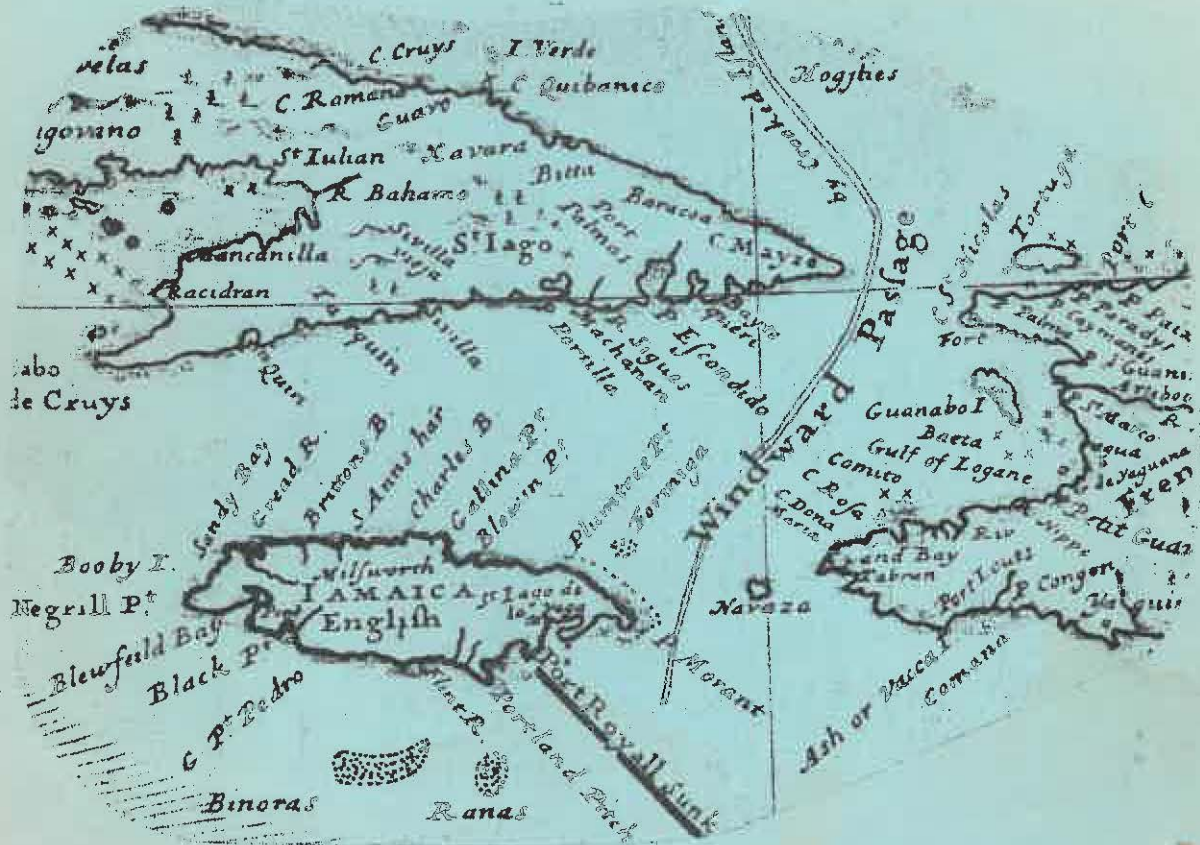


Jeremy D. Goo

CARIBBEAN RESEARCH INSTITUTE



GLASS BOTTLES
RECOVERED FROM
THE SUNKEN CITY
OF PORT ROYAL, JAMAICA
MAY 1, 1966 - MARCH 31, 1968

Robert F. Marx

January, 1969

GLASS BOTTLES RECOVERED FROM THE SUNKEN CITY
OF PORT ROYAL: MAY 1, 1966 - MARCH 31, 1968

By
ROBERT F. MARX

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CONTENTS

I.	<u>Preface</u>	1
II.	<u>History of the Site</u>	1
III.	<u>Excavation of the Site</u>	3
IV.	<u>Observations on the Glass Bottles</u>	4
V.	<u>Preservation of the Glass Bottles</u>	6
VI.	<u>References</u>	7
VII.	<u>Bibliography</u>	8
VIII.	<u>Drawings of the Glass Bottles</u>	9

I. PREFACE.

The following is a preliminary report on the glass bottles from the sunken city of Port Royal, Jamaica, which were recovered during the period May 1, 1966 - March 31, 1968, when the program of excavation came to a halt for an indefinite period of time. Other reports covering the excavation of the site and different types of artifacts recovered from the site have already been published, and several more are still in preparation.

The objective of this report is to provide others, who know a great deal more than myself about the identification and dating of glass bottles, with the information I was able to obtain during the course of the excavation, with the hope that it will prove useful in their future studies of glass bottles. I also hope that it might be used as a guide for the non-experts on the subject of glass bottles, to enable them in dating and classifying glass bottles which they might discover in their own excavations.

Robert F. Marx
Satellite Beach, Florida
January, 1969

II. HISTORY OF THE SITE.

Port Royal and the large harbor it protects, although one of the finest in the West Indies, had little importance in the history of Spanish Jamaica, since the Spanish colonists had scarcely any commerce to speak of. They located a small port, called Puerto de Caguaya, at the mouth of the Rio Cobre, on the northwest side of the harbor. Port Royal itself was called Cayo de Carena (Careening Cay) by the Spaniards, and used only, as the name suggests, as a place for careening and refitting the occasional ship that visited the virtually forgotten colony (1).

After the English captured Jamaica in 1655, they quickly recognized the commercial and military strategic value of Port Royal. The Royal Navy first made use of Port Royal during the time of the invasion, and after the Spaniards were routed, they were followed by the Army which stationed troops there and quickly began to fortify the site. In the years 1655-1660 the English used Port Royal as a base from which they made many successful raids against Spanish shipping and settlements. Then, when the monarchy was restored in England in 1660, all of the naval forces and most of the soldiers were recalled, and Port Royal became of primary importance as a base for the buccaneers, such as Henry Morgan and scores of others of lesser fame. When Spain and England made peace in 1670, all privateering commissions were recalled, and Port Royal's inhabitants had to find new occupations.

From the early beginnings as a purely military site, Port Royal had quickly become a bustling civilian settlement. Within a few years the small cay was so jammed with houses and other buildings that it was necessary to fill in the marshy area separating Port Royal from the Palisadoes (a long low sandspit projecting out from the island and enclosing what is known as Kingston Harbor) to provide more room for expansion. The two foundations of this rapid growth were plunder and contraband. As soon as the fleet began to carry out successful raids on the Spaniards from its base in Port Royal, merchants started to flock there from England and other colonies in North America and the West Indies to trade in the booty taken from the Spaniards. The merchants also obtained money by a more peaceful means -- contraband trade. Spain claimed, but could

not enforce, an exclusive monopoly on trade with her New World colonies, and after the destruction of two treasure fleets in 1656 and 1657, Spain's commerce with her colonies came to a halt. With Spain unable to satisfy her colonists' demands for European products, the English at Port Royal were happy to do so -- at a handsome profit. Although much less glamorous than piracy, the contraband trade actually brought more wealth to England.

By the time of the earthquake in 1692, Port Royal had been transformed in a few decades from a deserted cay to the most important trading center in the New World. The spacious harbor was always crowded with shipping, and the amount and variety of goods that passed over its wharves were astonishing: Jamaica's own export products to England and North America were mainly sugar, molasses, rum, indigo, cotton, tobacco, ginger, all-spice, mahogany and dyewoods; as well as the items they obtained through their contraband trade with the Spaniards, such as gold, silver, precious stones, pearls, and various agricultural products. Most of Jamaica's imports came from England, but smaller amounts also came from Ireland and North America. The bulk of the imports from England and Ireland consisted of manufactured goods and other products from Europe destined for local use and trade with the Spaniards. Large numbers of Negro slaves were also brought from Africa, both for local use and for selling to the Spaniards.

From an unpublished document written in 1688 -- known as the "Taylor Manuscript" -- which is now in the possession of the Institute of Jamaica (2), we have a fairly detailed description of Port Royal shortly before the 1692 disaster. The town consisted of two thousand buildings, the majority of which were made of brick and many were two or more stories high. The population was about eight thousand and, although most contemporary accounts claim that the vast majority of the inhabitants were "Godless men", there were several different Protestant churches (including two Quaker meeting houses), a Roman Catholic chapel, and a Jewish synagogue. The wharves, warehouses and homes of the wealthy merchants were located on the harbor, or north, side of town, where the water was deep enough for ships of large tonnage to tie up right against the shore. Three large forts -- Charles, James and Carlisle (the latter two sank during the earthquake) -- as well as several smaller batteries, protected the town. There were three markets: a produce market situated in the center of the town, and the fish and meat markets located at the water's edge on the western tip of Port Royal. The most outstanding buildings were the King's House, where the Island's Council met; the Governor's House; St. Paul's Church (Anglican); the Exchange, the center for the town's main business transactions; the Marshallsea, which was a prison for men; and Bridewell, a prison for women.

At twenty minutes before noon on June 7, 1692, Port Royal was struck by the first of three strong tremors. The last one was the most violent and was quickly followed by a tidal wave. Within a matter of minutes nine-tenths of the city had either sunk or slid into the sea, and no more than ten acres of land remained out of the water by the end of the day: Port Royal was once again a cay, separated from the Palisadoes. More than 2,000 lives were lost that day, and within a month an additional 3,000 persons died in epidemics that followed the disaster.

Except for a number of men who immediately began carrying out salvage operations on the submerged buildings in hopes of recovering some of the great amount of wealth which went down with the buildings, the majority of the survivors moved across the harbor and built the town of Kingston. However, within a few months after the disaster, some of Port Royal's former inhabitants moved back to the cay again and began to rebuild the town, but it was never again to regain a degree of its former glory. In 1702, when the town was just starting to flourish somewhat, a fire consumed the whole town. In 1712 and again in 1722, the city was levelled to the ground by disastrous hurricanes. Throughout the eighteenth and nineteenth centuries Port Royal mainly served as an important base for the British Navy and, during the periods of war, for privateers.

III. EXCAVATION OF THE SITE.

The site itself is far from being an archaeologist's dream. Over the centuries since the initial disaster, the site has been seriously disturbed by both nature and man. Subsequent earthquakes as well as many different hurricanes, have greatly altered the sea floor. Probably the most serious disturbance has been caused by the hundreds of ships which have anchored over the site and, in dragging their anchors, have plowed up a great part of the sea floor. During the course of my preliminary survey of the site (January - April, 1966) and subsequent excavations, we have discovered that the stratigraphical context of the site left a great deal to be desired. On many occasions nineteenth and twentieth century items have been found underneath artifacts dating from the period of the 1692 disaster. Furthermore, the site has been used, and is still being used, as a refuse dump, which has made dating of the artifacts recovered more difficult. Except in cases where artifacts are found under fallen walls of the buildings which sank in the 1692 disaster -- and this is not always foolproof either since many walls of the old buildings were still collapsing as late as the 1907 earthquake -- we have had to rely almost entirely on hallmarks and touchmarks on silver and pewterware and cross reference with already dated artifacts from other sites, for dating and identifying artifacts recovered on our site. This also applies to clay smoking pipes, which, with the exception of ceramic shreds and bones, constitute the largest number of any single type of artifact found on the site (3).

Other factors which make dating artifacts recovered on the site difficult are the almost total lack of underwater visibility and the manner in which the site has to be excavated. At the best, the underwater visibility at the beginning of each day's excavation is rarely more than three or four feet, and once the excavation is in progress, visibility is either nil, or only a few inches. The sediment on the site consists on the average of one to three feet of fine silt below which there is between three to five feet of very hard-packed mud, which is almost impossible to penetrate with our excavation tool -- an airlift -- unless it is first broken up in small pieces. Below the mud we find loose black sand and gravel, which like the silt, is easy to pump to the surface up the airlift tube. We have found from long experience that the best method of excavation on our site is to pump in the levels of the sand and gravel, which undermine the hard-packed strata of mud and causes it to fall deeper in the hole, which also results in the mud breaking apart and making it possible to excavate. Naturally, this causes artifacts lying at higher levels in the sediment to fall deeper, making stratigraphical dating of these artifacts an impossibility. However, unless another more practical method of excavation can be developed, we have no other choice but to excavate in this manner. If we were first to pump the silt to the surface and then try to dig through the hard mud with hand tools, not only would our work be increased tenfold, but also with the extremely bad visibility on the site many artifacts would probably be damaged or broken by the use of the hand tools.

At the time the excavation was to begin, a proposal was made to the Jamaican Government by a group of international financiers for the development of present-day Port Royal into a major tourist center, and included in the proposal was the construction of a deep-water port for cruise ships off the western tip of Port Royal. At that time, and until recently, it was believed that dredging operations would have to be undertaken on a portion of the site, and for that reason, it was decided that our excavations should be undertaken in that threatened area.

Before beginning the excavations, we learned from contemporary documents that not only was this area of minor importance in relation to the site as a whole, but also that most of the salvage operations undertaken on the site, right after the disaster and for several decades that followed, were confined to this area, since it was quite shallow and most of the roofs of the buildings remained above water for years, making it easy for salvors to recover items. The area between Fort James and Fort Carlisle, which

was where all the wealthy merchants lived and had their warehouses, sank in from forty to sixty feet of water, and relatively little salvaging was carried out there because the depth of the water was difficult for divers to work in at that time.

During the overall excavation we estimate that we have excavated between twenty and thirty buildings, but this estimate is no more than an educated guess. Only three buildings have been found intact. The positions of the remaining segments -- erect or fallen single walls or portions of them and, more rarely, two walls joined at right angles -- have been plotted, but it is not always possible to determine to which building they belonged originally. Their arrangement has been disturbed and many of the segments are missing, since a vast number of bricks have been salvaged from this area over the centuries.

However, we have been able to determine what some of the buildings were used for from the type of artifacts found in certain areas, as well as the identity of the owners from owners' initials found on silver and pewterware. We know that we have located two turtle crawls, the fish and meat markets, two taverns, a cobbler's shop, a carpenter's shop and possibly a pewterer's or silversmith's shop. The other buildings we believe were probably private homes; at least the nature of the artifacts found seem to indicate this. Two shipwrecks dating from the time of the 1692 disaster, and another believed to have sunk in 1722, have also been located in the area already excavated (4).

IV. OBSERVATION ON THE GLASS BOTTLES.

The overall site is heavily saturated with intact and fragments of bottles, dating from 1660 up to the present. The earliest ones, naturally, were lost during the 1692 disaster and the post earthquake bottles were either lost on numerous shipwrecks which have occurred over the site or during the various hurricanes which have struck Port Royal over the years; others were thrown into the sea by the town's inhabitants or from ships anchored over the site.

During the course of the excavation, we discovered only one small area where there were virtually no signs of wine bottles which pre-dated the earthquake. This area was contained in a fifteen foot radius where a large coin hoard was discovered and where very few of any other type of artifacts were found (5).

In two other sections of the area excavated, large numbers of wine bottles were discovered and both are believed to be the sites of taverns. One site, which is thought to have been the property of a land owner named Richard Collins, contained 88 intact and fragments of 140 other wine bottles, as well as over 500 clay smoking pipes, several wine glasses, and a large number of sherds of Rhenish stoneware mugs (6). Of the 88 intact wine bottles found in this area, 14 were of the type #10 (see section VIII of this report), 54 were of type #14, and the remainder were of type #16. In the area believed to be the second tavern site, a total of 103 intact and 54 semi-intact wine bottles, and 673 clay smoking pipes were discovered (7). Of the intact bottles, 97 were of type #10 in this report, 3 were of type #14 and three were of type # 17. All of the intact bottles on both tavern sites were discovered in 1692 earthquake stratigraphical context.

A total of 629 intact and 1960 semi-complete wine bottles, as well as the necks of 2345 other wine bottles pre-dating the 1692 earthquake were discovered during the course of the excavation. Of the intact wine bottles, they all consisted of types #10, 13, 14, 15, 16, 17, 19, and 20 (see Section VIII of this report). Because of a thick calcareous deposit on seven of the intact wine bottles, their types could not be classified until preservation work is undertaken on them. Of the semi-complete wine

bottles dating from and at the time of the 1692 disaster, they consisted of the following types: 579 of type #10; 207 of type #13; 254 of type #14; 74 of type #15; 398 of type #16; 320 of type #17; 76 of type #19; and 52 of type #20. It should be noted that at least fifty per cent of these bottles pre-dating and dating from the time of the 1692 earthquake were not discovered in the 1692 earthquake stratigraphical level, but rather at more recent dated stratigraphical levels and even on the surface of the sea floor sediment. There are two primary reasons for this phenomena: (1) during subsequent seismic disturbances over the years following the 1692 disaster, many artifacts were dislodged from deep positions in the sediment and brought to higher levels; and (2) thousands of ships anchored over the site through the centuries and pulled to higher levels many artifacts buried in the bottom sediment -- this occurred when the ship's anchor either dragged because of strong winds or currents or as the anchor was being hauled aboard the ship.

During the past decade there has also been a large amount of unauthorized diving by amateurs on the site who have recovered thousands of bottles of all dates, some easily discovered on the surface or others protruding through the surface of the bottom sediment. Many bottles were probably recovered by the early salvors and others broken into small fragments; therefore, we have no accurate means to determine the number of wine bottles which were lost during the 1692 disaster in the area we have excavated.

