Mr. Green's prices were too high. In March of 1676, Apthorpe supplied "2 dozen plain, quart glass bottles for 7s" and a month later he supplied "18 dozen and 3 quart sealed glass bottles for £4 2s

2d." Apthorpe supplied sealed bottles at 4s 6d per dozen, a shilling a dozen higher than the cost of plain bottles, but also a shilling lower than Green's price for sealed bottles. In February of 1676, the Earl received his last order of sealed bottles since the remaining orders were for plain bottles. In total, between 1671 and 1691, the Earl ordered 1,120 dozen quart wine bottles (approximately 700 sealed) representing an annual consumption rate of 58 dozen or 696 bottles. With such large quantities of bottles being ordered each year, it is likely that breakage was common. Surviving accounts for a banquet held in 1703, in honor of the Second Duke of Bedford, recorded "nineteen dozen of bottles broken and lost" (Wills 1977: 59).

Although the account books of the Earl of Bedford indicate that sealed bottles averaged one shilling a dozen more than plain bottles, there was an additional cost. Before a gentleman could order sealed bottles, he first had to pay an engraver to make and cut a brass die (Dumbrell 1983: 20). In addition, it appears that every time a gentleman requested a new order of bottles, he had a new seal made. For example, two of the three "P.K." seals excavated at Ferryland have different letter styles. A cheaper alternative was a clay stamp, similar to one uncovered during excavations of a glasshouse at Bolsterstone or single-letter stamps mounted in a wooden handle (Ashurst 1987: 202; Noël Hume 1969a: 61). Surviving bottle seals, though, indicate that gentleman rarely purchased single-letter stamps, and regardless of which material the seal was constructed from, an

additional cost was involved. In consideration of these extra expenses, it is likely that a gentleman did not have his bottles sealed simply to protect them from theft, as Buckley (1932) and Dumbrell (1983) suggest.

During the seventeenth and eighteenth centuries, a gentleman often ordered sealed bottles to commemorate events, such as marriages or births (Ruggles-Brise 1949: 31). A gentleman might order sealed bottles to refer to the year that he bottled wine. Most importantly, a sealed bottle was a status symbol. "Display, or conspicuous consumption, had always been a feature of the upper ranks of society..."; they fashioned an image of themselves through objects (Johnson 1996: 182, 193). The seventeenth century witnessed an increase in the ownership of objects or material goods. A materialistic attitude grew stronger as spaces became more private and activities, such as entertaining, moved inside the house (Johnson 1996: 16). The gentry or mercantile classes stayed at home and entertained in addition to going to inns or taverns (Johnson 1996: 186). It is during social gatherings in the home that the gentleman's personalized bottles or "frontstage goods", as Weatherall calls them, stood on the table in view of all his guests (1988: 26-7). This emphasis on display was directed at social inferiors as well as equals.

A status attachment associated with bottles is evident in two surviving seventeenth-century accounts that mention bottles. In 1665, John Evelyn, after visiting the "elegant" house of Mr. Povey, wrote in his diary that he admired

above all else “his pretty cellar and ranging of his wine bottles” (Bray 1907: 387). Similarly, in 1663, Samuel Pepys wrote in his *Diary* about “Mr. Rawlinson’s where I saw my new bottles, made with my crest upon them, filled with wine, about five or six dozen of them” (Armstrong 1970: 220). Pepys seemed to be excited and proud that he could afford sealed wine bottles and even felt the event noteworthy enough to record.

During the mid-seventeenth century, gentleman in the New World had adopted the practice of glass bottle usage and sealing. For instance, during excavations at Jamestown, Virginia between 1934 and 1956, archaeologists uncovered 104 bottle seals comprising 34 different types. Similarly, excavations at Ferryland have produced 19 bottle seals, all of which belong to the most prominent colonists. The connection between wealth and the ownership of sealed bottles is evident since the identified seals belong to the most prominent residents. Furthermore, gentlemen in the New World had to pay additional costs for shipping, packing, and agent commission fees (Wills 1977: 63).

#### 11.4 The Seals

The Ferryland glass collection contains nineteen bottle seals, eight of which date to the seventeenth century. Most of the remaining seals date to the first half of the eighteenth century. All nineteen have the initials or names of private individuals on them. Of the nine seals containing initials, three contain a

third initial that represents a spouse's given name. One of these seals also carries the date 1723, which may signify the year that the couple married. The remaining nine seals contain the names of private individuals, the earliest dated example being "John Curtis 1695." Two of these seals appear to contain the town names of "Dartmouth" and "Ferryland."

#### 11.4.1 Seals



##### 1. I R

Recovered from Stratum 1a (Area C), which represents the 1673 storehouse destruction level, this is probably the seal of John Rayner, sea captain, co-governor and representative of Baltimore to Ferryland in 1660, after Baltimore's right to the colony was restored (Pope 1993).



## 2. PK

Three seals were excavated from mid- to late seventeenth-century contexts at Areas C and G. This is likely the seal of Phillip Kirke I, third son of Sir David and Sara Kirke. Phillip was a planter, merchant, and boatkeeper at Ferryland beginning in the 1640s. Philip operated five boats at Ferryland in 1675 (Pope 1992). He died as a prisoner of War at Placentia in 1697. Two of the three seals have different letter styles, indicating that Kirke ordered sealed bottles on two different occasions.



## 3. John Curtis 1695

Excavated from Event 267, Area F, a layer of clay found directly above the cobble street, this is the seal of John Curtis, a planter operating out of Port Bonavista,

Newfoundland, as early as 1675 (Berry 1675). Curtis owned one boat and employed two men.



#### 4. Sloss 1699

Recovered from Event 222, Area B, which consisted of loosely packed rocks placed outside the wall of a house following its destruction in 1696, this seal joined onto a glass fragment recovered in a deposit (Event 243) immediately above the cobblestone street. The owner of this seal has not been identified.



#### 5. Wm. Smith 172?

Excavated from Event 52, Area E, this seal is associated with the remains of an early- to mid-eighteenth-century tavern or dwelling that functioned as a tavern. It is the seal of William Smith who was a successful planter operating out of

Trinity, Newfoundland. Smith owned three boats and employed 27 servants. He died about 1754 (Matthews 1987).



**6. Tho Holdsw[orth] in Da[rtmouth] 17??**

Recovered from Event 52, Area E. This is the seal of Thomas Holdsworth of Dartmouth. The Holdsworths were adventurers in the Newfoundland fishery (Ruggles-Brise 1949:20, 113). Thomas Holdsworth owned extensive properties on the North Side of Ferryland during the first half of the eighteenth century (Pope 1993).



**7. John Strang**

Found during the excavation of Event 297, Area F, which is located in a trench that originally formed part of the colony's defenses. Event 297 represents a



secondary deposit of 1696 fire rubble, as well as a midden that was used by the residents of Ferryland during the last years of the seventeenth century and possibly during the early eighteenth century. The seal is that of John Strang, Master of the ship *Ann*, of Barnstaple, which fished at Ferryland in 1698 and 1699 (Pope 1993). John Strang was a merchant at Bideford and Barnstaple and in 1707, he petitioned the Board of Trade for protection of the fishery at Ferryland (Pope 1993).



#### 8. P Gely 1752

Excavated from Event 1, located directly north of the seawall at Area C. This Event consisted of a layer of sand, gravel and rock that was dredged from the Pool in 1961. The seal belongs to Philip Gely, a resident of Lympstone, Devon, England who was born in 1720-21. Philip conducted a survey of Bengers Plantation in Ferryland in 1754 (Matthews 1987).



### 9. George Davis

Excavated from Event 1, Area C. George Davis was a merchant of Topsham, Devon, Poole, Dorset and London, England as well as Carbonear, Newfoundland. He was baptized on March 11, 1725 and died in Newfoundland (possibly Carbonear) in 1789. He began his career as an agent for merchants Pike and Green at Carbonear in 1757 and shortly after, became a merchant himself. In the late 1770s, Davis experienced financial difficulties and owed a large debt to John Green (Kennedy 1980).



### 10. B HE

Excavated from Event 24, Area C, a fill-layer immediately below the plough zone. This is possibly the seal of Humphrey Bryant ("HB") and his wife ("EB") or Henry Burdon and his wife (Pope 1993). Bryant was the Master of the *Bull*

*Frigate* of London that was fishing at Ferryland in 1698. Similarly, Bryant was the Master of the *Lamb* of Bideford that was fishing at Ferryland in 1708 (Pope 1993). He was one of several merchants of Bideford and Barnstaple and commander of ships resorting to Ferryland. He also petitioned the Board of Trade in 1707 for protection of the fishery at Ferryland. Henry Burdon was the Vice Admiral at Ferryland in 1707, at which time he signed a statement that Philip Kirke was the rightful owner of the Pool Plantation.



11. ? C

Recovered from Stratum 1a, Area C. Half a seal with one complete letter. A remaining portion of the first initial suggests that it was an "R." The owner of this seal has not been identified.



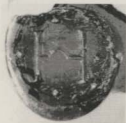
### 12. Peter Fewings

Excavated from Level 2, Area C, which represents the remains of an early eighteenth-century structure. Peter Fewings was Master of the *Waterford Galley* of Waterford, who fished at Ferryland in 1700 and 1701 (Pope 1992).