Until preservation work has been undertaken on all of the intact wine bottles and the calcareous growth removed from the mouths of the majority of the bottles, we have no method of determining how many of them contained wine or other liquids, as those containing sea water weigh approximately the same as those containing their original liquids. In the course of dismantling a fallen brick wall on the site, three wine bottles were discovered with corks in their mouths and containing air, which as they were uncovered, floated to the surface of the sea.

None of the intact or semi-complete pre-earthquake wine bottles contained seals on them, but some might eventually be found when the calcareous growth has been removed from all of the bottles now awaiting preservation. Among the forty or more bushels of wine bottle fragments, eleven seals were discovered and drawings of them and their identifications will be contained in a future publication. Of the eleven seals, I have already established that six of them are off post-earthquake bottles.

According to Ivor Noël Hume, "it was not until the close of the seventeenth century that brass wire came into general use" to hold the corks in place on wine bottles. From my findings at Port Royal, this statement can certainly be substantiated, as we found brass wire only sealing three wine bottle mouths of wine bottles which were in use at the time of the 1692 earthquake and afterward; and since all three were not found in the 1692 context, they certainly could have been lost on the site after 1692 (8). Copper wire, which was used occasionally during the eighteenth century, but which was not apparently widely used until the close of that century, was not found on any of the bottles or fragments of bottles discovered during the excavation.

In using the drawings and the information contained on the bottles described in this report, the following factors must be taken into consideration. Although most of the bottles are described as "wine bottles", they could have been used to contain a wide variety of different liquids, both alcoholic or non-alcoholic. The original color of the glass on bottles might have been changed due to chemical and organic action in the sediment and sea water. The thickness of the glass on all of the un moulded bottles varied greatly and in all of the bottle drawings, reduced to one quarter size, the thickness of the glass was not reduced, but is shown as near to being the original thickness as we could determine. Due to weathering of the glass on the bottles, it is almost impossible

to determine the original thickness of the glass: in some cases the weathering made the glass as much as twice its original thickness, and in other cases the weathering caused a great deal of the thickness of the original glass to be lost. Several intact bottles and numerous fragments of wine bottles dating from the 1692 disaster were sent to Dr. Robert Brill of the Corning Glass Museum for analysis, and he had the following to report about the specimens he examined:

One of the most interesting things to me about Port Royal is the chemical process by which glass deteriorates there. We have found on examination of some of the wine bottles excavated [there] that the weathering crusts are very thick -- thicker than on most corroded glasses from this period. Apparently they have been submerged under a thick layer of sediment which covers the sunken city.

Further research into the identification of the makers' and patent marks on many of the moulded bottles should also narrow the date range when these bottles were in general use.

V. PRESERVATION OF THE GLASS BOTTLES.

Most of the white lead glass objects such as wine glasses, tumblers, and pharmaceutical vials or medicine bottles, were recovered free from any calcareous deposits, though most were covered with thin coatings of lead oxide, and sometimes iron oxide, when discovered in close association with artifacts made of iron. The method for preserving or cleaning these types of glass objects was as follows: a 10 percent solution of nitric acid, to remove the lead oxide, and a 5 per cent solution sulfuric acid, followed by thorough washings in distilled water, as recommended by Mendel Peterson of the Smithsonian Institution (9). Similarly, most of the bottles post-dating 1740 required no preservation other than a thorough washing in fresh water to prevent efflorescence from developing on the glass.

However, we have yet to discover a proper method of preserving the bottles ranging in dates from 1660 to 1740. At present a preservation laboratory is being constructed at Port Royal, and one of the main items to be studied will be a method of properly preserving these wine bottles.

One of the interesting things about the wine bottles in the date range 1660 - 1740 is that bottles from the same period but found elsewhere in Jamaica and throughout the Caribbean are discovered in a better state of preservation and can be properly preserved with the method recommended by Peterson (10).

During the early days of our excavation, I attempted to use this same method: first removing the sediment inside the bottle, then the removal of any exterior calcareous growth by giving the bottle a bath in a 0.2 solution of sulfuric acid for periods of time from several days to two weeks (depending on the amount of calcareous growth on the bottle), followed by many washings in fresh water (or distilled water when available) until the glass is free of alkalis. The bottle is then dried in several baths of alcohol and coated with four to five layers of plastic spray. However, after several months, we discovered that the glass was flaking under the plastic coating and within a year's time several of the bottles had completely disintegrated.

At the recommendation of Alan Albright of the Smithsonian Institution, one of the leading experts on preservation of artifacts recovered from sea water, we next experimented with coating the bottles with Polyvinylacetate, which produced negative results. We then tried three types of commercial glues: "Gloy," "Elmer's Glue" and "Padding Cement." The bottles coated with any of these three glues were kept in an air conditioned environment; the glass did not flake after a year's time and the bottles remained intact, although their glass acquired a rainbow appearance. Other bottles, treated in a like manner, but not stored in an air conditioned environment, suffered the same fate as those coated with plastic spray or Polyvinylacetate.

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- (1) For more information regarding the history of the site see: Marx, R.F., Pirate Port: The Story of the Sunken City of Port Royal (Cleveland and New York, 1967).
- (2) John Taylor, "Multum in Parvo or Parvum in Multo. Taylor's second part of the history of his life and travels in America" 1688.
- (3) For more information concerning our methods of excavation and the work accomplished during 1966 see: Marx, R.F., "Excavation of the Sunken City of Port Royal: December 1965 - December 1966" (Institute of Jamaica, Kingston, Jamaica, March 1967).
- (4) For more information concerning the work accomplished throughout the overall excavation see: Marx, R.F., "Excavation of the Sunken City of Port Royal: January 1967 - March 1968" (Jamaica National Trust Commission, Kingston, Jamaica, May 1968).
- (5) Marx, R.F., May 1968, pp. 107-9.
- (6) Marx, R.F., March 1967, p. 17.
- (7) Ibid., p. 55.
- (8) Hume, Ivor Noël, "The Glass Wine Bottle in Colonial Virginia," Journal of Glass Studies, vol. III, 1961 (Corning, New York), p. 110.
- (9) Peterson, Mendel, History Under the Sea: A Handbook for Underwater Exploration (Washington, D. C., 1965), pp. 61-2.
- (10) Ibid., p. 62.

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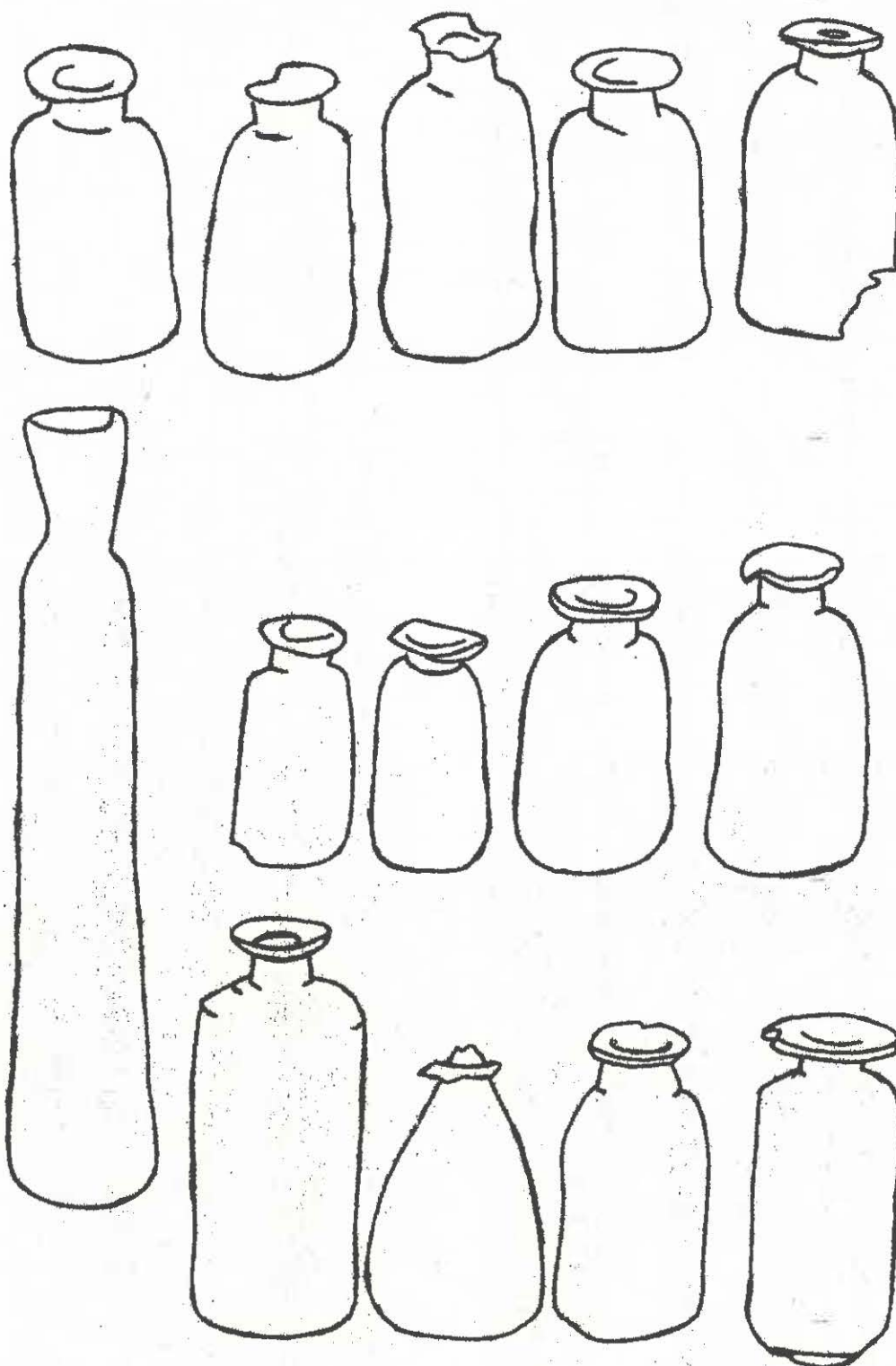
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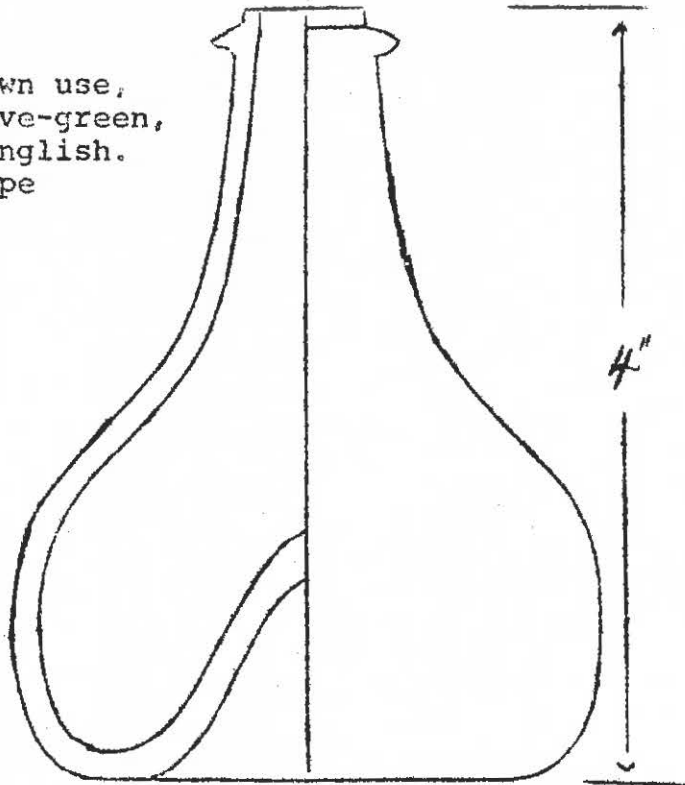
VIII. DRAWINGS OF THE GLASS BOTTLES.



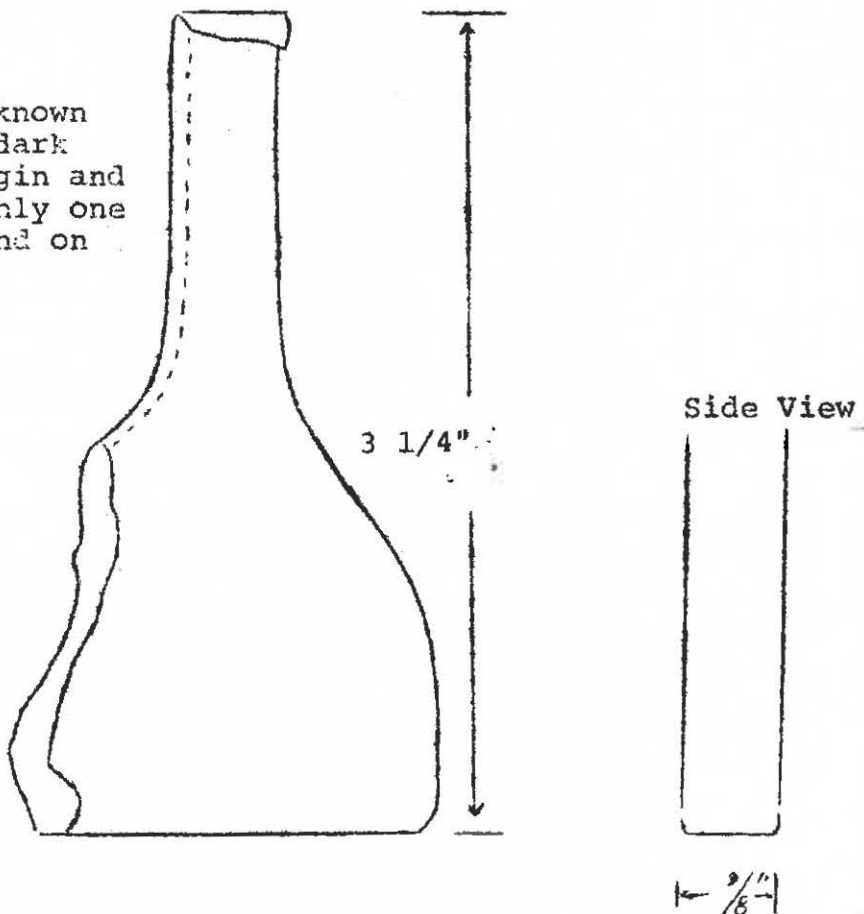
1. Pharmaceutical vials, full size, bluish-green in color, pre-dating 1692, found together in wooden box and packed in straw. Probably English.

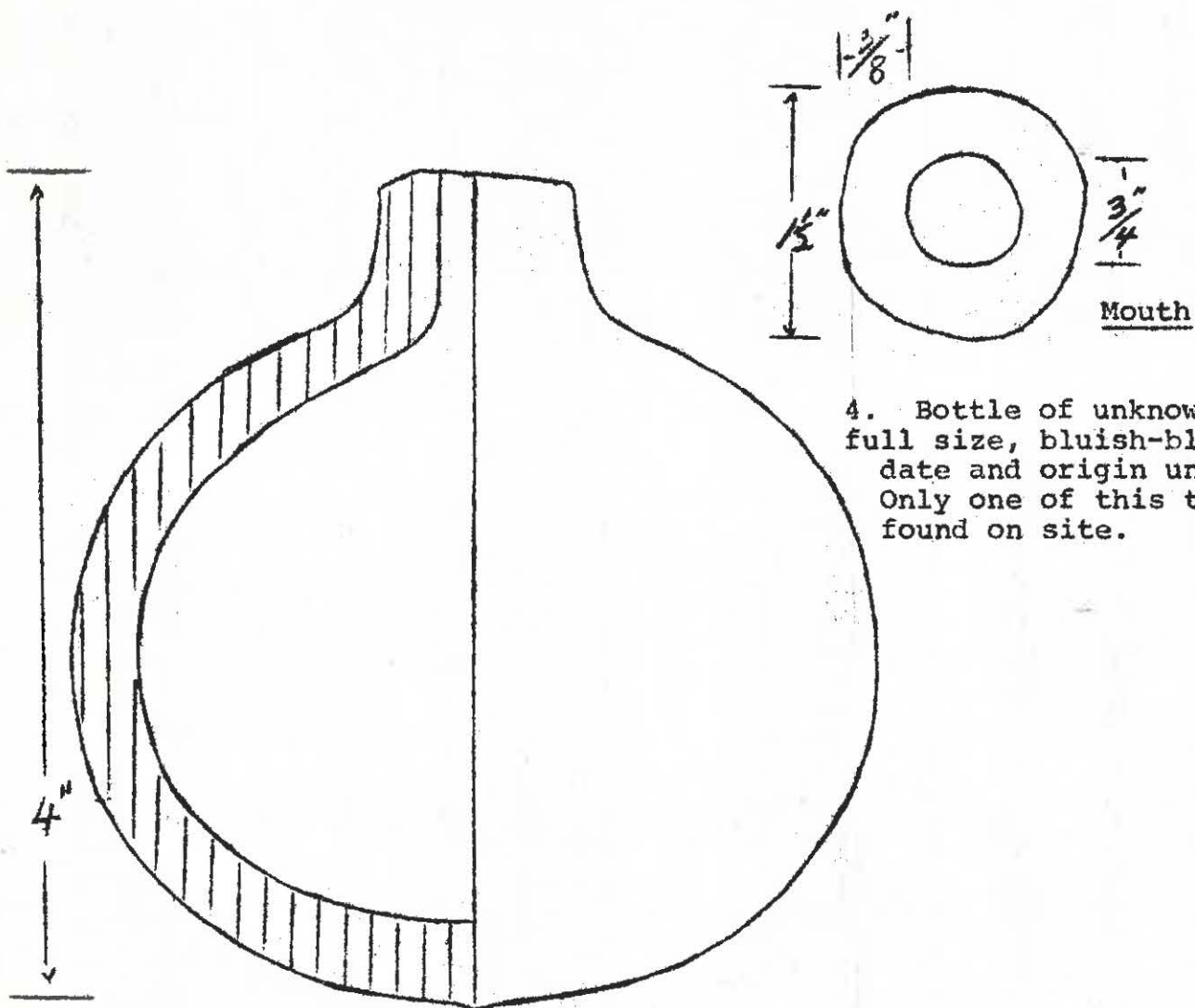


2. Bottle of unknown use,
full size, dark olive-green,
c. 1690, probably English.
Only one of this type
found on the site.