### 13. Wm. Saunders [Ferr]yland

Recovered from Event 52, Area E. This seal may belong to William Saunders, a Ferryland planter who was fishing out of "Peggins room" in 1763 .



## 14. H

Excavated from Event 63, Area D, which consists of a layer of beach gravel.

Possibly a merchant seal belonging to the Holdsworth family.



## 15. B TS 1723

Recovered from Ferryland Harbor. Possibly the initials of Thomas Burley ("TB") and his wife ("SB"). Thomas Burley was the Master of the *Thomas Burley* of Plymouth that fished at Ferryland in 1701(Pope 1993).



#### 16. Ino Robins 1735

Excavated at Buoy's Island. In 1673, there was a William Robbins listed as a planter at Ferryland. Although William died sometime before 1681, he did have a number of children (possibly John) and a wife who was listed as a boatkeeper. In 1726, a John Robins sold fish to Edward Burd at Ferryland.



#### 17. W HI.

Recovered from Event 287 (Area F), which represents a seventeenth-century midden. The seal probably belonged to Henry Wickley ("HW") and his wife ("IW"). Henry Wickley was master of the *Barnstable Merchant* fishing at Ferryland or Aquaforte in 1699 (Pope 1993).

## Chapter Twelve

### SUMMARY AND CONCLUSION

#### 12.1 Introduction

This thesis provides a model for the dating of wine bottles and fragments as well as answers to seven questions relating to bottle use at Ferryland. A brief summary of the results of the wine bottle dating model will be presented, followed by a review of a number of findings relating to bottle use.

#### 12.2 Dating Model Summary

The wine bottle dating model is based on measurements recorded on 70 complete and dated bottles in museum collections. Up to 20 separate attributes were measured on each of the 70 bottles. These bottles were separated according to six distinct types and the earliest and latest date of each type was noted. Dating the Ferryland wine bottles was achieved by measuring as many attributes as possible on each fragment. These attributes could then be compared to those recorded on each of the six types in order to determine the bottle type and production period. This dating method was successful since the change from one bottle form to another was sudden and most changes are in one direction. Necks suddenly became shorter and base and resting point diameters suddenly became wider. Each form also has a number of characteristic attributes as was shown in Chapter 5.

### 12.3 Glass and Function of Areas

The Ferryland glass assemblage also provides information regarding the function of a number of Ferryland's structures. The presence of seven case bottles on the forge floor supports the idea that the blacksmith shop was also a social center, a place where clients could eat, drink and relax (Light and Unglik 1984: 12; Pope 1989). In reference to Area C, the 55 bottles recovered during the excavation of the storehouse destruction level indicate that this structure was not just a place for work, but also a social center where alcohol consumption took place. The glass recovered from the byre at Area C, on the other hand, indicates that prior to its destruction in 1696, this structure likely served as a residence for fishers or some other inhabitants of Ferryland. Finally, the glass recovered from Area E indicates that this structure may have served as a tavern. The three bottles seals, in particular, indicate that at least some visitors brought their own supply of bottles.

### 12.4 Questions Summary

One goal of this thesis was to determine exactly when case, wine, and pharmaceutical bottles first arrived at Ferryland. Excavations at Areas B and C provided the answer to this question. In 1622, Captain Edward Wynne noted that "the forge hath been finished" (Pope 1993). The presence of case bottle fragments in the stone forge indicate that these bottles were utilized from the time that the colony was founded in 1621. Likewise, case bottles have been recovered from



early occupation layers associated with the storehouse and privy at Area C. Determining exactly when wine bottles were first utilized is indicated by the presence of three type A bottle bases in the occupation levels associated with the storehouse, which was destroyed in 1673. This indicates that the inhabitants of Ferryland likely possessed wine bottles shortly after 1650. Pharmaceutical bottles also appear to have been in use at Ferryland from an early date since fragments from these phials were recovered from the occupation level associated with the forge.

The changing use of case and wine bottles has also been determined from an analysis of Ferryland's glass. After the introduction of wine bottles in the 1650s, their use increased steadily. This is evident from the storehouse destruction level of 1673 which contained 25 wine bottles and 28 case bottle. The 1696 byre destruction level produced an equal number of both forms, however, the use of case bottles decreased rapidly by the end of the century. For example, the 1705 destruction level at Area C contained only one case bottle, in comparison to 13 wine bottles. It appears that wine bottles superceded case bottles at this time. Excavations at the tavern at Area E, which dates to the first half of the eighteenth century, produced 26 wine bottles and no case bottles.

Determining how bottles were used at Ferryland was accomplished by relying on the documentary record. The documentary and pictorial evidence reveal that bottles were mainly used in the alcohol trade, for serving and short-term

storage of beverages. Case bottles contained aqua vitae while wine bottles usually contained wines, and sometimes beer, cider and ale. With reference to Newfoundland and Ferryland, the historic record indicates that the inhabitants were avid consumers of alcohol and different varieties were available in bulk. Fishermen also earned cash incomes, and therefore were able to consume goods such as wines and spirits (Pope 1994: 226).

Another question related to bottle ownership was whether or not alcohol consumption was a private or public activity. Some of the bottles excavated at Ferryland were personal possessions. This is indicated by the fact that 19 carried seals and at least five have initials scratched onto them. The personal ownership of bottles is also indicated by the area in which they were excavated. For instance, bottles recovered from the byre may have belonged to fishermen residing in a loft. These bottles as well as those with initials may have contained an individual's private stock of alcohol. Certainly, when James Yonge noted in 1663, that while traveling from Renew's to Fermuse "I used to leave a bottle of brandy hid behind a tree, which I would mark, and take a dram in my way" indicates the private consumption of alcohol (Poynter 1963: 56). However, alcohol consumption was also a public activity and bottles were used communally. This would be the case revealed at the tavern at Area E, where glass bottles were found in association with large numbers of drinking mugs and clay pipes. The glass recovered from the forge also indicates the public consumption of alcohol. Similarly, the three case bottles

recovered from the occupation level associated with the storehouse may indicate that aside from loading or unloading ships, alcohol was consumed.

The connection between social status and the ownership of sealed bottles is suggested by the fact that all bottle seals excavated at Ferryland belong to the most prominent residents or visitors. However, the reasons for a gentleman purchasing sealed bottles was not simply to protect them from theft. Sealed bottles were one of the many ways for a gentleman to reveal his status in society.

## 12.5 Conclusions

Some of the most exciting work on material culture involves the theme of consumption: the various ways people bought, used, and eventually discarded objects (Johnson 1996: 188-189). The glass bottle is a prime example of one of these objects. The Ferryland site has proved to be a valuable source for the study of seventeenth- and early eighteenth-century bottle glass. It has produced an important, representative sample of the principal forms and types of container glass found on archaeological sites that date to the seventeenth-century in North America. For the above reason, this research in combination with the historical data, may be used by other archaeologists in their analysis of bottle glass. The dating model may also be able to eliminate the many discrepancies that exist in the dating of wine bottles, thus increasing their interpretative value. Analysis of Ferryland's bottle glass can therefore contribute to our knowledge of seventeenth-century artifact trade, availability, and use.

## REFERENCES CITED

- Anon.  
1933 *Loan Exhibition of Drinking Vessels, Books, Documents, etc., etc., Held at Vintners' Hall, London*. Catalogue of the Wine Trade.
- Armstrong, William  
1970 *The Diary of Samuel Pepys*. University of California Press, Berkeley.
- Ashurst, Denis  
1987 Excavations at the 17th-18th century Glasshouse at Bolsterstone and the 18<sup>th</sup> century Bolsterstone Pothouse, Stockbridge, Yorkshire. *Post-Medieval Archaeology* 21: 147-226.
- Baker, Vernon  
1980 Glass Wine Bottles. In *Burr's Hill: A 17<sup>th</sup> Century Wampanoag Burial Ground Warren, Rhode Island*, edited by Susan Gibson, pp. 58-66. Studies in Anthropology and Material Culture, Vol. 2. The Haffenreffer Museum of Anthropology, Brown University.
- Banks, Fay  
1997 Wine Drinking in Oxford 1640-1850. *British Archaeological Reports British Series* No. 257. Oxford.
- Baxter, M. J.  
1988 The Morphology and Evolution of post Medieval Wine Bottles Revisited. *Science and Archaeology* 30: 10-14.
- Bernt, Walther  
1969 *The Netherlandish Painters of the Seventeenth Century*. Vol. 1. Phaidon Press, London.
- Berry, Sir John  
1675 *A List of ye Planters Names who: an Accnt. Of their concerns from Cape de Raze to Cape Bonavista: viz. Great Britain, Public Records Office [PRO], Colonial Office [CO] 1/35, 16.*
- Bradford, Sarah  
1969 *The Englishman's Wine The Story Of Port*. Macmillan and Co., London.

Braudel, Fernand

- 1979 *The Structure of Everyday Life: Vol. 1, Civilization & Capitalism 15th-18th Century*. Harper and Row, New York.

Bray, William (editor)

- 1907 *The Diary of John Evelyn*. J. M. Dent and Sons, London.

Brown, Christopher

- 1984 *Scenes of Everyday Life: Dutch Genre Painting of the Seventeenth Century*. Faber and Faber, London.

Buckley, Francis

- 1914 *The Taxation of English Glass in the Seventeenth Century*. Law, London.  
1932 Old English Glass. *The Antique Collector* 3(8): 191-193.

Campbell, Alister

- 1954 Bottles of Great Charm. *Antique Dealers and Collector's Guide* September: 23-25.

Carillo, Richard

- 1972 English Wine Bottles as Revealed by a Statistical Study: A Further Approach to Evolution and Horizon in Historical Archaeology. *Conference on Historic Site Archaeology Papers* 7(4): 290-317. University of South Carolina, Columbia, South Carolina.

Carter, Matthew

- 1997 *The Archaeological Investigation of a Seventeenth-Century Blacksmith Shop at Ferryland, Newfoundland*. Unpublished M. A. thesis, Department of Anthropology, Memorial University of Newfoundland.

Carter, M., B. Gaulton and J. Tuck

- 1998 Archaeology at Ferryland 1997. *Avalon Chronicles* 3: 49-62.

Cell, Gillian

- 1969 *English Enterprise in Newfoundland, 1577-1660*. University of Toronto Press, Toronto.

Clark, Peter

- 1983 *The English Alehouse: a Social History 1200-1830*. Longman Group, New York.

Donnachie, Ian

- 1979 *A History of the Brewing Industry in Scotland*. John Donald Publishers, Edinburgh.

Douglas, R. W., and S. Frank

- 1972 *A History of Glassmaking*. G. T. Foulis and Co., Oxfordshire.

Dumbrell, Roger

- 1983 *Understanding Antique Wine Bottles*. Antique Collectors' Club, Suffolk.

Dunsmuir, Richard

- 1976 Old and Rare English Wine Bottles. *Antique Collector*, August: 11-31.

Fairbanks, Jonathan and Robert Trent

- 1982 *New England Begins: The Seventeenth Century*. Vol. 2. Museum of Fine Arts, Boston.

Faith, N.

- 1986 *Cognac*. Hamish Hamilton, London.

Faulkner, Alaric and Gretchen Faulkner

- 1987 *The French at Pentagoet 1635-1674: An Archaeological Portrait of the Acadian Frontier*. The Maine Historic Preservation Commission, Maine.

Forbes, R. J.

- 1956 Food and Drink. In *A History of Technology, the Mediterranean Civilizations and the Middle Ages, 700 B.C. to A.D. 1500*, edited by C. Singer, E. J. Holmyard, A. R. Hall and T. I Williams, 2: 103-146. Clarendon Press, Oxford.

Francis, Alan David

- 1972 *The Wine Trade*. Adam and Charles Black, London.

Gaulton, Barry

- 1997 Seventeenth-Century Stone Construction at Ferryland, Newfoundland (Area C). Unpublished M. A. thesis, Department of Anthropology, Memorial University of Newfoundland.

- Godfrey, E.  
1975 *The Development of English Glassmaking, 1560-1640*. University of North Carolina Press, Chapel Hill.
- Hale, William  
1968 *The Horizon Cookbook and Illustrated History of Eating and Drinking through the Ages*. American Heritage Publishing Co., New York.
- Harper, J. R.  
1960 In Quest of Lord Baltimore's House at Ferryland. *Canadian Geographical Journal* 61(3): 106-114.
- Harris, Jane  
1981 *Glassware Excavated from Fort Anne, Nova Scotia*. History and Archaeology, No. 45: 123-198. National Historic Parks and Sites Branch, Environment Canada, Ottawa.  
1979 *Eighteenth-Century French Blue-Green Bottles from the Fortress of Louisbourg, Nova Scotia*. History and Archaeology, No. 29: 83-149. National Historic Parks and Sites Branch, Environment Canada, Ottawa.
- Head, C. Grant  
1976 *Eighteenth Century Newfoundland: A Geographers Perspective*. The Carlton Library No. 99. McClellan and Stewart, Toronto.
- Henkes, Harold E.  
1994 *Glass Without Gloss: Utility Glass from Five Centuries Excavated in the Low Countries, 1300-1800*. Rotterdam Papers 9, A Contribution to Medieval and Post-Medieval Archaeology. Coördinatie Commissie van Advies inzake Archeologisch Onderzoek binnen het Ressor Rotterdam, Rotterdam.
- Howley, M. F.  
1979 *Ecclesiastial History of Newfoundland*. Mika Publishing Company, Belleville, Ontario. [1888.]
- Hudson, J.  
1961 Seventeenth Century Wine Bottles and Seals Excavated at Jamestown. *Journal of Glass Studies* 3: 78-89.

## Hughes, G. B.

- 1955 Discovered in the Cellars. *Country Life*, 16 June: 1575-1576.  
 1958 *English Glass for the Collector 1660-1860*. Lutterworth Press, London.

## Johnson, Matthew

- 1996 *An Archaeology of Capitalism*. Blackwell, Massachusetts.

## Jones, Olive

- 1986 *Cylindrical English Wine and Beer Bottles, 1735-1850*. Studies in Archaeology, Architecture and History, National Historic Parks and Sites Branch, Environment Canada, Ottawa.

## Kelso, William M.

- 1984 *Kingsmill Plantations, 1619-1800: Archaeology of Country Life in Colonial Virginia*. Academic Press, Orlando, Toronto.

## Kennedy, Earl

- 1980 Interim Report on the Family of George Davis (died 1789), Merchant of Carbonear, Poole and London. Report on file, Maritime History Archive, Memorial University of Newfoundland.

## Latham, Robert and William Matthews (editors)

- 1971 *The Diary of Samuel Pepys*. Vol. 4, 1663; Vol. 7, 1666. Bell and Sons, London.

## Leeds, E. T.

- 1914 On the Dating of Glass Wine Bottles of the Stuart Period. *The Antiquary*, August: 285-290.

## Light, J and H. Unglik

- 1984 *A Frontier Fur Trade Blacksmith Shop: 1796-1812*. Studies in Archaeology, Architecture and History, National Historic Parks and Sites Branch, Environment Canada, Ottawa.

## Matthews, Keith

- 1987 Name Files. Research file, Maritime History Archive, Memorial University of Newfoundland, St. John's.

## McKearin, Helen

- 1971 Notes on Stopping, Bottling and Binning. *Journal of Glass Studies* 13: 120-127.



## McNulty, Robert

- 1971 Common Beverage Bottles: Their Production, Use, and Forms in Seventeenth and Eighteenth Century Netherlands, part 1. *Journal of Glass Studies* 13: 91-119.

## Morgan, Roy

- 1976 *Sealed Bottles: Their History and Evolution (1630-1930)*. Midlands Antique Bottle Publishing, Burton-on-Trent, Staffordshire, England.

## Morison, Samuel (editor)

- 1993 *Of Plymouth Plantation, 1620-1647*. Knopf, New York

## Munsey, Cecil

- 1970 *The Illustrated Guide to Collection Bottles*. Hawthorn Books, New York.

## Noël Hume, Ivor

- 1956 A Century of London Glass Bottles. *The Connoisseur Year Book*, pp. 98-103.
- 1957 Wine Relics from Virginia, No. 2 From Jamestown to Williamsburg. *The Wine and Spirit Trade Record*, 16 August: 448, 450, 452.
- 1961 The Glass Wine Bottle in Colonial Virginia. *Journal of Glass Studies* 3: 90-117.
- 1969a *A Guide to Artifacts of Colonial America*. Alfred A. Knopf, New York.
- 1969b *Archaeology and Wetherburn's Tavern*. Colonial Williamsburg Archaeological Series No. 3. Williamsburg, Virginia.

## Oswald, A.

- 1982 *English Brown Stoneware, 1670-1900*. Faber, London.

## Pope, Peter

- 1986 *Ceramics From Seventeenth-Century Ferryland, Newfoundland*. Unpublished M. A. thesis, Department of Anthropology, Memorial University of Newfoundland.
- 1988 *Clay Tobacco Pipes from Ferryland: Archaeological Analysis and Historical Interpretation*. Department of History, Memorial University of Newfoundland.
- 1989 Historical Archaeology and the Demand for Alcohol in Seventeenth Century Newfoundland. *Acadiensis* 19(1):72-90.

- 1992 The South Avalon Planters, 1630-1700: Residence, Labour, Demand and Exchange in Seventeenth-Century Newfoundland. Unpublished Ph. D. dissertation, Department of History, Memorial University of Newfoundland.
- 1993 *Documents Relating to Ferryland 1597-1726, a Textbase, Including Original Transcriptions*. Report on File at the Colony of Avalon Foundation, Ferryland Newfoundland.
- 1994 Fish into Wine: The Historical Anthropology of the Demand for Alcohol in Seventeenth-Century Newfoundland. *Social History* 27(54): 261-278.
- 1996 Six Letters from the Early Colony of Avalon. *Avalon Chronicles* 1:1-20.

## Powell, Harry

- 1923 *Glass-Making in England*. University of Cambridge Press, Cambridge.

## Poynter, F. N. L. (editor)

- 1963 *The Journal of James Young (1647-1721) Plymouth Surgeon*. Longmans, London.

## Prowse, D. W.

- 1895 *A History of Newfoundland, from the English, Colonial and Foreign Records*. London.