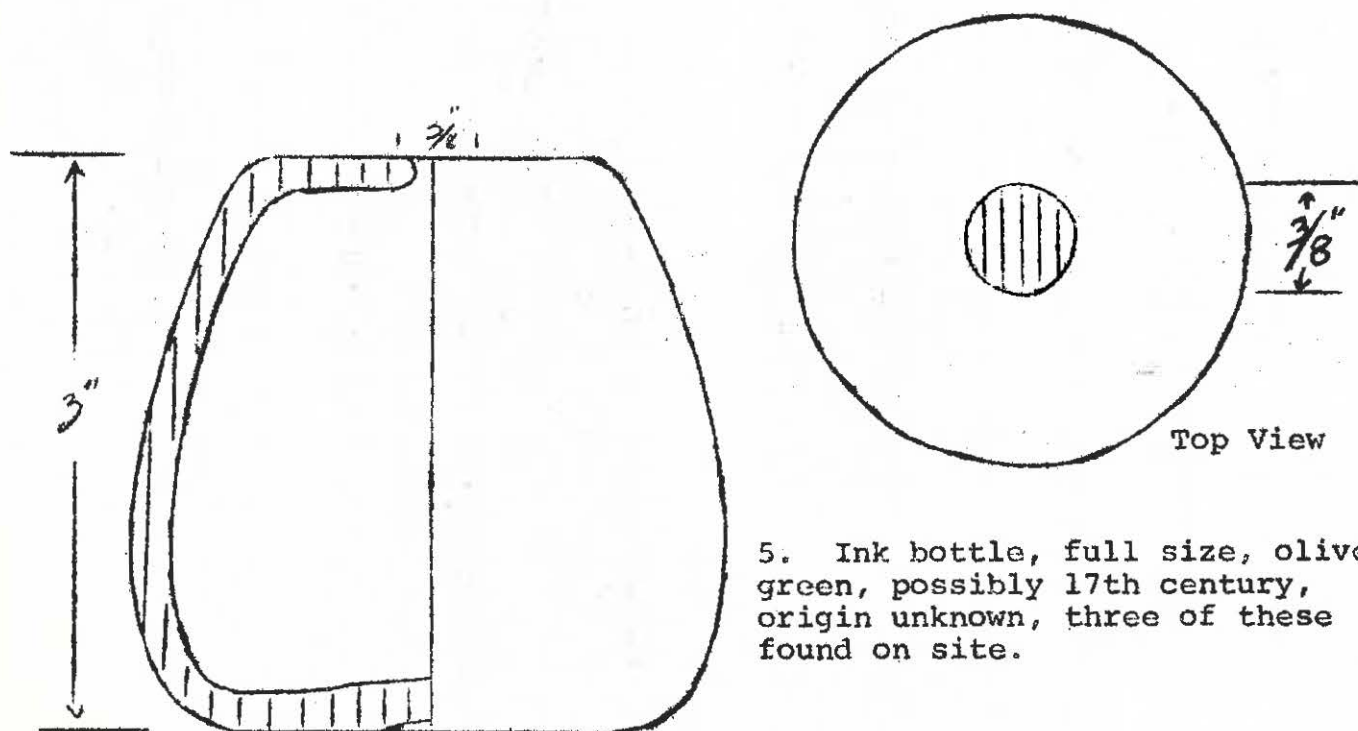


3. Bottle of unknown
use, full size, dark
olive-green, origin and
date unknown. Only one
of this type found on
site.





4. Bottle of unknown use, full size, bluish-black, date and origin unknown. Only one of this type found on site.

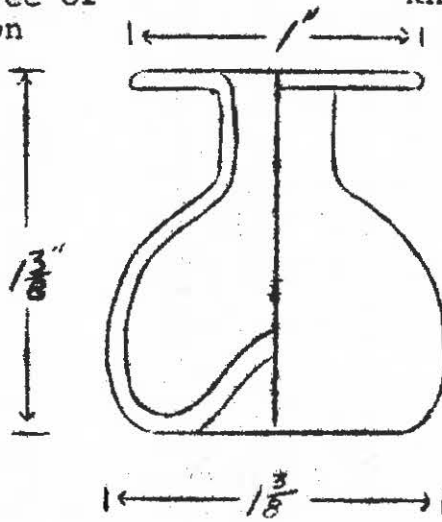


5. Ink bottle, full size, olive-green, possibly 17th century, origin unknown, three of these found on site.

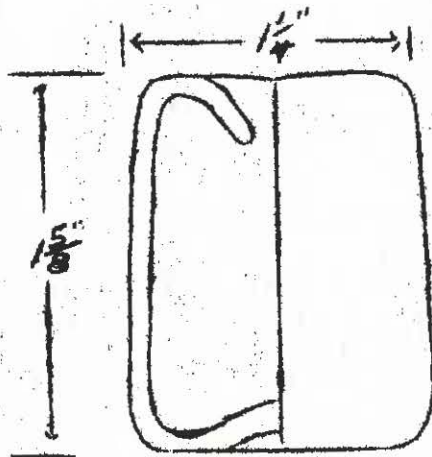
6. Probably a pharmaceutical vial, full size, dark olive-green, probably 19th century and of Continental manufacture. Three of this type found on site.



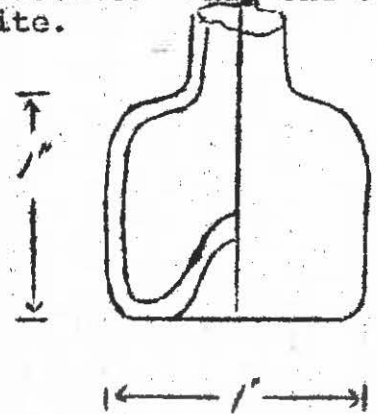
7. Perfume bottle, full size, light green, pre 1692, origin unknown. Only one found on site.



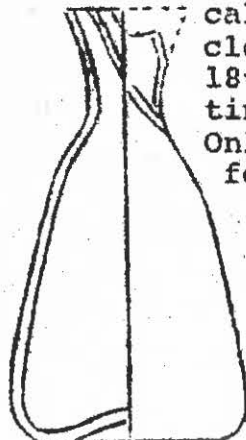
8. Ink bottle, full size, green, probably 18th century, origin probably Continental. Only one found on the site.



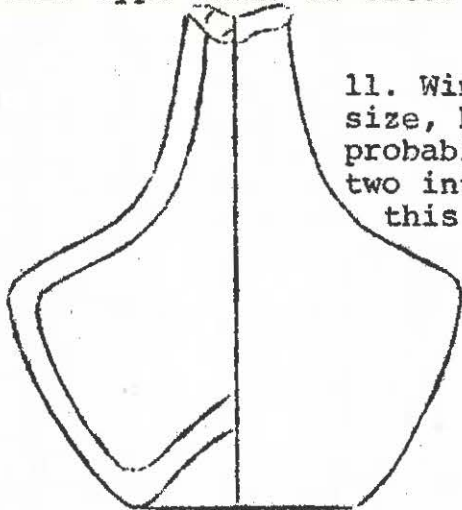
9. Possibly perfume bottle, full size, dark olive-green, probably 13th century and of Continental manufacture. Only one found on site.



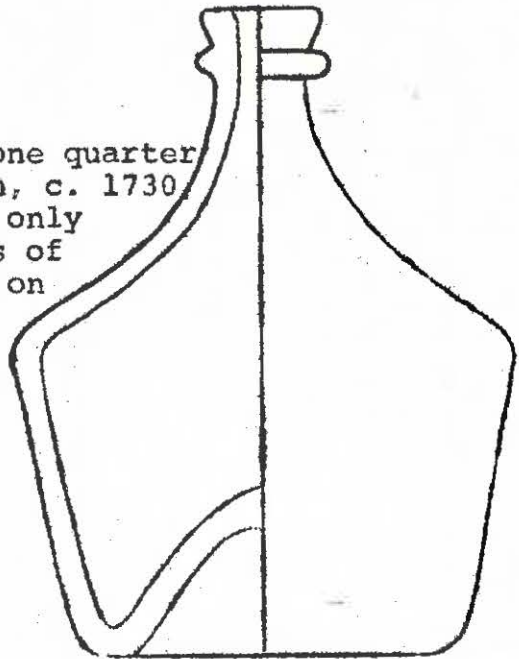
9b. Probably pharmaceutical vial, full size, clear glass, probably 18th century and of Continental manufacture. Only one of this type found on site.



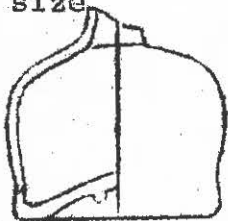
10. Wine bottle, one quarter size, bluish-green, c. 1660-1690, English. Total of 179 of this type found on site.



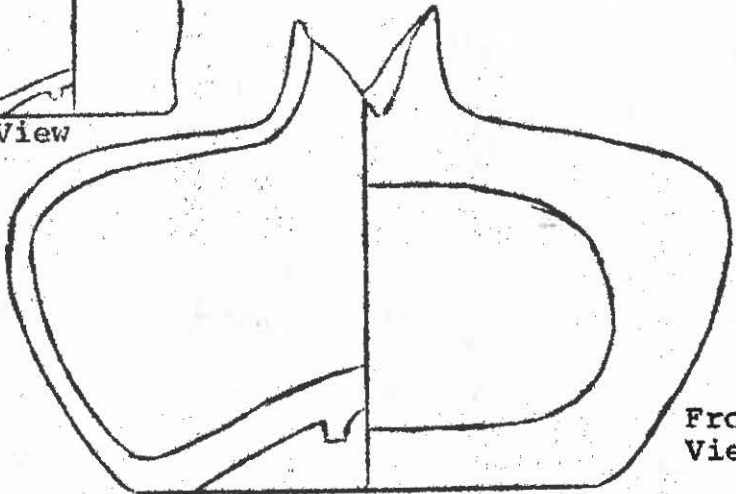
11. Wine bottle, one quarter size, bluish-green, c. 1730, probably English, only two intact bottles of this type found on site.



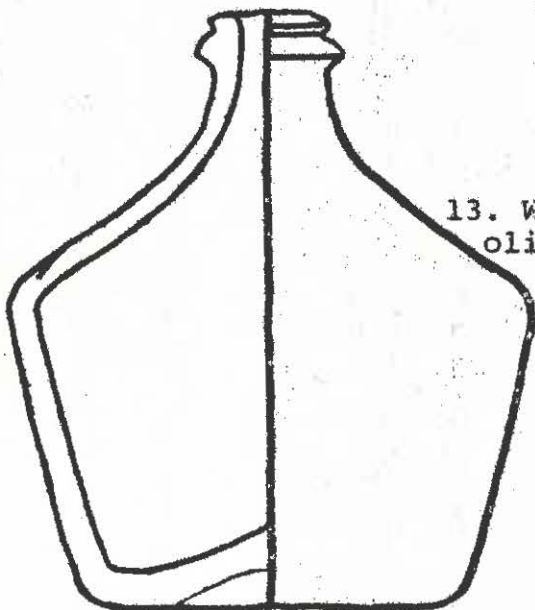
12. Wine bottle, one quarter size, dark olive-green, probably early 18th century, probably English. Only one found on site.



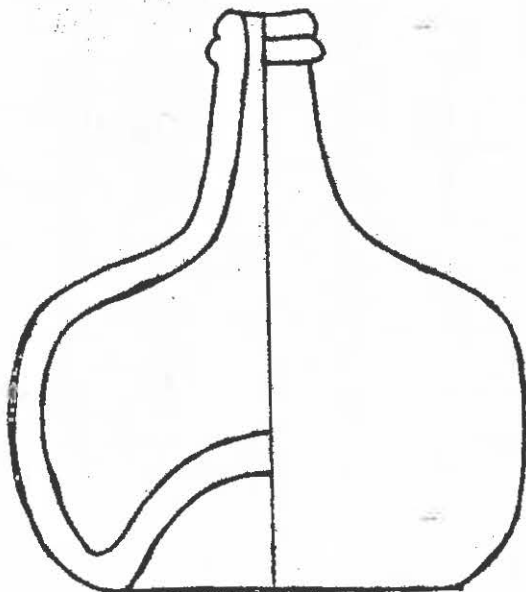
Side View



Front View

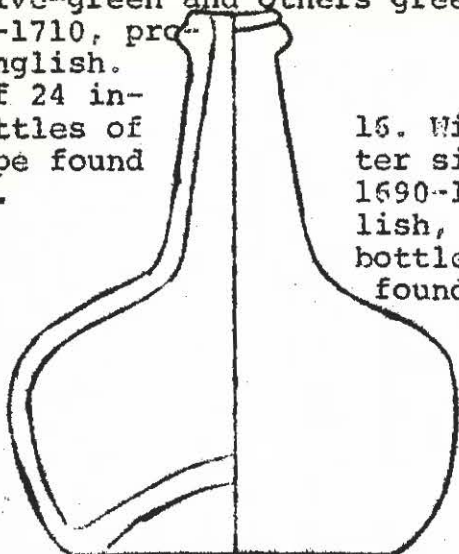


13. Wine bottle, one quarter size, dark olive-green, c. 1660-1690, English. Total of 34 intact bottles of this type found on site.

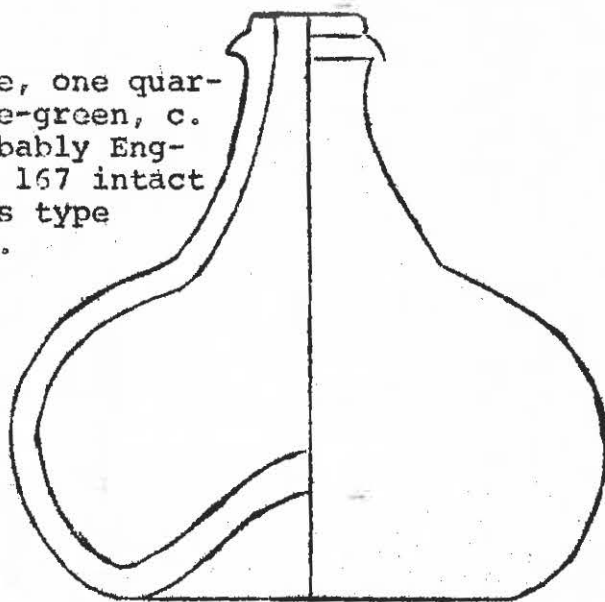


14. Wine bottle, one quarter size, olive-green, c. 1690, English. Total of 109 intact bottles of this type found, most in pre 1692 context.

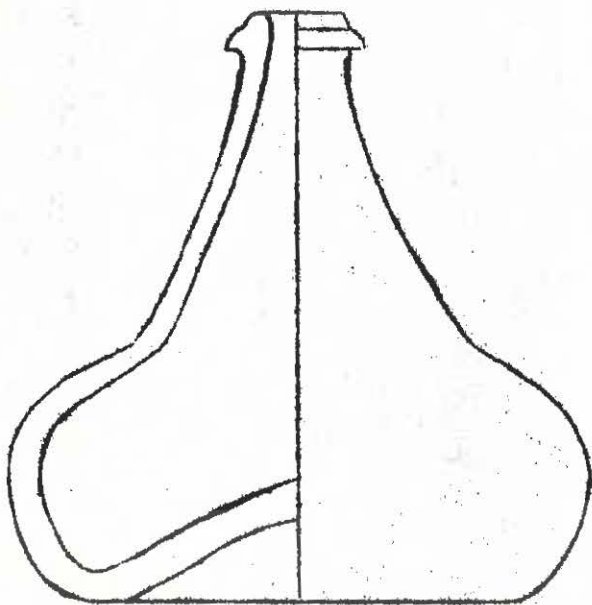
15. Wine bottle, one quarter size, some dark olive-green and others greenish-blue, c. 1690-1710, probably English. Total of 24 intact bottles of this type found on site.



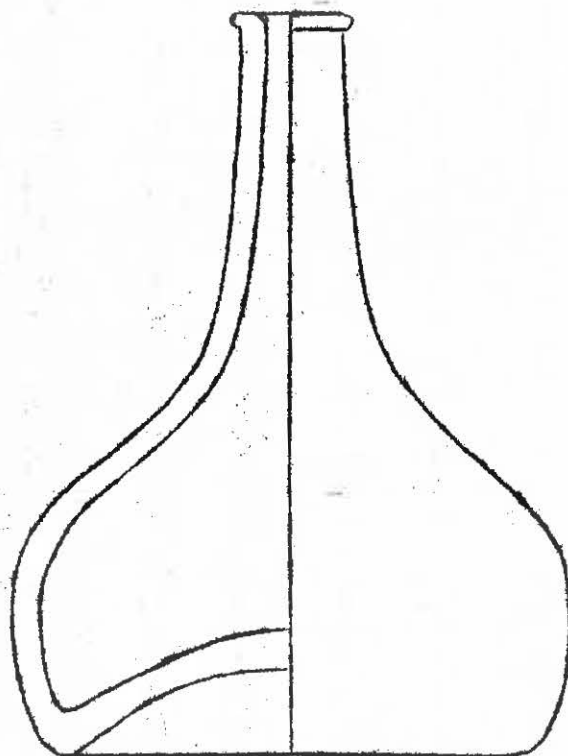
16. Wine bottle, one quarter size, olive-green, c. 1690-1720, probably English, total of 167 intact bottles of this type found on site.

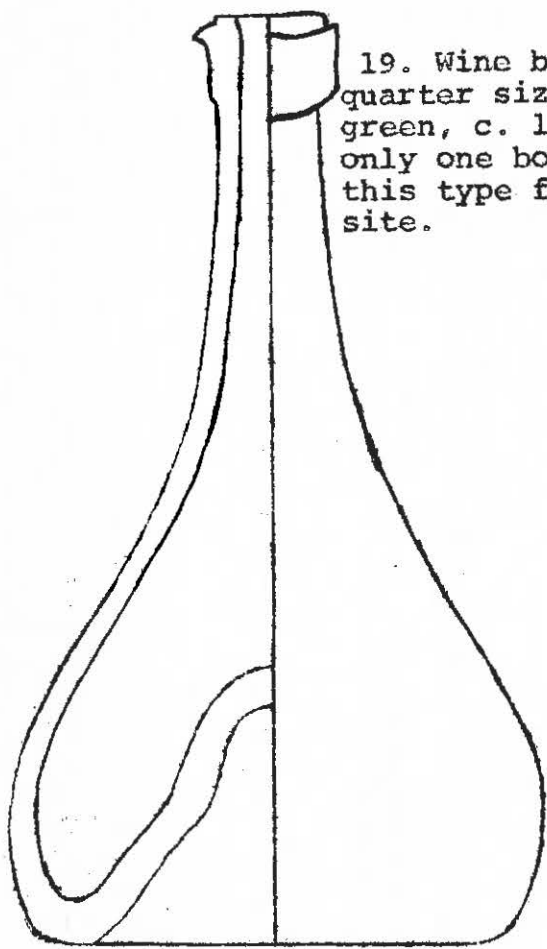


17. Wine bottle, one quarter size, olive-green, c. 1690-1720, English, a total of 107 intact bottles of this type found on site, most in pre 1692 context.

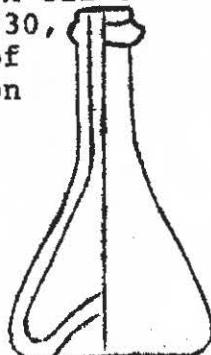


18. Wine bottle, one quarter size, dark olive-green, c. 1720-30, probably English, total of four intact bottles of this type found on site.

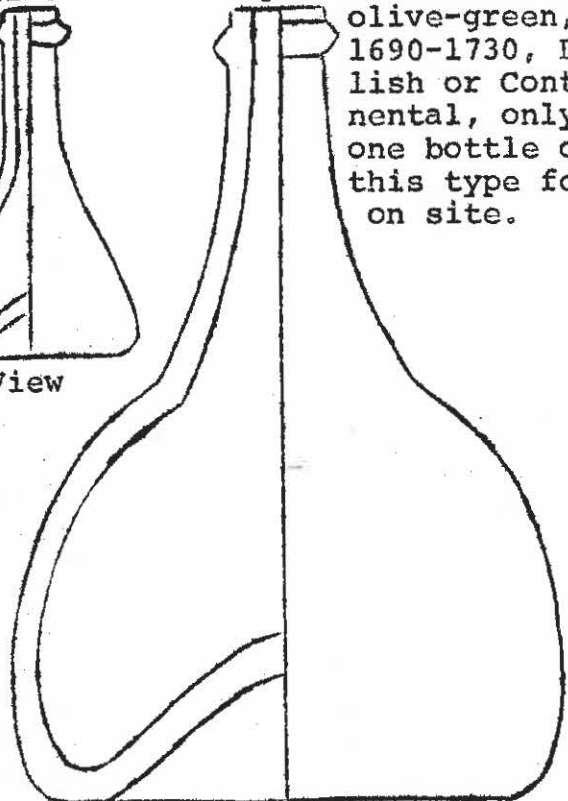




19. Wine bottle, one quarter size, dark olive-green, c. 1690-1730, only one bottle of this type found on site.



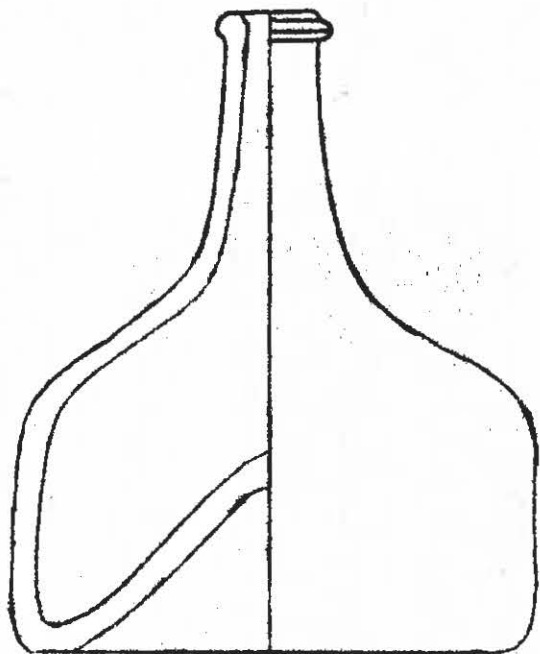
Side View



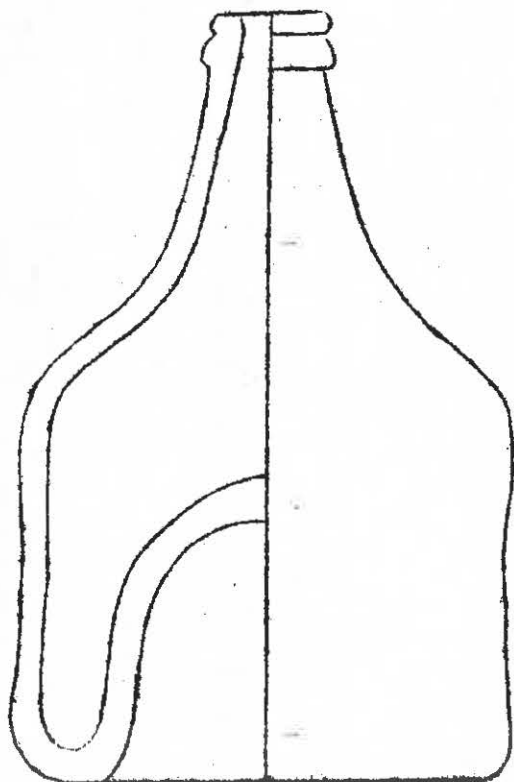
20. Wine bottle, one quarter size, dark olive-green, c. 1690-1730, English or Continental, only one bottle of this type found on site.

Front View

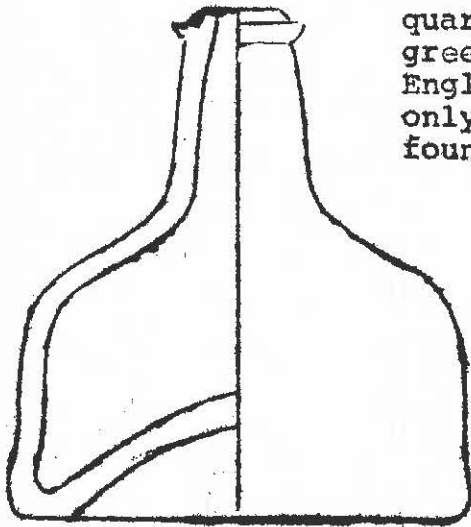
21. Wine bottle, one quarter size, olive-green, c. 1730, probably English, total of 18 intact bottles of this type found on site.



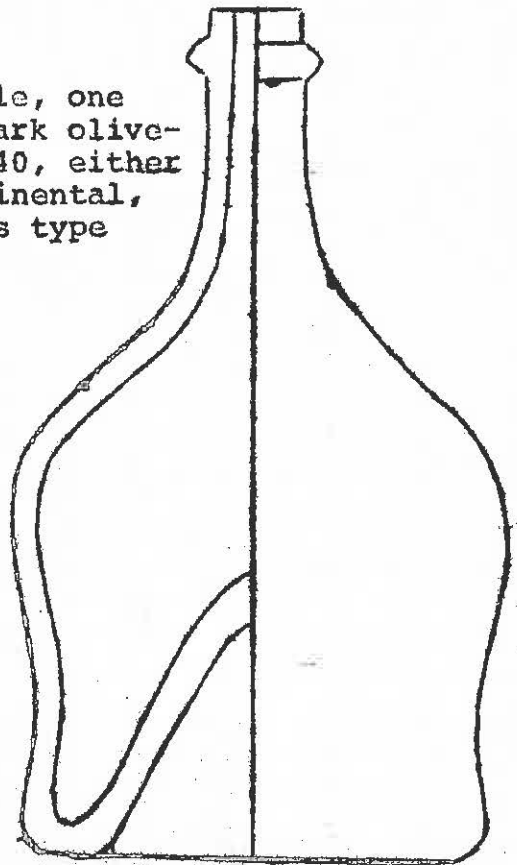
22. Wine bottle, one quarter size, dark olive-green, c. 1740, English, total of 23 intact bottles of this type found on site.



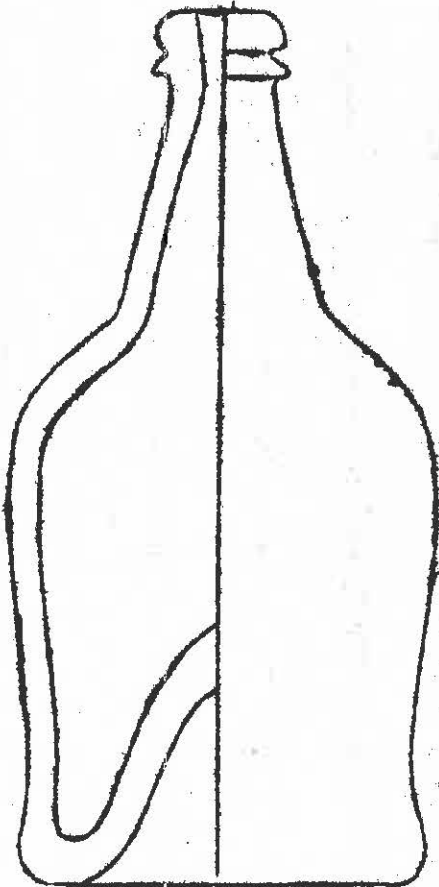
24. Wine bottle, one quarter size, dark olive-green, c. 1730-40, either English or Continental, only one of this type found on site.



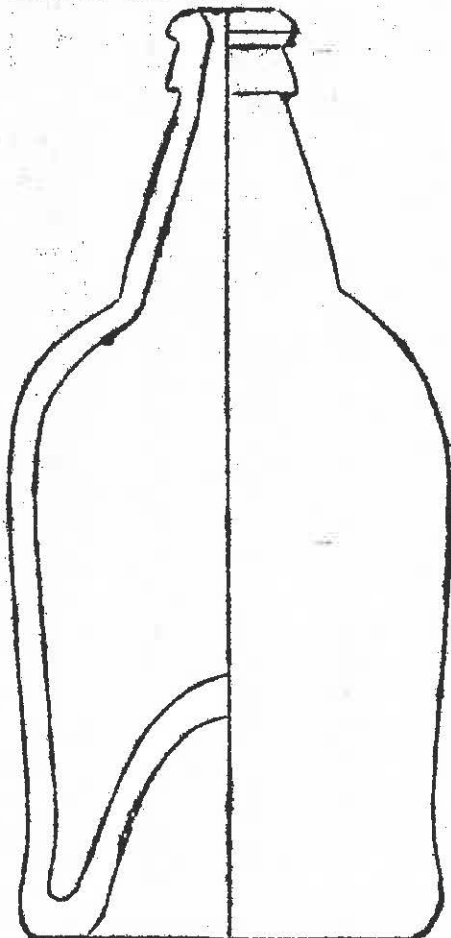
23. Wine bottle, one quarter size, olive-green, c. 1720, probably English, only five intact bottles of this type found on site.

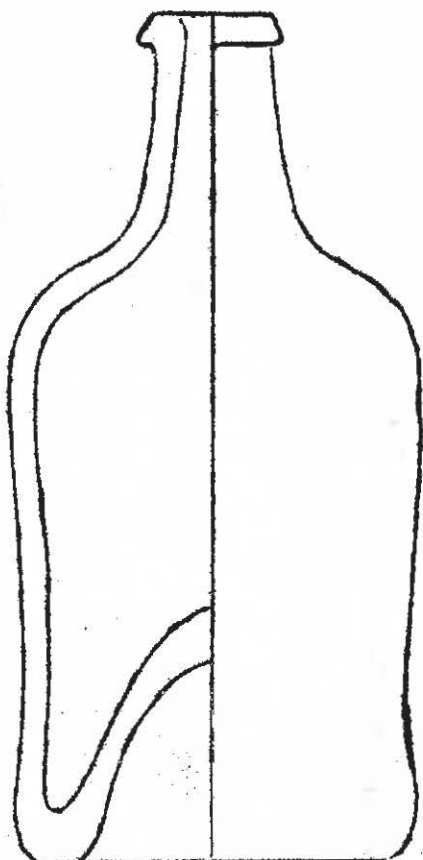


26. Wine bottle, one quarter size, dark blue, c. 1780-1800, probably English, six intact bottles of this type found on site.

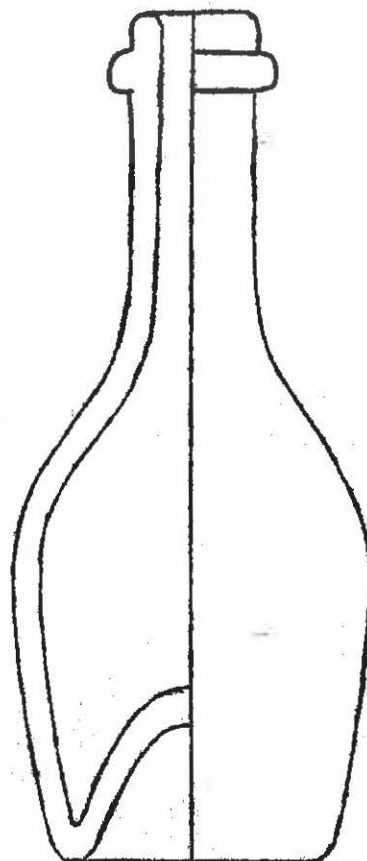


25. Wine bottle, one quarter size, dark brown, c. 1780, probably English, only one of this type found on site.

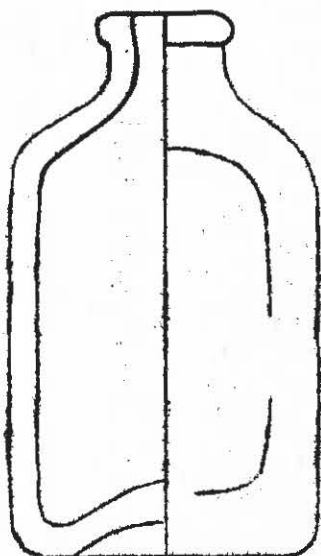




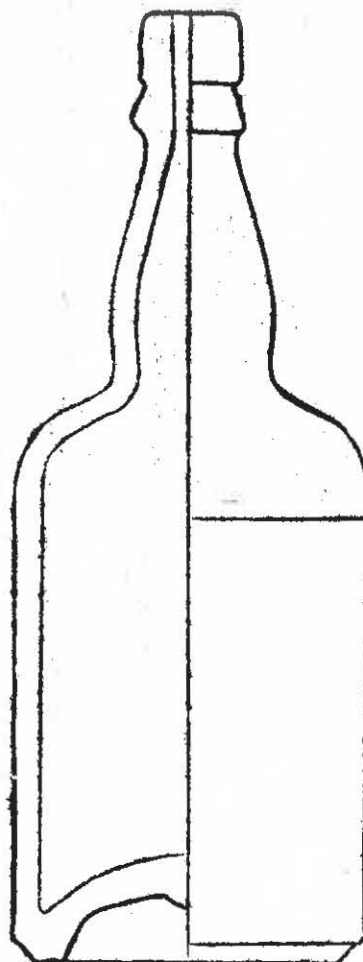
27. Wine bottle, one quarter size, dark brown, c. 1780-1820, probably English, only one of this type found on site.