## Robertson, W. S.

- 1976 A Quantitative Morphological Study of the Evolution of Some Post-Medieval Wine Bottles. *Science and Archaeology* 17: 13-20.

## Ross, Lester

- 1983 *Archaeological Metrology: English, French, American and Canadian Systems of Weights and Measures for North American Historical Archaeology*. History and Archaeology No. 68. National Historic Parks and Sites Branch, Environment Canada, Ottawa.

## Ruggles-Brise, Sheelah

- 1949 *Sealed Bottles*. Country Life, London.

## Simard, Al.

- 1980 Black Glass. *Canadian Bottle and Stoneware Collector* 5: 6-14. Phil Culhane, Ontario, Canada.

Simon, André

1964 *The History of the Wine Trade in England*. Holland Press, London.

Slive, Seymour

1971 *Dutch Painting 1600-1800*. Yale University Press, New Haven and London.

Thomas, M. Halsey (editor)

1973 *The Diary of Samuel Seawall 1674-1729*. Farrar, Straus and Giroux, New York.

Thorpe, W. A.

1938 The Glass Sellers Bills at Woburn Abbey. *Journal of the Society of Glass Technology* 22: 165-205.

Tuck, James

1993a The Ferryland Archaeology Project 1993 Research. Report on file, Culture and Heritage Division, Province of Newfoundland and Labrador.

1993b Archaeology at Ferryland, Newfoundland. *Newfoundland Studies* 9(2): 294-310.

1996a Archaeology at Ferryland, Newfoundland 1936-1995. *Avalon Chronicles* 1: 21-42.

1996b Excavations at Ferryland, 1996. Report on file, Culture and Heritage Division, Province of Newfoundland and Labrador.

Unwin, Tim

1991 *Wine and the Vine: An Historical Geography of Viticulture and the Wine Trade*. Routledge, London and New York.

Vose, Ruth

1980 *Glass*. William Collins Sons & Co., London.

Weatherhill, Lorna

1988 *Consumer Behavior and Material Culture in Britain 1660-1700*. Routledge, London and New York.

Williams, Alan

1987 *Father Baudoin's War: D'Iberville's Campaigns in Acadia and Newfoundland 1696, 1697*. Department of Geography, Memorial University of Newfoundland

Wills, Geoffrey

1977 *The Bottle-Collector's Guide*. John Bartholomew & Son, London.

Wilson, Anne

1975 The Early Days of Distilling. *Folk Life* 13: 54-65.

Wyatt, Victor

1965 *From Sand-Core to Automation: A History of Glass Containers*.  
Glass Manufacturers Federation, London.

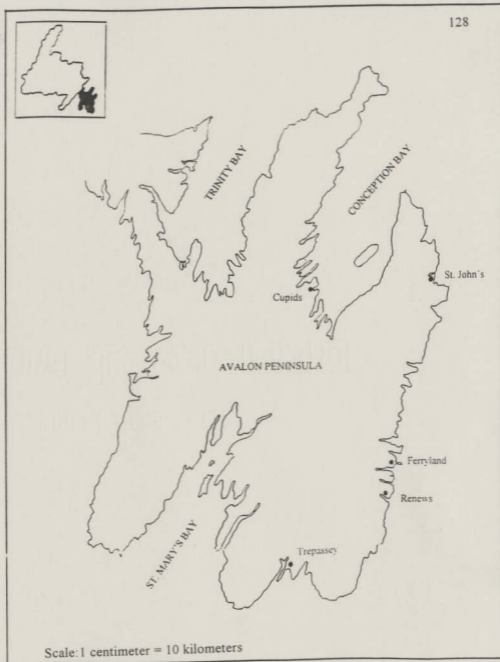
Younger, William

1966 *Gods, Men, and Wine*. Wine and Food Society, London.

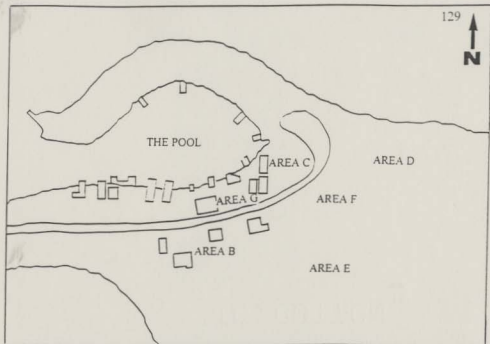
**PERSONAL COMMUNICATIONS**

Gaulton, Barry, 1998.

Personal Communication, November 1998, Department of Anthropology  
(Archaeology Unit), St. John's, Newfoundland.



**Map 1.1:** Map of Newfoundland (inset), Avalon Peninsula.



Map 1.2: Ferryland, showing areas of excavation around the Pool.

**Plate 5.1:** Type A wine bottle (actual size).







**Plate 5.2:** Type B wine bottle (actual size).



Plate 5.3: Type C wine bottle (actual size).



**Plate 5.4:** Type D wine bottle (actual size).



Plate 5.5: Type E wine bottle (actual size).



**Plate 5.6:** Type F wine bottle (actual size).



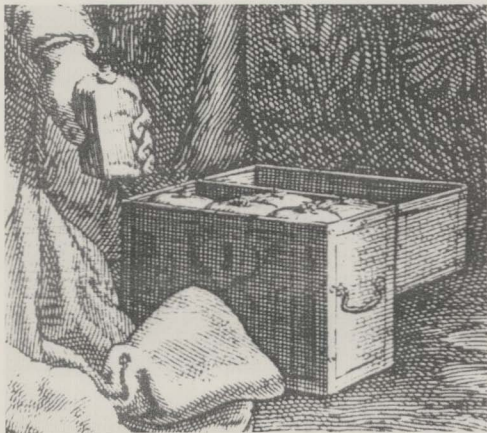
**Plate 5.7:** Type A case bottle recovered from the privy, Area C (actual height 280 mm).



**Plate 5.8:** Type A1 case bottle neck (actual size).



**Plate 5.9:** Type B case bottle base and body (actual size).



**Plate 6.1:** "De goede Samaritaam" by Nicolaes Lastman (Henkes 1994: 236).





**Plate 6.2:** "Le Desserte" by Jan Davidsz de Heem (Slive 1995: 285).



**Plate 6.3:** "Soo Gewonnen so Verteert" by Jan Steen (Brown 1984: 87).



Plate 6.4: "Het tuinfeest" by Nicolaes de Bruyn (Henkes 1994: 239).



**Plate 6.5:** "The Liquor Store" by Q. Brekelenkamm (Hale 1968: 283).



**Plate 6.6:** "The Dentist" by Lambert Doomer (Brown 1984: 99).



**Plate 6.7:** "Tavern Interior" by Jan Steen (Brown 1984: 186).



**Plate 6.8:** "Soo de Songen, so Pypen de Jongen" by Jan Steen (Brown 1984: 30).

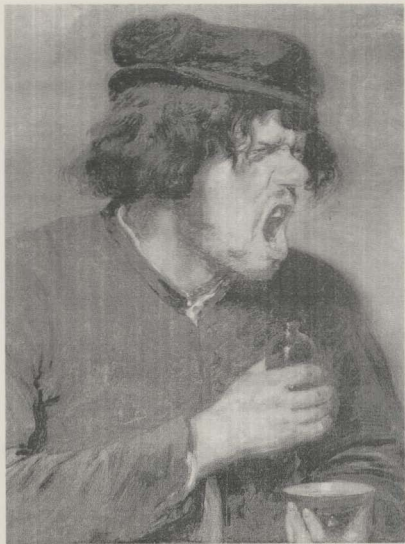


Plate 6.9: "Peasants at an Inn" by Craesbeeck (Bernt 1970: 273).





**Plate 6.10:** "Grace Before Dinner" by Egbert van Heemskerck (Bernt 1970: 497).



**Plate 6.11:** "The Bitter Draught" by Adriaen Brouwer (Slive 1995: 135).



**Plate 6.12:** "Man Reading a Letter" by Ludolf de Jongh (Bernt 1970).



**Plate 6.13:** "The Schoolmaster" by Adriaen van Ostade (Brown 1984: 168).



**Plate 6.14:** "The Doctor's Diagnosis" by Joos van Craesbeeck (Bernt 1970: 271).



**Type A**  
1652-1665



**Type B**  
1660-1675



**Type C**  
1670-1688



**Type D**  
1689-1700

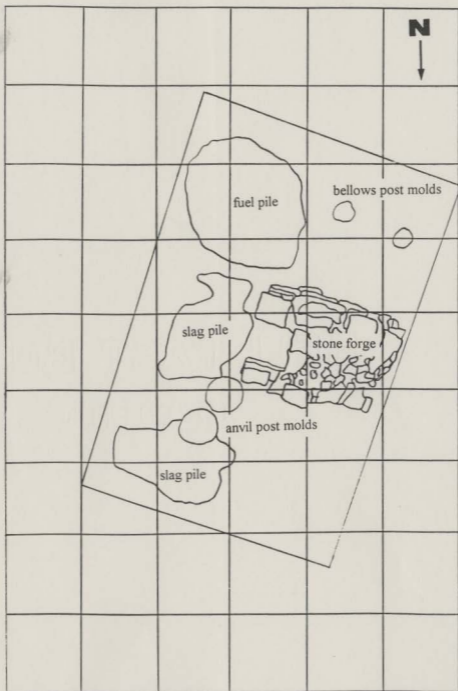


**Type E**  
1682-1705



**Type F**  
1689-1721

**Figure 5.1:** Wine bottle types.



**Figure 7.1:** Floor plan of the blacksmith shop. Scale: 2.2 centimeters = 1 meter





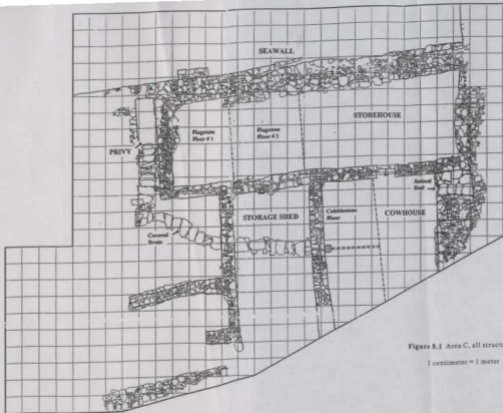


Figure 8.1 Area C, all structures.

1 centimeter = 1 meter

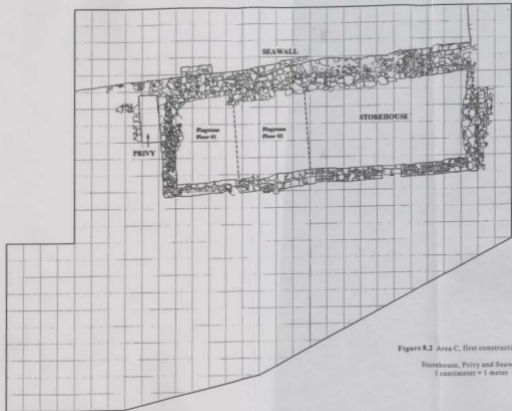


Figure 8.2 Area C, first construction phase.

Storehouse, Privy and Seawall  
1 centimeter = 1 meter

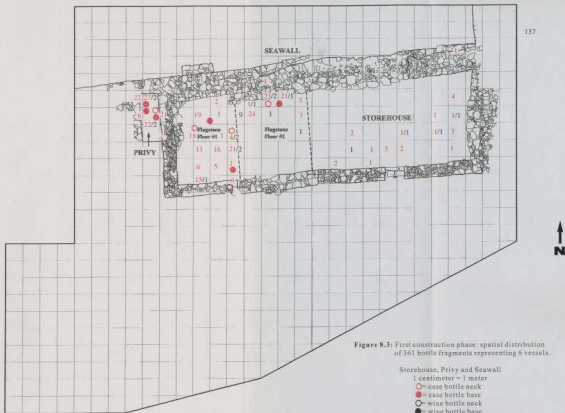


Figure 8.3: First construction phase: spatial distribution of 361 bottle fragments representing 6 vessels.



Figure 8.4: First destruction phase: spatial distribution of 892 bottle fragments representing 55 vessels.

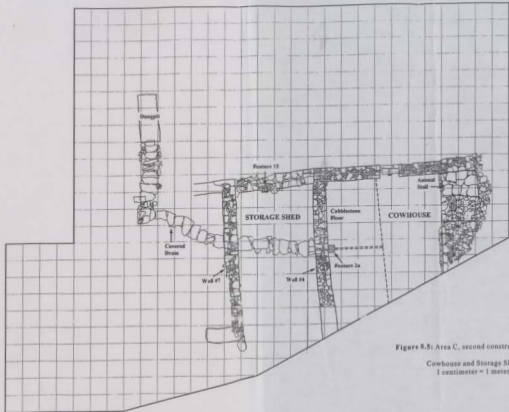


Figure 8.5: Area C, second construction phase.

Cowhouse and Storage Shed  
 1 centimeter = 1 meter



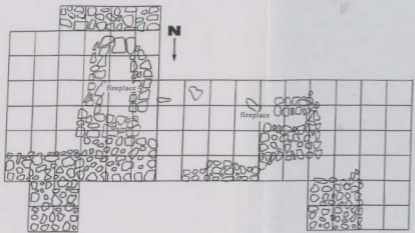


Figure 9.1: Floor plan of the tavern, Area E.

1.5 centimeters = 1 meter



Figure 9.2: Tavern occupation level: spatial distribution of 167 bottle fragments representing 6 vessels.

1.5 centimeters = 1 meter  
 = wine neck  
 = wine base  
 = pharmaceutical base



**Table 5.1:** Production period for wine bottle types, according to researcher.

	TYPE A	TYPE B	TYPE C	TYPE D	TYPE E	TYPE F
<b>Banks 1997</b>	1640- 1670	1670-1680	Not listed	Not listed	1680-1700	1700-1725
<b>Dumbrell 1983</b>	1630-1660	1660-1670	1670-1680	1690-1700	Not listed	1710-1725
<b>Noel Hume 1961</b>	1652	1655-1670	1655-1670	1675-1690	1685-1715	1710-1730
<b>Morgan 1976</b>	1630-1660	1660-1670	1670-1680	Not listed	1680-1700	1700-1715
<b>Simard 1993</b>	1630-1660	1660-1680	1680-1700	Not listed	Not listed	1700-1710
<b>Ringling 1994</b>	1650s	1660s	late 1670s	Not listed	1690s	Not listed
<b>Baker 1980</b>	1655-1655	1655-1665	1655-1670	Not listed	Not listed	Not listed
<b>Wicks 1999</b>	1652-1665	1660-1675	1670-1688	1689-1700	1682-1705	1698-1721

**Abbreviation key for Table 5.2:**

Measurements in mm

<b>V#:</b>	Vessel Number
<b>BD1:</b>	Bore Diameter 1
<b>BD2:</b>	Bore Diameter 2
<b>LSR:</b>	Lip to String Rim Height
<b>LH:</b>	Lip Height
<b>SRH:</b>	String Rim Height
<b>FH:</b>	Finish Height
<b>ND1:</b>	Neck Diameter 1
<b>ND2:</b>	Neck Diameter 2
<b>ND3:</b>	Neck Diameter 3
<b>NH:</b>	Neck Height
<b>B1:</b>	Body Diameter 1
<b>B2:</b>	Body Diameter 2
<b>B3:</b>	Body Diameter 3
<b>BH:</b>	Body Height
<b>BD:</b>	Base Diameter
<b>RPD:</b>	Resting Point Diameter
<b>IH:</b>	Indent Height
<b>PMD:</b>	Pontil Mark Diameter
<b>H:</b>	Bottle Height
<b>V oz:</b>	Volume in Ounces
<b>V ml:</b>	Volume in Milliliters
<b>TY:</b>	Type
<b>DATE:</b>	Date



**Abbreviation key for Table 5.3:**

Measurements in mm

<b>V#:</b>	Vessel Number
<b>AR:</b>	Area
<b>EV:</b>	Event
<b>BD1:</b>	Bore Diameter 1
<b>BD2:</b>	Bore Diameter 2
<b>LSR:</b>	Lip to String Rim Height
<b>LH:</b>	Lip Height
<b>SRH:</b>	String Rim Height
<b>FH:</b>	Finish Height
<b>ND1:</b>	Neck Diameter 1
<b>ND2:</b>	Neck Diameter 2
<b>ND3:</b>	Neck Diameter 3
<b>NH:</b>	Neck Height
<b>B1:</b>	Body Diameter 1
<b>B2:</b>	Body Diameter 2
<b>B3:</b>	Body Diameter 3
<b>BH:</b>	Body Height
<b>BD:</b>	Base Diameter
<b>RPD:</b>	Resting Point Diameter
<b>IH:</b>	Indent Height
<b>PMD:</b>	Pontil Mark Diameter
<b>H:</b>	Bottle Height
<b>TY:</b>	Type



**Table 5.4:** Capacity Measures (Ross 1983:42; Younger 1966: 475)

	WINE PINT	WINE QUART	ALE PINT	ALE QUART
Elizabeth I, 1601-1826	550 ml	1101 ml	550 ml	1101 ml
Queen Anne, ~1701-1826	473 ml	946 ml		
Ale, pre 1340-1803			577 ml	1155 ml
Oxford, 1670			596 ml	1193 ml
Oxford, 1737	497 ml	994 ml		

**Abbreviation key for Table 5.5:**

Measurements in mm

<b>V#:</b>	Vessel Number
<b>AR:</b>	Area
<b>EV/L:</b>	Event/Level
<b>BD1:</b>	Bore Diameter 1
<b>BD2:</b>	Bore Diameter 2
<b>LD:</b>	Lip Diameter
<b>ND:</b>	Neck Diameter
<b>NH:</b>	Neck Height
<b>FH:</b>	Finish Height
<b>B1:</b>	Body Dimension 1
<b>B2:</b>	Body Dimension 2
<b>BH:</b>	Body Height
<b>BD:</b>	Base Dimension
<b>RPD:</b>	Resting Point Diameter
<b>IH:</b>	Indent Height
<b>PMD:</b>	Pontil Mark Diameter
<b>H:</b>	Bottle Height
<b>CAP:</b>	Capacity
<b>TY:</b>	Type