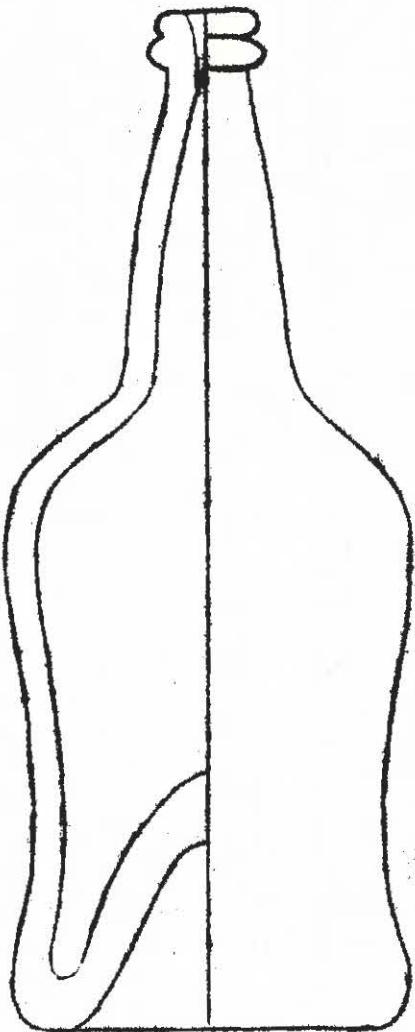
28. Wine bottle, one quarter size, black, c. 1770-90, either French or Continental, only one found on site.



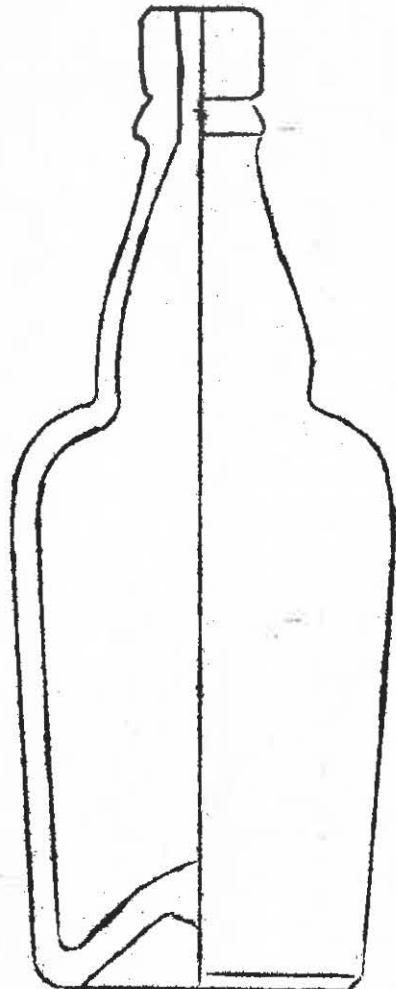
29. Moulded bottle of undetermined use, one quarter size, olive-green, c. 1825-50, probably English, only one found on site.



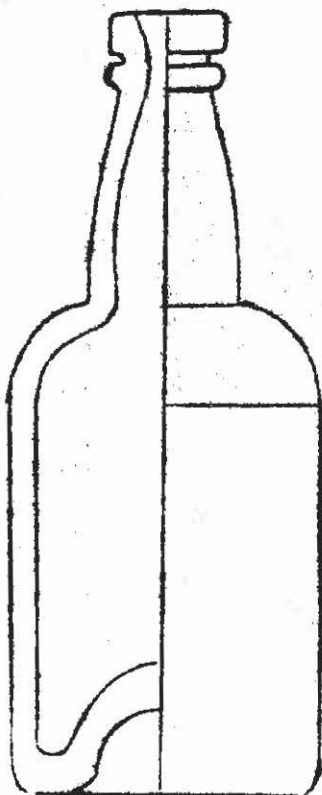
30. Wine bottle, one quarter size, moulded, dark olive-green, c. 1840, probably English, only one found on site.



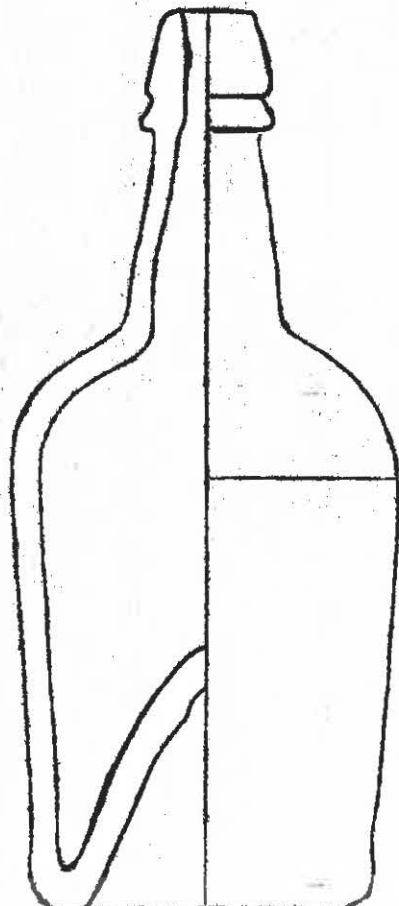
31. Wine bottle, one quarter size, olive-green, c. 1770, probably English, only one found on site.



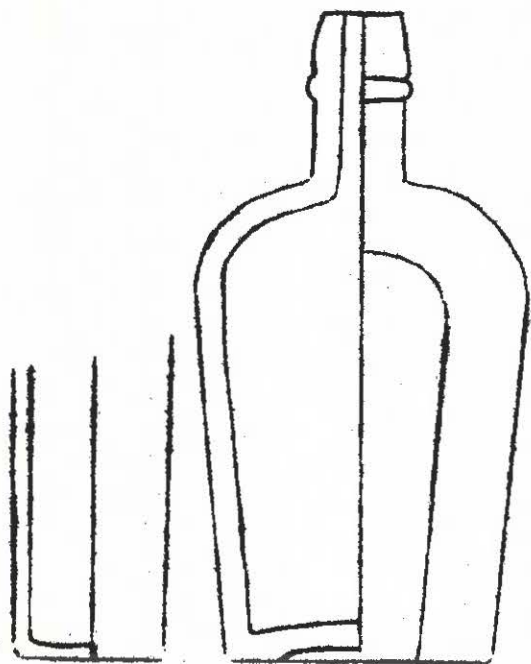
32. Wine bottle, one quarter size, dark olive-green, moulded c. 1820-40, probably English, only two found on site.



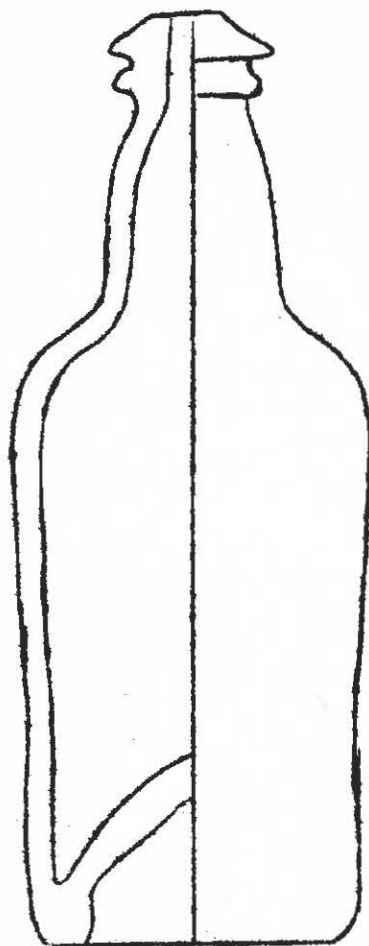
33. Wine bottle, one quarter size, amber, moulded, c. 1820, probably English, only one found on site.



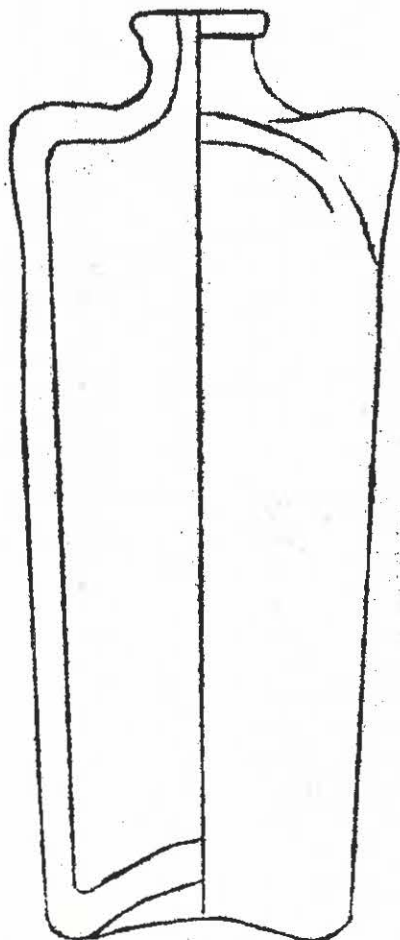
34. Wine bottle, one quarter size, dark olive-green, moulded, c. 1820-40, probably English, three of this type found on site.



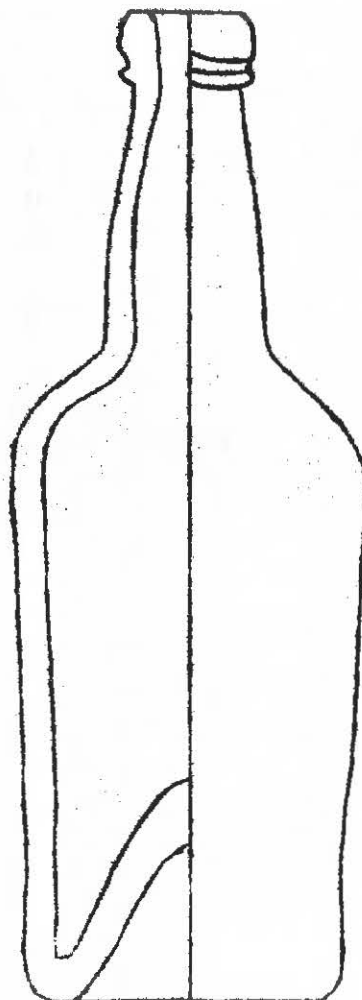
35. Spirit bottle, one quarter size, light olive-green, moulded, c. late 19th or early 20th century, either American or English, only one found on site.



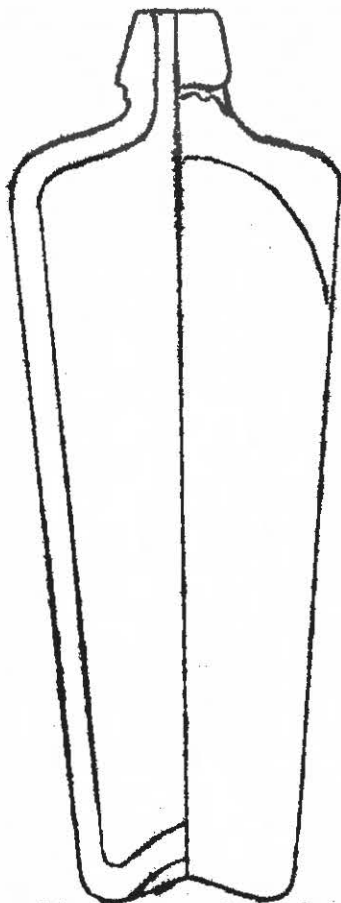
36. Wine bottle, one quarter size, dark brown, c. 1780-1800, probably English, only one found on site.



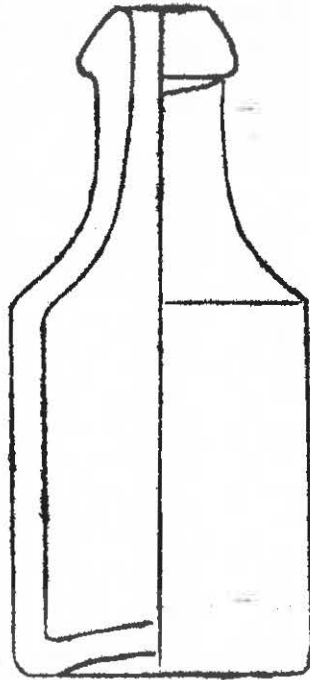
37. Square-bodied case bottle, use unknown, one quarter size, dark blue, moulded, c. probably 18th century, probably English, possibly Dutch, only one found on site.



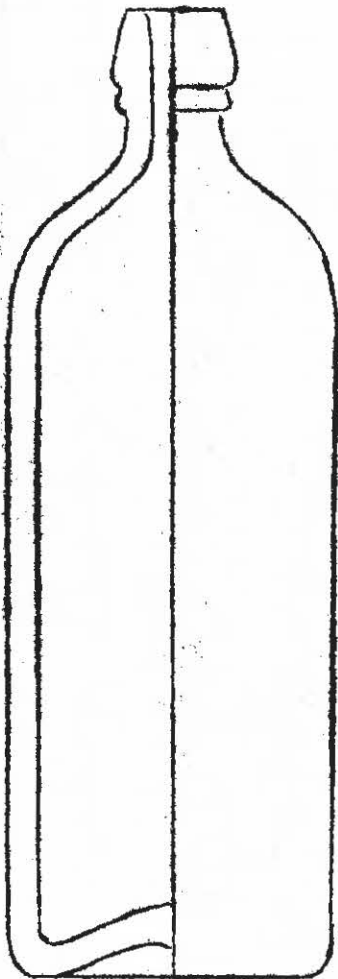
38. Wine bottle, one quarter size, dark brown, c. 1780-1800, probably English, only one found on site.



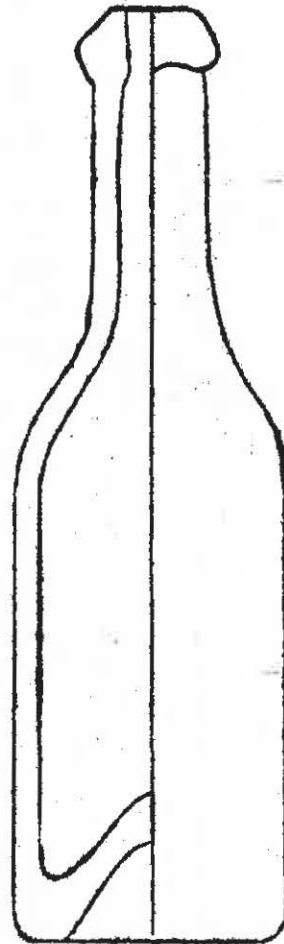
39. Square-bodied case bottle, use unknown, one quarter size, dark olive-green, moulded, c. 19th century, probably Dutch, possibly English, only one found on site.



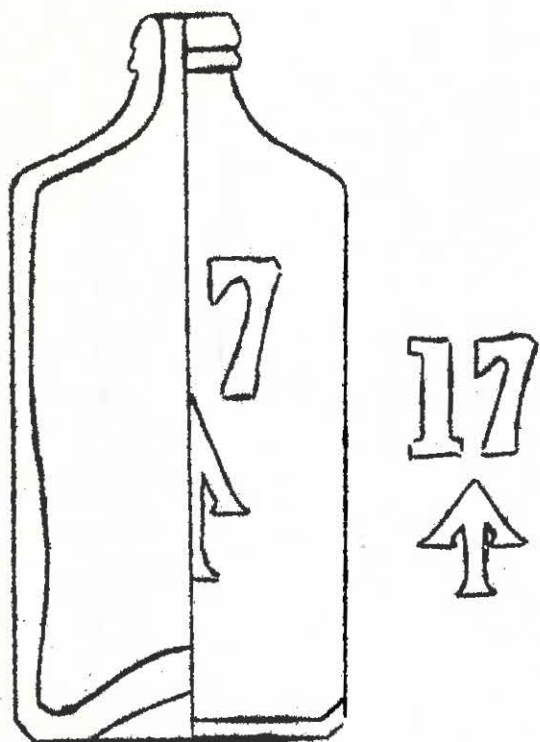
40. Bottle of undetermined use, one quarter size, olive-green, moulded, probably second half of 19th century, origin unknown, only one found on site.



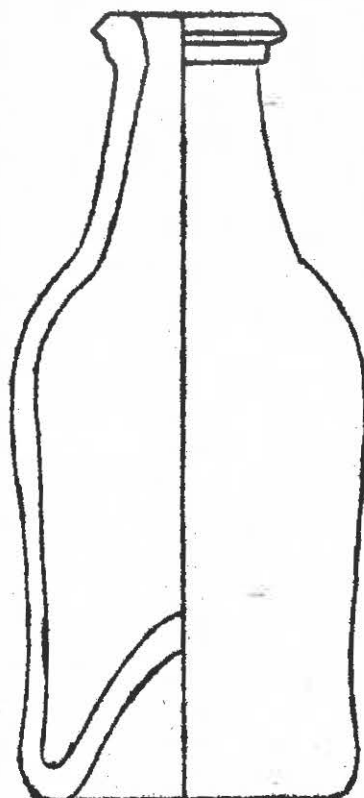
41. Bottle of undetermined use, one quarter size, dark olive green, moulded, probably late 19th century, probably American or English, only one found on site.