**Abbreviation Key for Tables 7.1, 8.1-8.5, 9.1 and 10.1:**

<b>EV:</b>	Event
<b>WB:</b>	Wine Bottle Base
<b>WN:</b>	Wine Bottle Neck
<b>TF:</b>	Total Fragments
<b>WC:</b>	Wine Vessel Count
<b>CB:</b>	Case Bottle Base
<b>CN:</b>	Case Bottle Neck
<b>CC:</b>	Case Bottle Count
<b>PB:</b>	Pharmaceutical Bottle Base
<b>PN:</b>	Pharmaceutical Bottle Neck
<b>PC:</b>	Pharmaceutical Vessel Count

\* = no matching base or neck

**Table 7.1:** Area B, vessel and fragment counts.

EV	WB	WN	TF	WC	CB	CN	TF	CC	PB	PN	TF	PC
154					3*	6	224	7		1	1	1
163							5					
F-31					2	1	5	2				
S-2C					1	2	39	2				
<b>Total</b>					<b>6</b>	<b>9</b>	<b>273</b>	<b>11</b>		<b>1</b>	<b>1</b>	<b>1</b>

**TOTAL:** 274 Fragments

**Table 8.1:** Area C, total number of vessels and fragments.

EV	WB	WN	TF	WC	CB	CN	TF	CC	PB	PN	TF	PC
1A	8	1*	200	9	3	6*	151	8	1		2	1
6			21		3	3	203	3				
9	10	2*	140	12	7	3*	113	9	1	1	10	1
13			4				1					
16	2*	3	58	4	7	2	108	7				
19	10	5	203	10	1		16	1				
31	2	3	52	3			4		1		2	1
33	3		50	3	3	1	73	3	1		2	1
44			4				22					
45	2	2	38	2	2		72	2				
47	1		15	1	1		66	1				
Privy			8		6	5*	208	7				
<b>Total</b>	<b>38</b>	<b>15</b>	<b>793</b>	<b>44</b>	<b>33</b>	<b>20</b>	<b>1037</b>	<b>41</b>	<b>4</b>	<b>1</b>	<b>16</b>	<b>4</b>

**TOTAL:** 1846 Fragments

**Table 8.2:** Area C, first construction and occupation Phase: vessel and fragment counts.

EV	WB	WN	TF	WC	CB	CN	TF	CC	PB	PN	TF	PC
6			21		3	3	203	3				
44			4				22					
Privy			4		3	1	107	3				
<b>Total</b>			<b>29</b>		<b>6</b>	<b>4</b>	<b>332</b>	<b>6</b>				

**TOTAL:** 361 Fragments

**Table 8.3:** Area C, 1673 destruction level: vessel and fragment counts.

EV	WB	WN	TF	WC	CB	CN	TF	CC	PB	PN	TF	PC
Privy			4		3	4	101	4				
1A	8	1*	200	9	3	6*	151	8	1		2	1
9	10	2*	140	12	7	3*	113	9	1	1	10	1
16	2*	3	58	4	7	2	108	7				
13			4				1					
<b>Total</b>	<b>20</b>	<b>6</b>	<b>406</b>	<b>25</b>	<b>20</b>	<b>15</b>	<b>474</b>	<b>28</b>	<b>2</b>	<b>1</b>	<b>12</b>	<b>2</b>

**TOTAL:** 892 Fragments

**Table 8.4:** Area C, second destruction phase: vessel and fragment counts.

EV	WB	WN	TF	WC	CB	CN	TF	CC	PB	PN	TF	PC
47	1		15	1	1		66	1				
33	3		50	3	3	1	73	3	1		2	1
45	2	2	38	2	2		72	2				
<b>Total</b>	<b>6</b>	<b>2</b>	<b>103</b>	<b>6</b>	<b>6</b>	<b>1</b>	<b>211</b>	<b>6</b>	<b>1</b>		<b>2</b>	<b>1</b>

**TOTAL:** 316 Fragments

**Table 8.5:** Area C, eighteenth-century destruction phase: vessel and fragment counts.

EV	WB	WN	TF	WC	CB	CN	TF	CC	PB	PN	TF	PC
19	10	5	203	10	1		16	1				
31	2	3	52	3			4		1		2	1
<b>Total</b>	<b>12</b>	<b>8</b>	<b>255</b>	<b>13</b>	<b>1</b>		<b>20</b>	<b>1</b>			<b>2</b>	

**TOTAL:** 277 Fragments

**Table 9.1:** Area E, vessel and fragment counts.

EV	WB	WN	TF	WC	CB	CN	TF	CC	PB	PN	TF	PC	UV
51	4	2*	109	5			4						
51-52	1	2	71	2									
52	4	8	405	10			15				1		2
66	4	1	158	4			4		2		5	2	
95	4	1	95	4			1						
103	1		1	1									
Other			14										
<b>TOTAL</b>	<b>18</b>	<b>14</b>	<b>853</b>	<b>26</b>			<b>23</b>		<b>2</b>		<b>6</b>	<b>2</b>	<b>2</b>

**TOTAL:** 882 Fragments

**Table 10.1:** Area F, vessel and fragment counts.

	WB	WN	TF	WC	CB	CN	TF	CC	PB	PN	TF	PC
<b>Area F</b>	4	5	171	5	2	1	54	2	1		7	1

**TOTAL:** 232 Fragments

## APPENDIX A: LIST OF VESSELS ACCORDING TO EVENTS

## AREA B: FORGE

## Vessel #:

1. Case Type A  
Catalogue #(s): 111966a-mm, 2597a-h, 5390a-y  
Coordinates: S5 W2, S3 W3, S3 W4  
Event(s): 154, Stratum 3B  
Portion: base, neck
  
2. Case Type A  
Catalogue #(s): 119233a-q  
Coordinates: S4 W0  
Event(s): 154  
Portion: neck
  
3. Case Type A  
Catalogue #(s): 110362a-d  
Coordinates: S4 W0  
Event(s): 154  
Portion: neck
  
4. Case Type A  
Catalogue #(s): 105268, 119383  
Coordinates: S2 E2, S3 E1  
Event(s): 154  
Portion: base, neck
  
5. Case Type A  
Catalogue #(s): 105205  
Coordinates: S2 E1  
Event(s): 154  
Portion: base

6. Case Type A  
Catalogue #(s): 5977  
Coordinates: N1 E0  
Level(s): Stratum 3b  
Portion: neck
7. Case Type A1  
Catalogue #(s): 5371  
Coordinates: S4 W2  
Level(s): 3b  
Portion: neck  
Comments: Pewter fragments concreted to surface
1. Case Type A  
Catalogue #(s): 96383  
Coordinates: S1 E1  
Feature 31  
Portion: base
2. Case Type A  
Catalogue #(s): 113941  
Coordinates: S3 E1  
Feature 31  
Portion: base
1. Case Type A  
Catalogue #(s) joined: 4912b, 4913g, j, s; 4912a, 4630a  
Coordinates: S4 W3  
Level(s): Stratum 2c  
Portion: base, neck
2. Case Type A  
Catalogue #(s): 4630c  
Coordinates: S4 W3  
Level(s): Stratum 2c  
Portion: neck

1. Pharmaceutical  
Catalogue #(s): 105562  
Coordinates: S3 E1  
Event(s): 154  
Portion: lip

### AREA C: FIRST CONSTRUCTION AND OCCUPATION PHASE

1. Case Type A  
Catalogue #(s) Joined: 45773a-b, 47339a, 47288  
Coordinates: N34 E73, N34 E75  
Event(s): 6  
Portion: base, neck  
Comments: 20305 possible neck
2. Case Type A  
Catalogue #(s) Joined: 118832  
Coordinates: N31 E75, N35 E74  
Event(s): 1A, 6  
Portion: base, neck  
Comments: 47227 possible neck
3. Case Type A  
Catalogue #(s) Joined: 66707a-c, 50658a-w, 53322a-c, 50942a-w  
Coordinates: N34 E76, N35 E77, N35 E78, N35 E79  
Event(s): 6, 26  
Portion: base, body, neck



4. Case Type A  
Catalogue #(s) Joined: 73418, 73977, 76112, 76271, 77254, 77330, 77609a-g,  
77610a-c, 77835a-b, 79736, 79746, 79747, 81619, 81628, 81772, 82472,  
82469a-b, 102637, 105550, 113394, 113143, 113393, 116158, 119473b,  
119475,  
Coordinates: N33 E71, N34 E70, N34 E71, N35 E70  
Event(s): 111, 114, 116 (privy)  
Portion: base, body, neck, lip  
Comments: privy, complete profile
5. Case Type A  
Catalogue #(s) Joined: 69444  
Coordinates: N34 E70  
Event(s): 50 (privy)  
Portion: base
6. Case Type A  
Catalogue #(s) Joined: 69443  
Coordinates: N34 E70  
Event(s): 50 (privy)  
Portion: base

#### AREA C: FIRST DESTRUCTION PHASE

##### Privy:

1. Case Type A  
Catalogue #(s): 5154, 5155a-z, 5156a  
Level(s): 2 Privy  
Portion: base, body, neck

2. Case Type A  
Catalogue #(s) Joined: 5154e, i, p, s, 5156b  
Level(s): 2 Privy  
Portion: base, body  
Comments: 5217c (Level 3) possible neck
3. Case Type A  
Catalogue #(s) 5156c  
Level(s): 1A Privy  
Portion: base
4. Case Type B  
Catalogue #(s) Joined: 4417  
Level(s): 1A Privy  
Portion: base  
Comments: sides taper

**Storehouse:**

3. Case Type A  
Catalogue #(s): 18713a, c, d, 18833  
Coordinates: N30 E75, N31 E74  
Level(s): 1A  
Portion: base, neck  
Comments: large capacity
4. Case Type A  
Catalogue #(s) 18712, 16347  
Coordinates: N30 E75, N31 E74  
Level(s): 1A  
Portion: base, neck  
Comments: very small capacity, probably fitted with pewter cap

8. Case Type A  
Catalogue #(s) Joined: 7086  
Coordinates: N32 E72  
Level(s): 1A  
Portion: neck
4. Case Type A  
Catalogue #(s) Joined: 51002  
Coordinates: N33 E75  
Event(s): 9  
Portion: base  
Comments: small capacity
6. Case Type A  
Catalogue #(s) Joined: 72309  
Coordinates: N33 E78  
Event(s): 9  
Portion: base  
Comments: small capacity
7. Case Type A  
Catalogue #(s) Joined: 65684  
Coordinates: N33 E78  
Event(s): 9  
Portion: base  
Comments: small capacity
1. Case Type A  
Catalogue #(s) Joined: 129422  
Coordinates: N32 E88  
Event(s): 16  
Portion: neck, base

2. Case Type A  
Catalogue #(s) Joined: 132372  
Coordinates: N34 E88  
Event(s): 16  
Portion: neck, base
3. Case Type A  
Catalogue #(s) Joined: 38711  
Coordinates: N32 E84  
Event(s): 16  
Portion: base  
Comments: large capacity
6. Case Type A  
Catalogue #(s) Joined: 132366, 71166  
Coordinates: N34 E85, N  
Event(s): 16, 47  
Portion: base  
Comments: emerald green in colour, thick glass
7. Case Type A  
Catalogue #(s) Joined: 146131  
Coordinates: N37 E84  
Event(s): 16  
Portion: base  
Comments: unusual color, large capacity
1. Wine Type C  
Catalogue #(s) Joined: 18480, 69235  
Coordinates: N30 E77, N32 E78  
Level(s): 1A; Event 9  
Portion: base, body

4. Wine Type C?  
Catalogue #(s) Joined: 16790, 20235, 20734, 20807  
Coordinates: N31 E83, N32 E83, N33 E81  
Level(s): 1A  
Portion: burnt base
7. Wine Type C  
Catalogue #(s) Joined: 18871, 20079, 20850, 20916, 22987, 24249a-c  
Coordinates: N31 E83, N32 E83  
Level(s): 1A  
Portion: body  
Seal: ? C
8. Wine Type B  
Catalogue #(s) Joined: 20111  
Coordinates: N31 E82  
Level(s): 1A  
Portion: base  
Seal: I x R. (1660s)
1. Wine Type B  
Catalogue #(s) Joined: 131848  
Coordinates: N36 E88  
Event(s): 16  
Portion: neck
2. Wine Type C?  
Catalogue #(s) Joined: 131737, 135725  
Coordinates: N36 E85  
Event(s): 16, 19  
Portion: neck, base
1. Pharmaceutical  
Catalogue #(s) Joined: 16947, 20437  
Coordinates: N31 E81, N32 E82  
Level(s): 1A  
Portion: base

**South of the Privy and Storehouse:**

1. Case Type A  
Catalogue #(s) Joined: 18571  
Coordinates: N28 E82  
Level(s): 1A  
Portion: neck  
Comments: small capacity
  
2. Case Type A  
Catalogue #(s) Joined: 18765a  
Coordinates: N24 E71  
Level(s): 1A  
Portion: neck
  
6. Case Type A  
Catalogue #(s) Joined: 5706b  
Coordinates: N30-31 E70  
Level(s): 1A Privy  
Portion: base  
Comments: small capacity
  
7. Case Type A  
Catalogue #(s) Joined: 7077a  
Coordinates: N29 E71  
Level(s): 1A  
Portion: neck  
Comments: small capacity
  
9. Case Type A  
Catalogue #(s) Joined: 5706a  
Coordinates: N30-31 E70  
Level(s): 1A Privy  
Portion: base  
Comments; large capacity

1. Case Type B  
Catalogue #(s) Joined: 56247a  
Coordinates: N23 E69  
Event(s): 9  
Portion: base  
Comments: small capacity, sides taper
  
2. Case Type B  
Catalogue #(s) Joined: 158524  
Coordinates: N17 E69  
Event(s): 9  
Portion: base  
Comments: sides taper
  
3. Case Type B  
Catalogue #(s) Joined: 62381  
Coordinates: N25 E80  
Event(s): 9  
Portion: base  
Comments: small capacity, sides taper
  
4. Case Type A  
Catalogue #(s) Joined: 51002  
Coordinates: N33 E75  
Event(s): 9  
Portion: neck
  
8. Case Type A  
Catalogue #(s) Joined: 40200, 44515, 47058, 47196, 48972  
Coordinates: N25 E73  
Event(s): 9  
Portion: neck, base  
Comments: large capacity

9. Case Type A  
Catalogue #(s) Joined: 48112  
Coordinates: N22 E72  
Event(s): 9  
Portion: neck
2. Wine Type C  
Catalogue #(s) Joined: 27581  
Coordinates: N27 E82  
Level(s): 1A  
Portion: neck
3. Wine Type A  
Catalogue #(s) Joined: 3473, 6654, 6694, 20808, 20902  
Coordinates: N27 E72, N27 E73  
Level(s): 1  
Portion: base, body
5. Wine Type ?  
Catalogue #(s) Joined: 22565a  
Coordinates: N27 E78  
Level(s): 1A  
Portion: base pontil
6. Wine Type B  
Catalogue #(s) Joined: 18031  
Coordinates: N21 E69  
Level(s): 1A  
Portion: base
9. Wine Type C?  
Catalogue #(s) Joined: 18027  
Coordinates: N28 E83  
Level(s): 1A  
Portion: base



1. Wine Type C  
Catalogue #(s) Joined: 45785, 45844, 45848, 45850, 45878, 45890, 51556  
Coordinates: N24 E70  
Event(s): 9  
Portion: neck
  
2. Wine Type C  
Catalogue #(s) Joined: 57768a-b  
Coordinates: N23 E69  
Event(s): 9  
Portion: neck
  
3. Wine Type C  
Catalogue #(s) Joined: 47143, 50925, 50926, 50928, 50929  
Coordinates: N24 E70  
Event(s): 9  
Portion: burnt base
  
4. Wine Type C  
Catalogue #(s) Joined: 62972  
Coordinates: N26 E78  
Event(s): 9  
Portion: base
  
5. Wine Type C  
Catalogue #(s) Joined: 38547, 38548  
Coordinates: N25 E73  
Event(s): 9  
Portion: burnt base
  
6. Wine Type C  
Catalogue #(s) Joined: 66054c, 72397, 73383a-f  
Coordinates: N21 E78, N21 E79, N25 E78  
Event(s): 9, 113  
Portion: base

7. Wine Type B  
Catalogue #(s) Joined: 66054a-b, 62350  
Coordinates: N24 E79, N25 E78  
Event(s): 9  
Portion: base, body
8. Wine Type C  
Catalogue #(s) Joined: 7085a-e, 6913, 42151, 42253  
Coordinates: N22 E73, N23 E72  
Event(s): 1A, 9  
Portion: body
9. Wine Type C  
Catalogue #(s) Joined: 42525  
Coordinates: N22 E72  
Event(s): 9  
Portion: base
10. Wine Type B  
Catalogue #(s) Joined: 59406  
Coordinates: N23 E69  
Event(s): 9  
Portion: base
11. Wine Type C?  
Catalogue #(s) Joined: 44017, 42673  
Coordinates: N22 E72  
Event(s): 9  
Portion: burnt base
12. Wine Type ?  
Catalogue #(s) 59164; 59692, 60624a, 59405  
Coordinates: N23 E70  
Event(s): 9  
Portion: base

1. Pharmaceutical  
Catalogue #(s) Joined: 38548a-c  
Coordinates: N25 E73  
Event(s): 9  
Portion: base  
Comments: burnt

**North of Storehouse:**

4. Case Type A  
Catalogue #(s) Joined: 141880, 154465  
Coordinates: N39 E89, N41 E89  
Event(s): 16  
Portion: base
5. Case Type A  
Catalogue #(s) Joined: 146153  
Coordinates: N38 E84  
Event(s): 16  
Portion: base  
Comments: small capacity
3. Wine Type B  
Catalogue #(s) Joined: 151598  
Coordinates: N39 E83  
Event(s): 16  
Portion: base
4. Wine Type ?  
Catalogue #(s) Joined: 151595  
Coordinates: N39 E83  
Event(s): 16  
Portion: neck, possibly Dutch