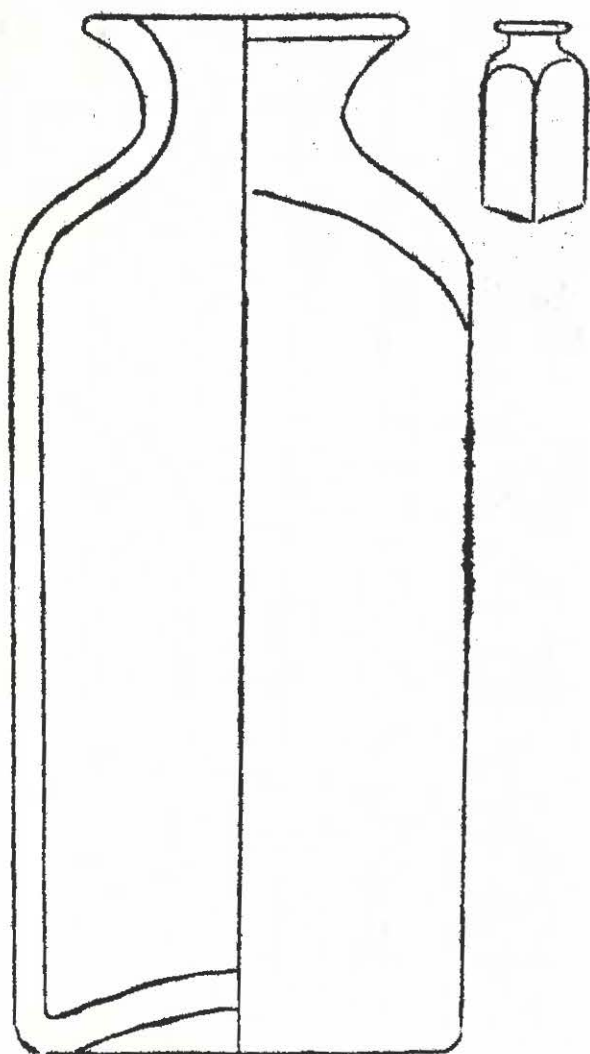
42. Wine bottle, one quarter size, dark olive-green, probably late 18th century, probably Continental, possibly French, only one found on site.



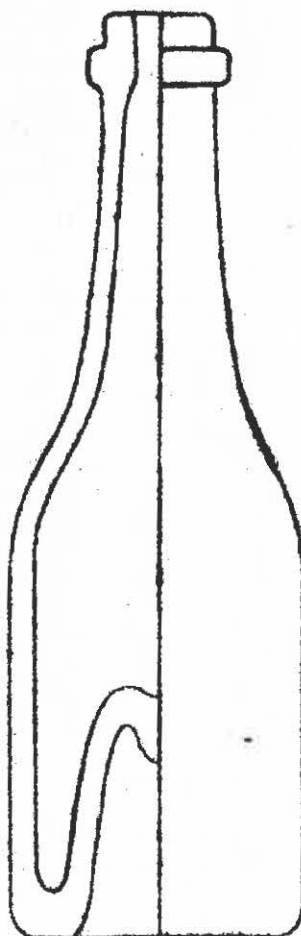
43. Bottle of unknown use, one quarter size, dark olive-green, moulded, probably c. 1820, English, only one found on site.



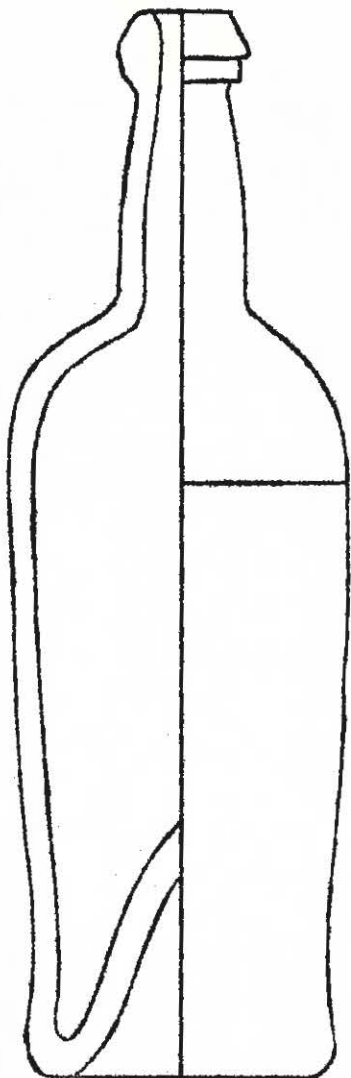
44. Bottle of unknown use, one quarter size, greenish-blue, probably c. 1790-1800, probably English, only one found on site.



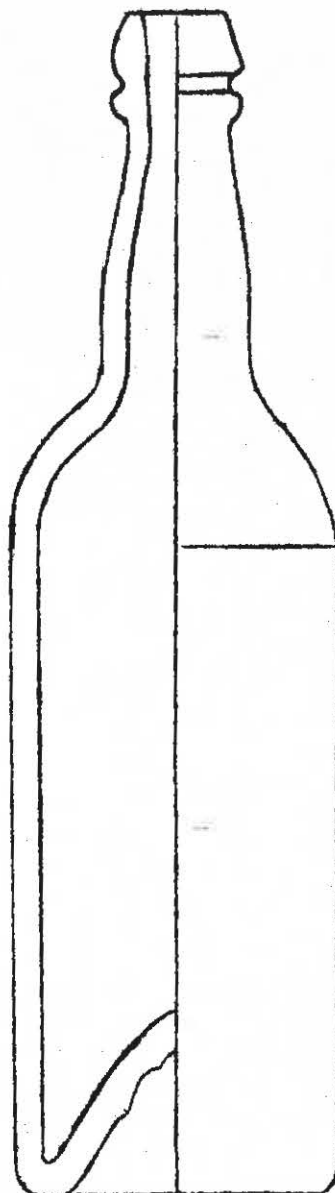
45. Square-bodied bottle of unknown use, one quarter size, dark olive-green, c. early 19th century, probably English or American, only one found on site.



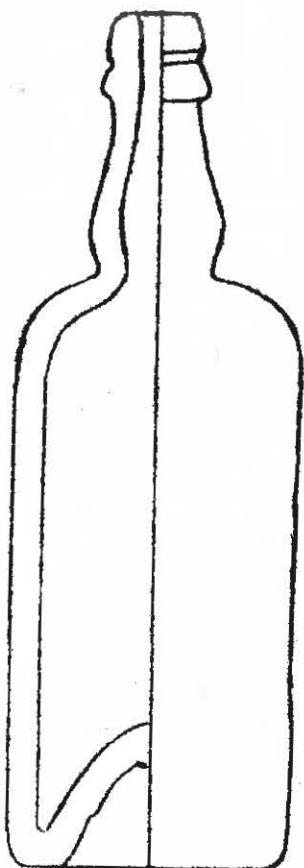
46. Wine bottle, one quarter size, dark olive-green, probably 19th century, probably French, only one found on site.



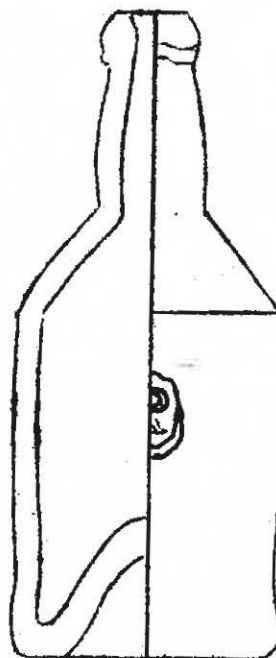
47. Wine bottle, one quarter size, dark olive-green, c. 1780-1800, probably English, total of 34 of this type found on site.



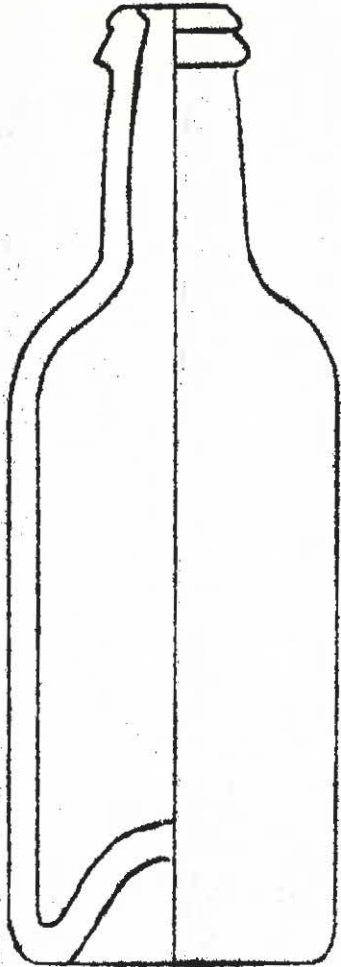
48. Wine bottle, one quarter size dark olive-green, moulded, late 19th century, American, English or Continental, total of 63 intact bottles of this type found on site.



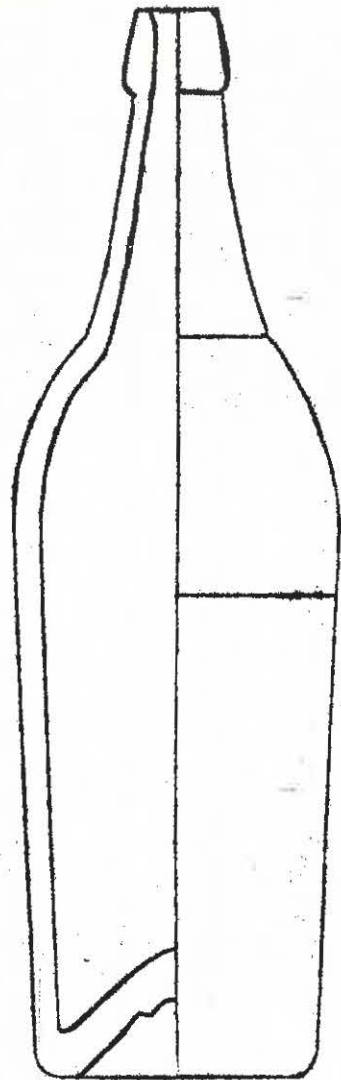
49. Wine bottle, one quarter size, dark olive-green, moulded, probably last half of 19th century, probably American or English, total of 24 intact bottles found on site.



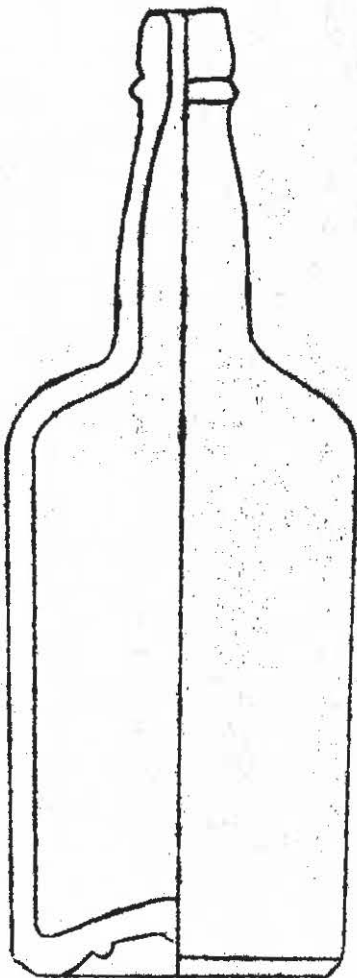
50. Bottle of unknown use, one quarter size, light olive-green, probably 1780-1820, possibly even as late as 1820, English, only one found on site.



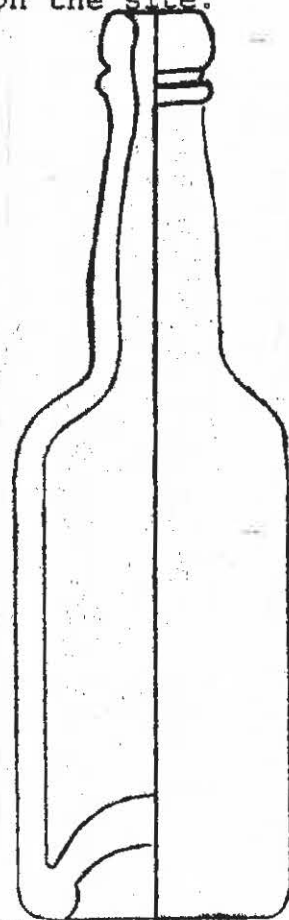
51. Wine bottle, one quarter size, amber, c. 1780-1800, probably English, three intact bottles of this type found on site.



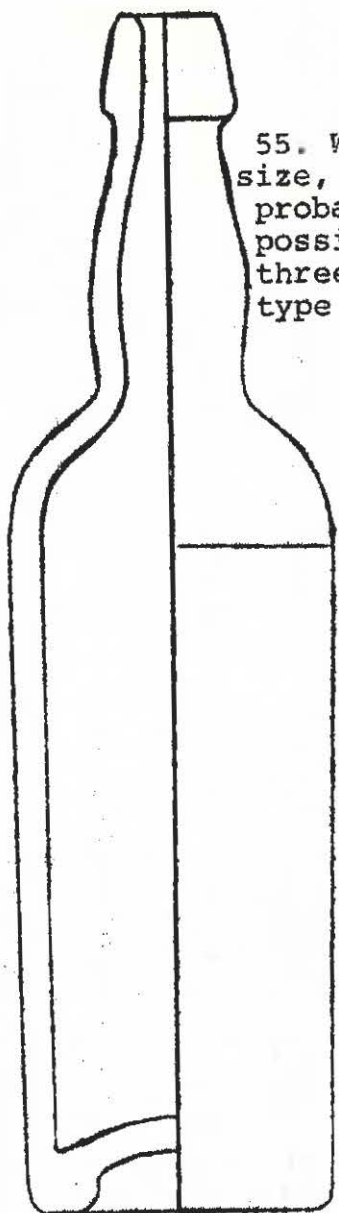
52. Wine bottle, one quarter size, olive-green, moulded, last half of 19th century, probably European, possibly American, only one found on the site.



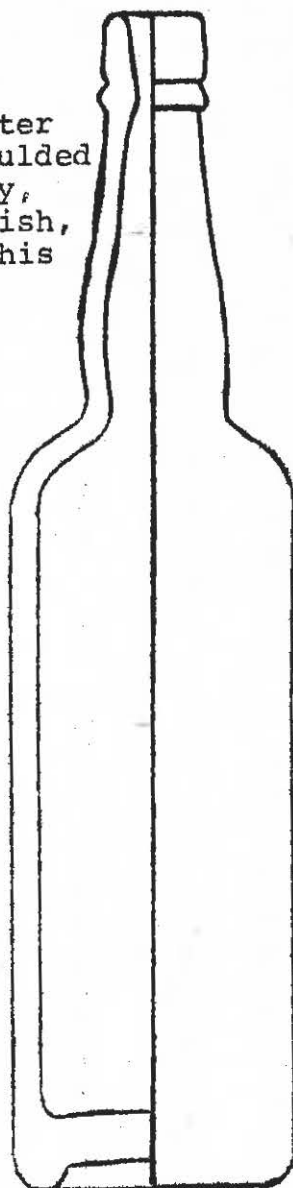
53. Wine bottle, one quarter size, dark brown, moulded, c. 1820-40, probably English, total of 43 intact bottles of this type found on the site.



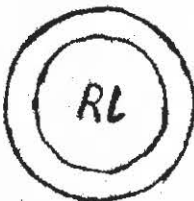
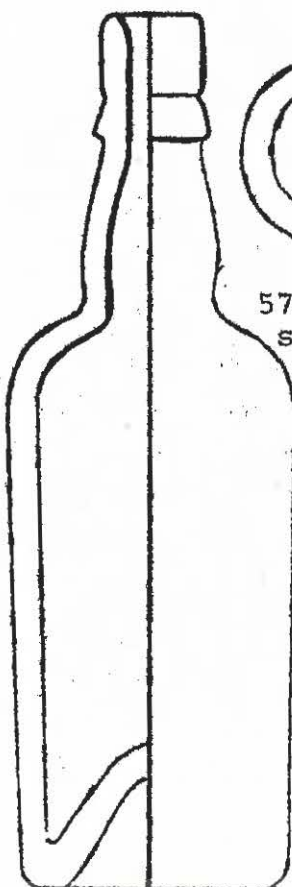
54. Wine bottle, one quarter size, dark olive-green, moulded, c. 1820-40, probably English, total of 22 bottles of this type found on site.



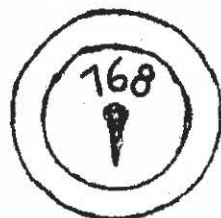
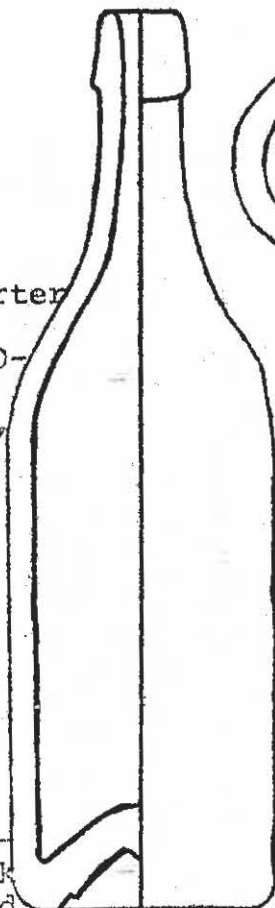
55. Wine bottle, one quarter size, dark olive-green, moulded probably late 19th century, possibly American or English, three intact bottles of this type found on site.



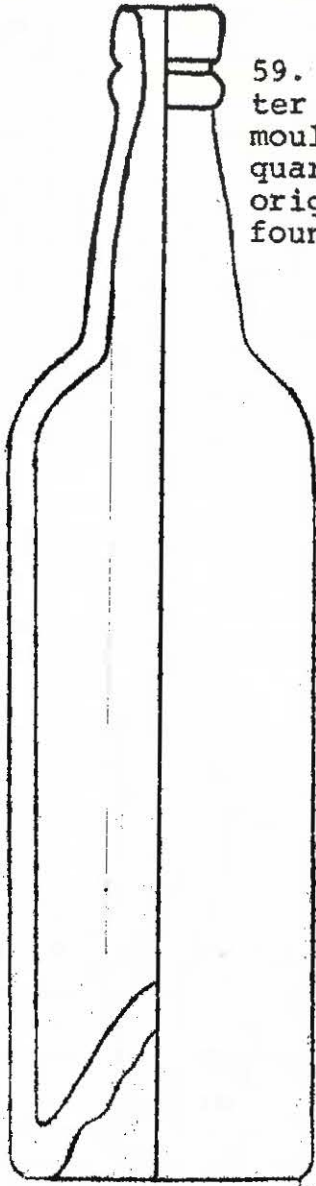
56. Wine bottle, one quarter size, dark olive-green, moulded, probably last half of 19th century, probably American, six intact bottles of this type found on site.



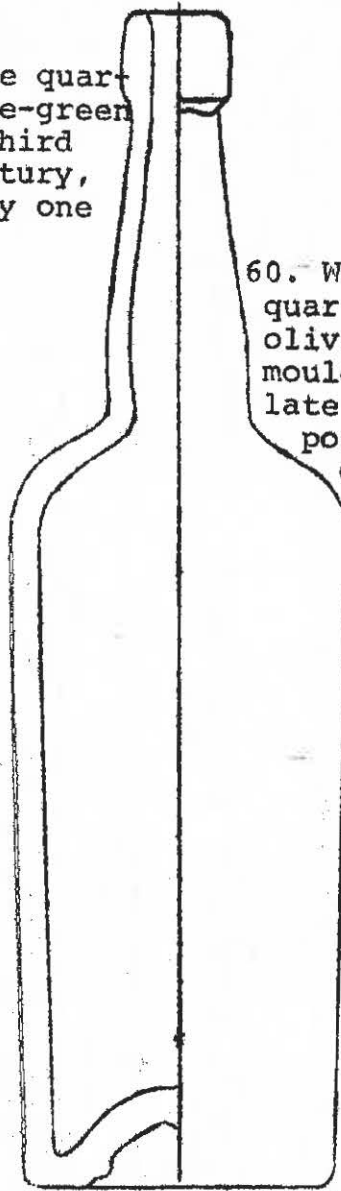
57. Wine bottle, one quarter size, dark olive-green, moulded, probably 1850-1880 (possibly 1820-40), probably English, possibly American, only one of this type found on the site.



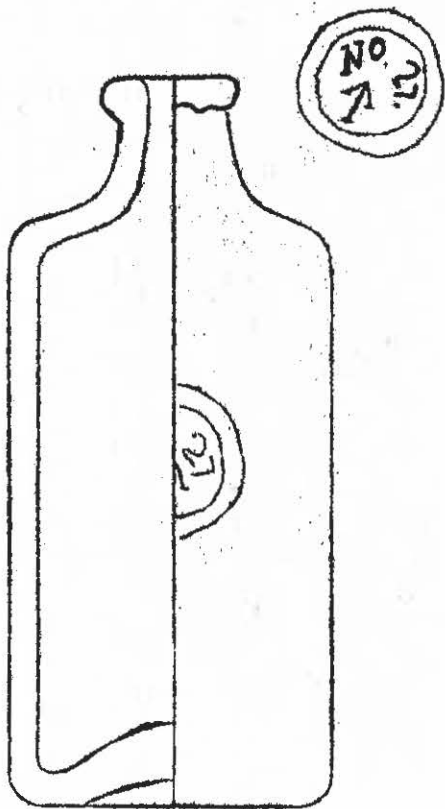
58. Wine bottle, one quarter size, dark brown, moulded, mid-19th century or later, probably English or American, only one of this type found on the site.



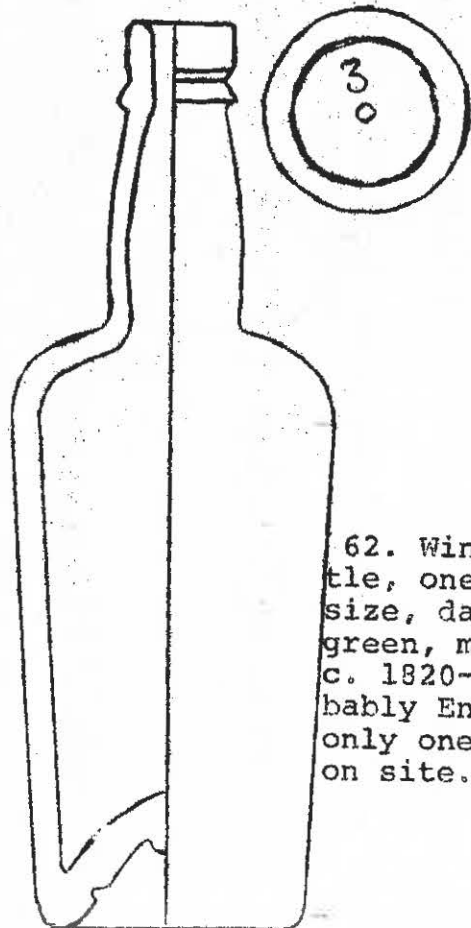
59. Wine bottle, one quarter size, dark olive-green moulded, probably third quarter of 19th century, origin unknown, only one found on site.



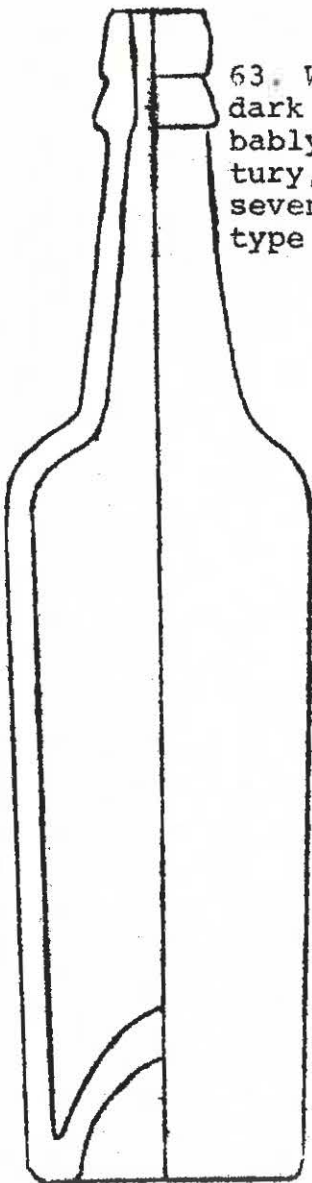
60. Wine bottle, one quarter size, dark olive-green, moulded, probably late 19th century, possibly American or English, three intact bottles of this type found on the site.



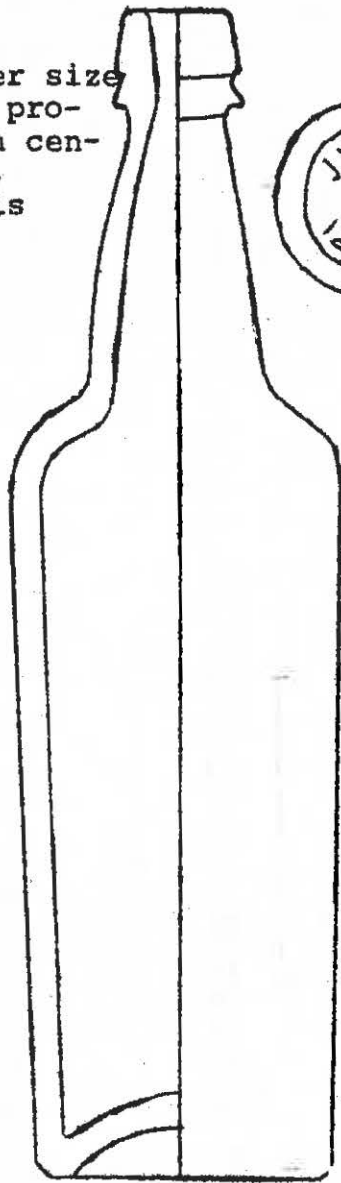
61. Bottle of unknown use, one quarter size, light olive-green, moulded, c. 1820, English, only one found on site.



62. Wine bottle, one quarter size, dark olive-green, moulded, c. 1820-40, probably English, only one found on site.

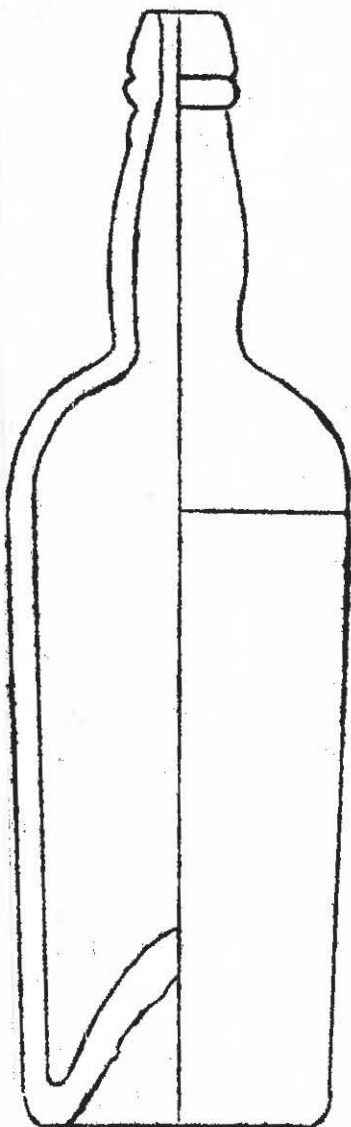


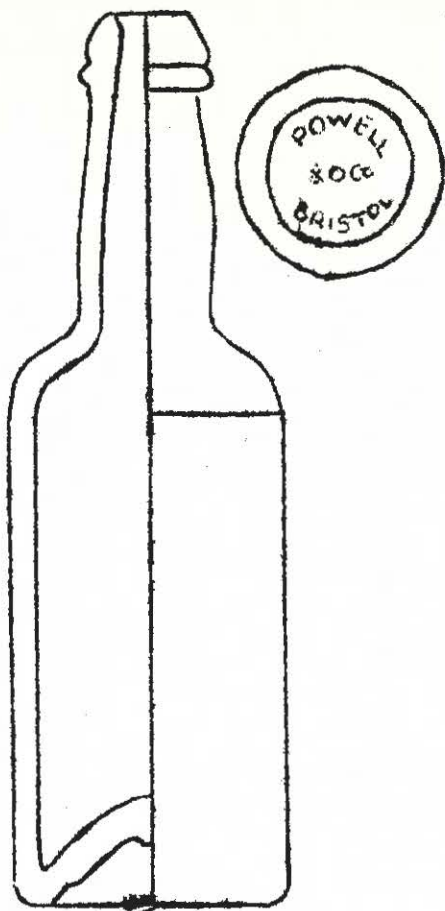
63. Wine bottle, one quarter size dark olive-green, moulded, probably third quarter of 19th century, possibly Continental, seven intact bottles of this type found on the site.



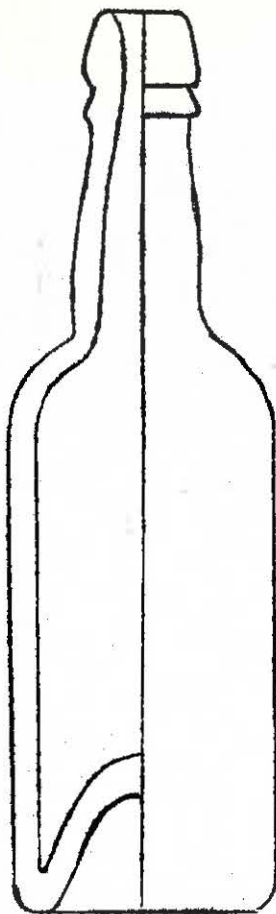
64. Wine bottle, one quarter size, olive-green, moulded, probably English or American only one found on site, probably third quarter of 19th century.

65. Wine bottle, one quarter size, dark brown, moulded, c. 1840, probably English, three bottles of this type found on site.



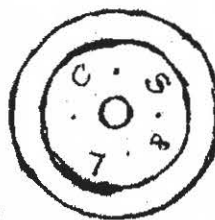
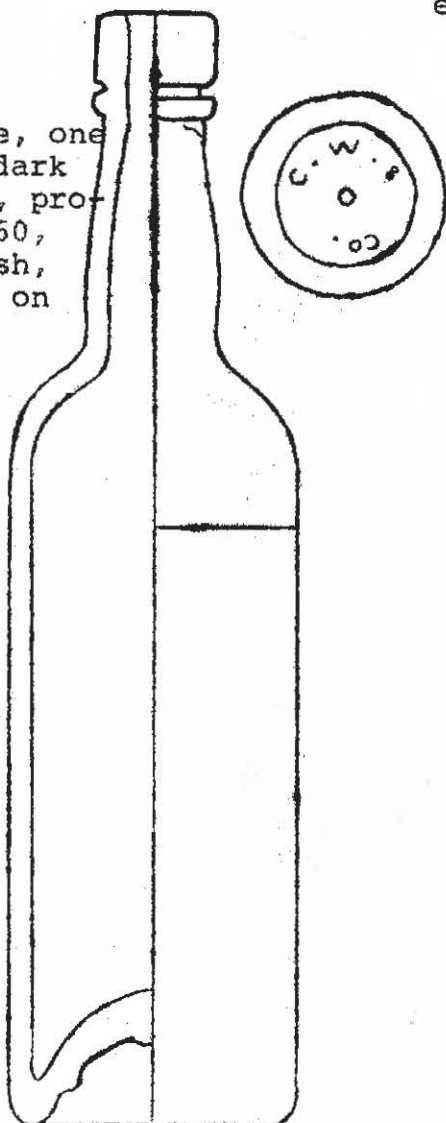


66. Wine bottle, one quarter size, dark olive-green, moulded, c. 1820-40, English, only one found on site.



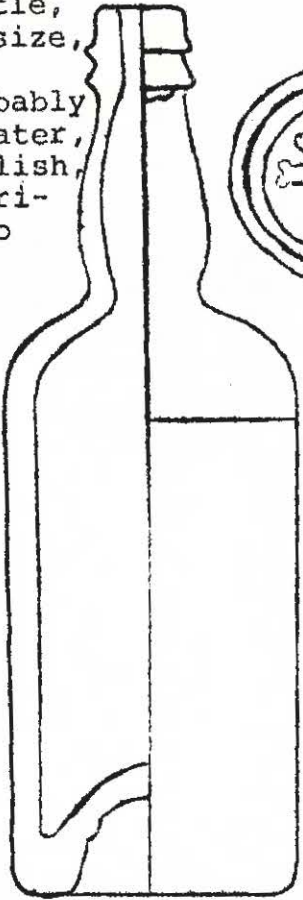
67. Wine bottle, one quarter size, dark olive-green, moulded, possibly c. 1820-40, probably 1850-1880, probably English, possibly American, seven intact bottles found on site.

68. Wine bottle, one quarter size, dark brown, moulded, probably c. 1840-60, probably English, only one found on site.

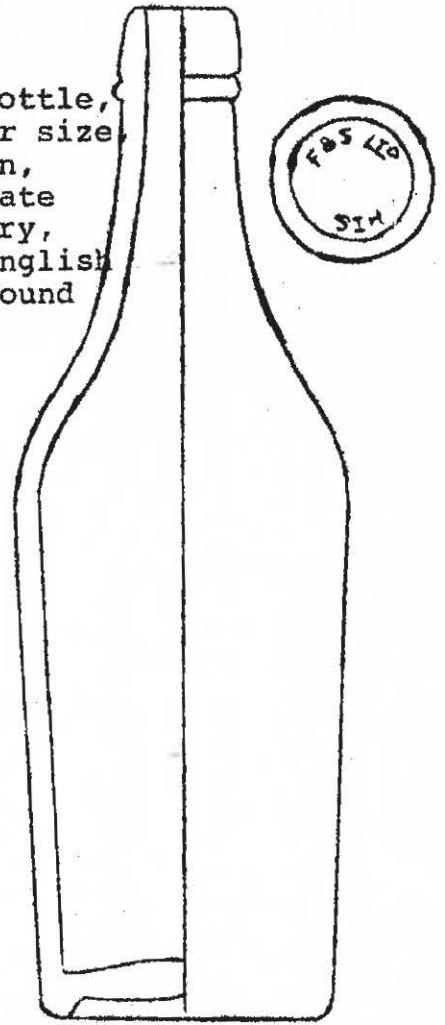


69. Wine bottle, one quarter size, dark brown, moulded, c. 1840-60, probably English, only one found on site.

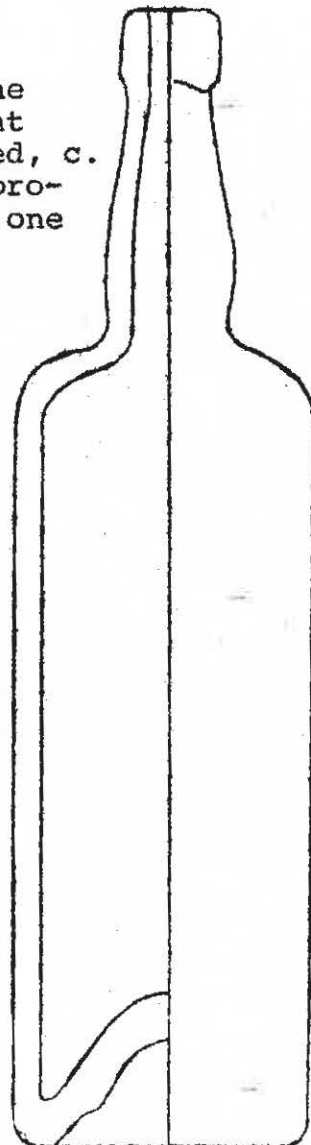
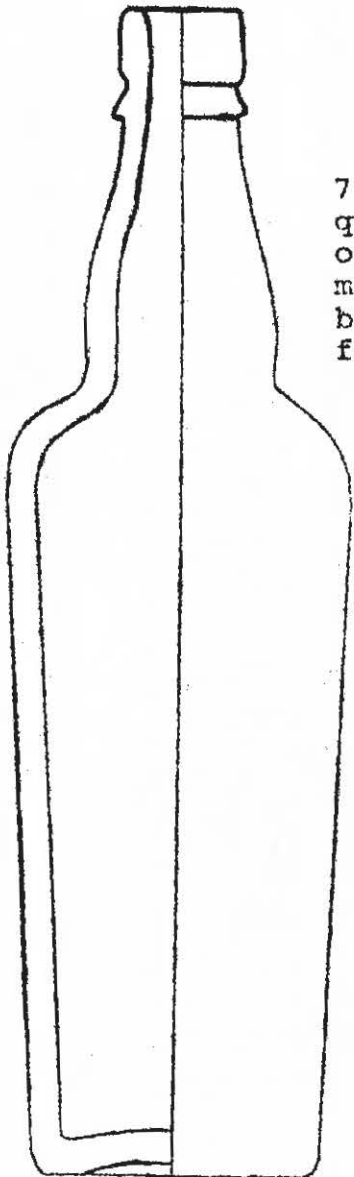
70. Wine bottle, one quarter size, dark brown, moulded, probably c. 1840 or later, probably English, possibly American, only two found on the site.