**AREA C: 1696 DESTRUCTION LEVEL**

1. Case Type B  
Catalogue #(s) Joined: 60629  
Coordinates: N27 E84  
Event(s): 47  
Portion: base  
Comments: burnt
1. Case Type A  
Catalogue #(s) Joined: 77911A; 85880  
Coordinates: N24 E84, N26 E84  
Event(s): 33, 45  
Portion: base, neck
2. Case Type B  
Catalogue #(s) Joined: 56533  
Coordinates: N26 E81  
Event(s): 33  
Portion: base  
Comments: Sides taper
3. Case Type B  
Catalogue #(s) Joined: 79104a-c, 76942, 77974  
Coordinates: N25 E84, N25 E85  
Event(s): 33, 25, 53  
Portion: base, body  
Comments: burnt, sides taper
1. Case Type B  
Catalogue #(s) Joined: 82756a-k, 82764a-d, 85866, 85870, 85876a-b, 85877, 85878, 85879, 86248  
Coordinates: N24 E84, N25 E82, N25 E83  
Event(s): 45, 47  
Portion: base, body  
Comments: burnt, sides taper

2. Case Type B  
Catalogue #(s) Joined: 161475  
Coordinates: N24 E84  
Event(s): 45  
Portion: base  
Comments: sides taper
1. Wine Type ?  
Catalogue #(s) Joined: 89028  
Coordinates: N28 E86  
Event(s): 47  
Portion: base fragment
1. Wine Type D?  
Catalogue #(s) Joined: 41786a-c  
Coordinates: N27 E81  
Event(s): 33  
Portion: burnt base
2. Wine Type D  
Catalogue #(s) Joined: 47889  
Coordinates: N29 E84  
Event(s): 33  
Portion: base
3. Wine Type D  
Catalogue #(s) Joined: 3017  
Coordinates: N24 E82  
Event(s): 33  
Portion: base
1. Wine Type D  
Catalogue #(s) Joined: 30316, 38072, 38877, 44748, 44934a-j, 45077  
Coordinates: N24 E81, N25 E81, N25 E82  
Event(s): 33, 45, 25  
Portion: base, body, neck

2. Wine Type D  
 Catalogue #(s) Joined: 156124, 156125, 156138, 156139, 156140, 161477,  
 64384  
 Coordinates: N23 E82  
 Event(s): 45  
 Portion: burnt base, body, neck
1. Pharmaceutical Type B  
 Catalogue #(s) Joined: 44070  
 Coordinates: N29 E83  
 Event(s): 33  
 Portion: base  
 Comments: single dram size

#### AREA C: EARLY-EIGHTEENTH-CENTURY DESTRUCTION

1. Case Type A  
 Catalogue #(s) Joined: 53298  
 Coordinates: N33 E83  
 Event(s): 19  
 Portion: base  
 Comments: numerous small body fragments
1. Wine Type F  
 Catalogue #(s) Joined: 129798, 131768, 132957a-e, 135819, 138681, 143539,  
 88267, 29179, 131387, 132966a-i, 132674e,g  
 Coordinates: N26 E89, N27 E88, N28 E86, N28 E87, N29 E87, N29 E88,  
 N30 E87, N30 E88  
 Event(s): 19, 30, 55, 195  
 Portion: base, body

2. Wine Type F  
Catalogue #(s) Joined: 42994, 44366, 48676, 50337, 129987a-b, 131377,  
131733, 11754, 132942, 143913, 144114  
Coordinates: N27 E89, N28 E89, N28 E84, N29 E87, N31 E85  
Event(s): 19, 22, 33  
Portion: base, body, neck  
Seal: etched "P"
3. Wine Type F  
Catalogue #(s) Joined: 57326B, 91722, 126684a-b, 131756, 131777, 149903,  
181832  
Coordinates: N24, E87, N27 E86, N29 E84, N29 E87, N30 E87, N31 E87  
Event(s): 19, 22, 30, 53, 86  
Portion: base, body
4. Wine Type C  
Catalogue #(s) Joined: 134183a-b  
Coordinates: N37 E89  
Event(s): 19  
Portion: base
5. Wine Type A  
Catalogue #(s) Joined: 66008  
Coordinates: N31 E86  
Event(s): 19  
Portion: base
6. Wine Type F  
Catalogue #(s) Joined: 138151, 141763, 151023  
Coordinates: N37 E85, N39 E89  
Event(s): 19, 16, 55  
Portion: base

7. Wine Type ?  
Catalogue #(s) Joined: 141272  
Coordinates: N26 E87  
Event(s): 19  
Portion: base pontil
8. Wine Type ?  
Catalogue #(s) Joined: 149966  
Coordinates: N24 E87  
Event(s): 19  
Portion: neck
9. Wine Type B  
Catalogue #(s) Joined: 132152, 126713  
Coordinates: N34 E85, N31 E87  
Event(s): 19  
Portion: base, lip
10. Wine Type ?  
Catalogue #(s) Joined: 84680a-h  
Coordinates: N34 E87  
Event(s): 19  
Portion: base, body
1. Wine Type C  
Catalogue #(s) Joined: 30319, 37107, 88181, 88268, 88750, 91268, 95195  
Coordinates: N27 E81, N27 E86, N28 E86  
Event(s): 31  
Portion: base, body, neck  
Seal: initials "NW" scratched into body
2. Wine Type  
Catalogue #(s): 91759, 88418, 89029b, 60567, 86534, 91478  
Coordinates: N6 E86  
Event(s): 31, 47  
Portion: neck, base



3. Wine Type F  
Catalogue #(s) Joined: 51295  
Coordinates: N  
Event(s): 31  
Portion: lip
1. Pharmaceutical  
Catalogue #(s): 93178  
Coordinates: N27 E86  
Event(s): 31  
Portion: base

## AREA E: TAVERN

1. Wine Post-type F  
Catalogue #(s) Joined: 62334, 62348a  
Coordinates: S35 E94  
Event(s): 51  
Portion: base
2. Wine Post-type F  
Catalogue #(s): 44951  
Coordinates: ?  
Event(s): 51  
Portion: base
3. Wine Cylindrical  
Catalogue #(s): 54372a-i  
Coordinates: S36 E97  
Event(s): 51  
Portion: base, body

4. Wine Post-type F  
Catalogue #(s): 66788  
Coordinates: S34 E101  
Event(s): 51  
Portion: lip
5. Wine Post-type F  
Catalogue #(s): 53370  
Coordinates: ?  
Event(s): 51  
Portion: base
1. Wine Cylindrical  
Catalogue #(s): 48468  
Coordinates: S36 E90  
Event(s): 51-52  
Portion: neck
2. Wine Cylindrical  
Catalogue #(s): 54214a, 62296a  
Coordinates: S36 E98, S35 E97  
Event(s): 51-52  
Portion: base, lip
1. Wine Type F  
Catalogue #(s): 66363  
Coordinates: S35 E89  
Event(s): 66  
Portion: base
2. Wine Cylindrical  
Catalogue #(s): 50237, 50239  
Coordinates: S35 E88  
Event(s): 66  
Portion: lip

3. Wine Type F?  
 Catalogue #(s): 66784e  
 Coordinates: S38 E101  
 Event(s): 95  
 Portion: base
4. Wine Post-type F  
 Catalogue #(s): 66784a-d, g, 65975a  
 Coordinates: S38 E101  
 Event(s): 95  
 Portion: base, body, lip

#### AREA F: MIDDEN

1. Wine Type E  
 Catalogue #(s) Joined: 177133, 177134, 177140, 177822, 178236, 180069,  
 180470, 180476, 184115, 184741, 184793, 184797, 184798, 184848, 84919,  
 184857, 186218, 186455, 186608, 187149, 187280, 87429, 194722, 194805,  
 197675, 203087, 203218, 208127  
 Coordinates: N4 E99, N5 E98, N5 E99, N5 E100, N6 E98, N6 E100, N6 E100,  
 N7 E100  
 Event(s): 290, 291, 294, 297, 303  
 Portion: base, body, neck, lip
2. Wine Type F  
 Catalogue #(s) Joined: 178758, 178759, 178769, 180421, 180444, 186794a-b,  
 188177, 195100, 195103, 195134, 200995, 203069, 205589, 206124  
 Coordinates: N7 E101, N8 E100  
 Event(s): 290, 297  
 Portion: base, body, neck, lip

3. Wine Type E  
Catalogue #(s) Joined: 178952, 184607, 184682, 184887, 184954, 187179,  
188838, 192015, 197675, 198496, 198698, 203066, 203093, 203162, 203214,  
203230, 203315, 203332, 203336, 210751  
Coordinates: N3 E100, N4 E99, N4 E100, N5 E97, N5 E98, N5 E99, N6 E98  
Event(s): 290, 294, 303  
Portion: body, neck, lip  
Comments: initials "H x H" scratched into body
4. Wine Type F  
Catalogue #(s) Joined: 184433, 194600, 197675f, 189781; 184213, 184464,  
184433e  
Coordinates: N6 E99, N7 E96, N8 E96, N8 E97  
Event(s): 290, 297, 303  
Portion: base, body, lip
5. Wine Type ?  
Catalogue #(s) Joined: 212045  
Coordinates: N5 N100  
Event(s): 294  
Portion: lip
1. Pharmaceutical  
Catalogue #(s): 194599a-b  
Coordinates: N7 N96  
Event(s): 297  
Portion: base
2. Pharmaceutical  
Catalogue #(s): 180579  
Coordinates: N5 N98  
Event(s): 290  
Comments: complete burnt vessel