71. Wine bottle, one quarter size, olive-green, moulded, late 19th century, probably English, only one found on site.

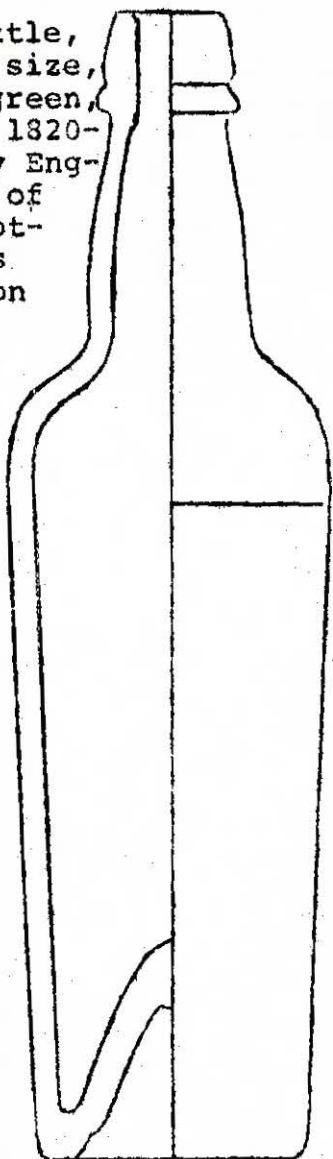


73. Wine bottle, one quarter size, bright olive-green, moulded, c. mid 19th century, probably Continental, one found on the site.

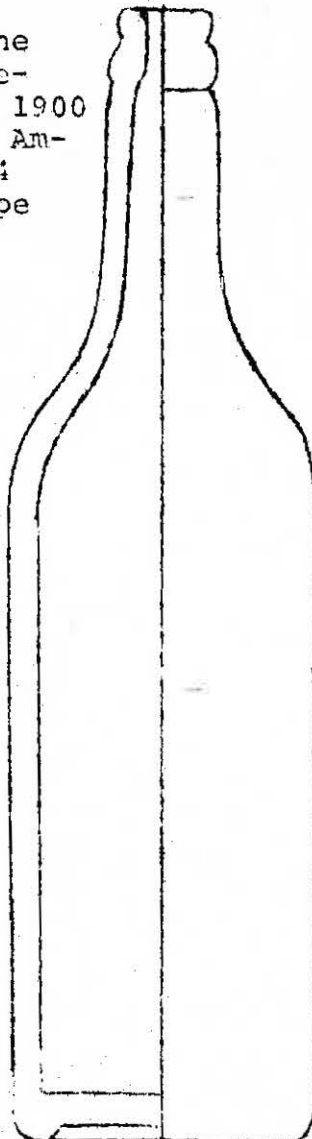


72. Wine bottle, one quarter size, greenish-blue, moulded, probably mid to third quarter 19th century, probably Continental, nine intact ones found on the site.

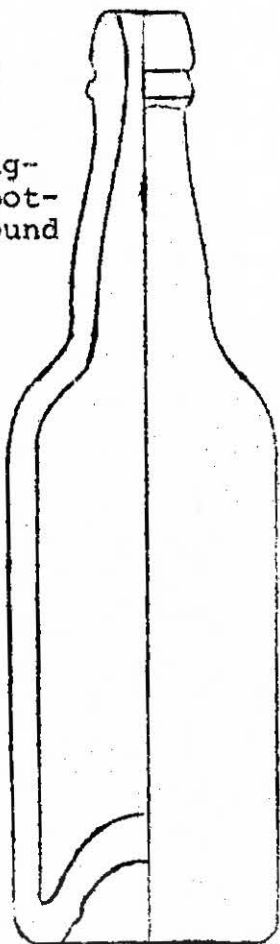
74. Wine bottle, one quarter size, dark olive-green, moulded, c. 1820-40, probably English, total of 16 intact bottles of this type found on the site.



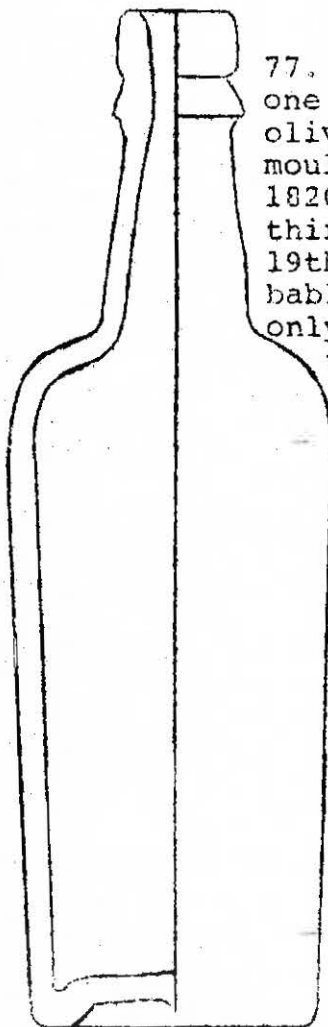
75. Wine bottle, one quarter size, olive-green, moulded, c. 1900 or later, probably American, total of 14 bottles of this type found on the site.



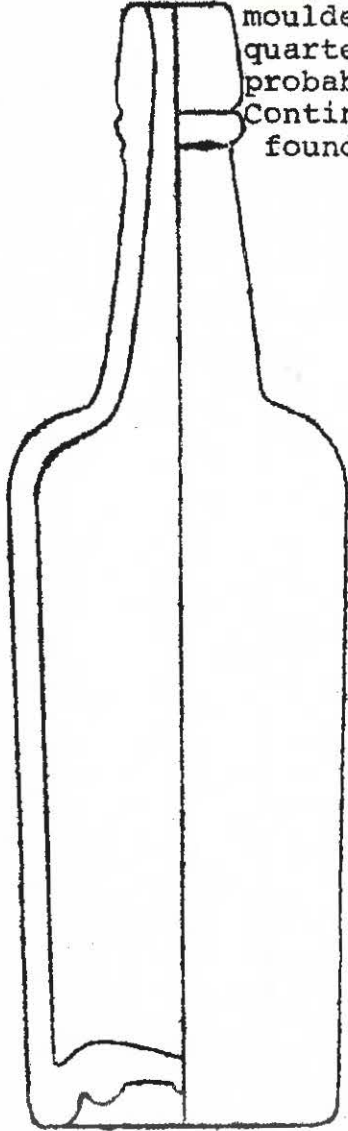
76. Wine bottle, one quarter size, olive-green, moulded, c. 1820-40, probably English, three intact bottles of this type found on the site.



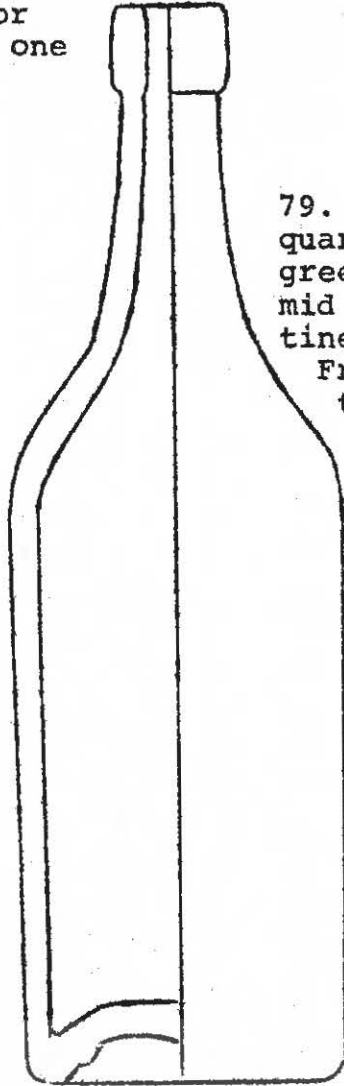
77. Wine bottle, one quarter size olive-green, moulded, probably 1820-40, possibly third quarter of 19th century, probably Continental, only one found on the site.



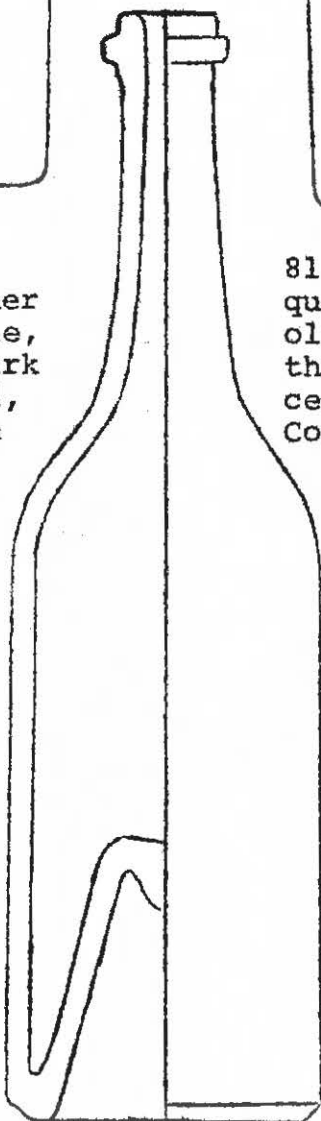
78. Wine bottle, one quarter size, amber, moulded, probably third quarter of 19th century, probably English or Continental, only one found.



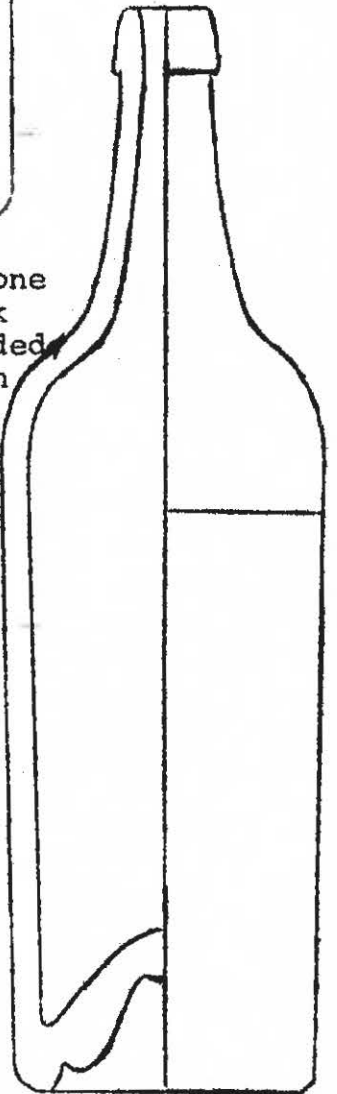
79. Wine bottle, one quarter size, dark olive green, moulded, probably mid 19th century, Continental, probably French, four of this type found on the site.

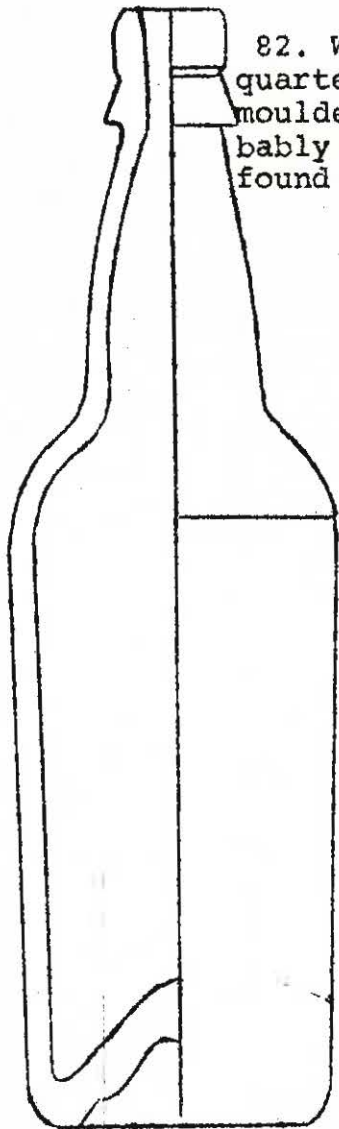


80. Champagne or other sparkling wine bottle, one quarter size, dark olive-green, moulded, mid 18th to mid 19th century, French, seven found on the site.

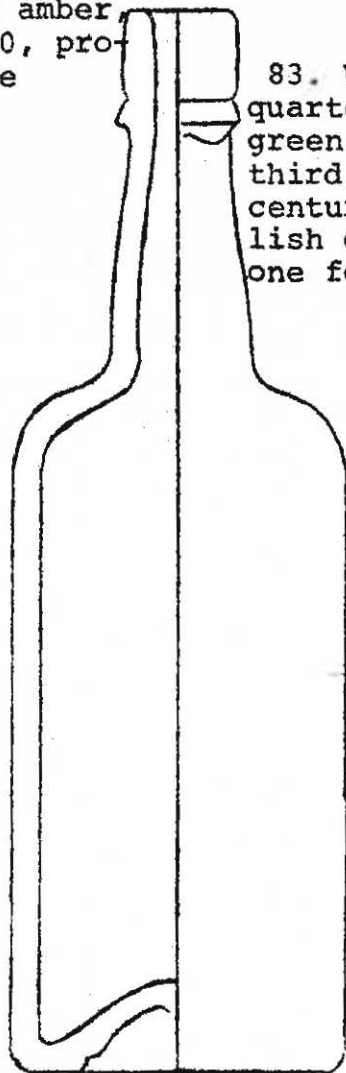


81. Wine bottle, one quarter size, dark olive-green, moulded, third quarter 19th century, probably Continental, only one found on the site.



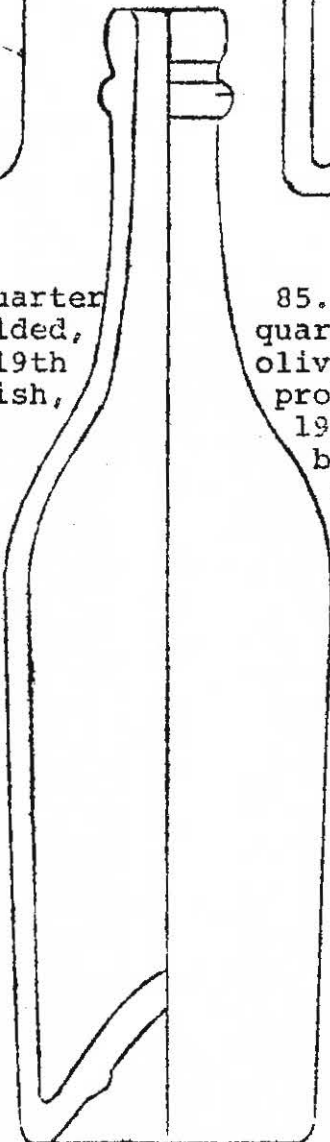


82. Wine bottle, one quarter size, dark amber, moulded, c. 1820-40, probably English, nine found on the site.

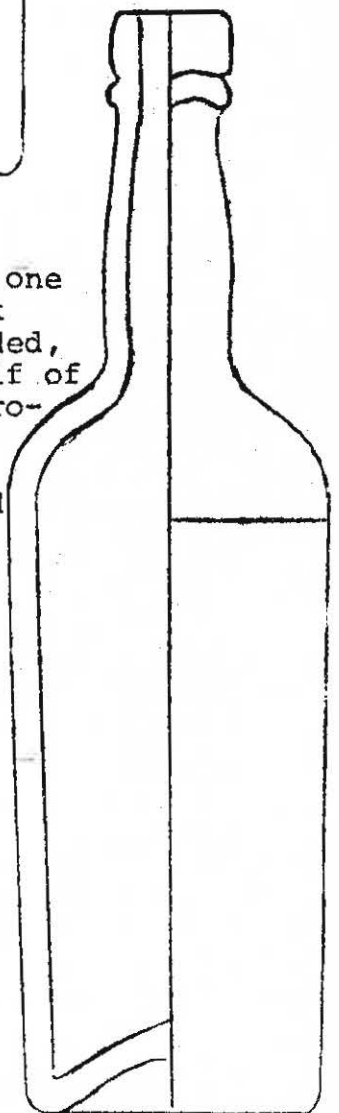


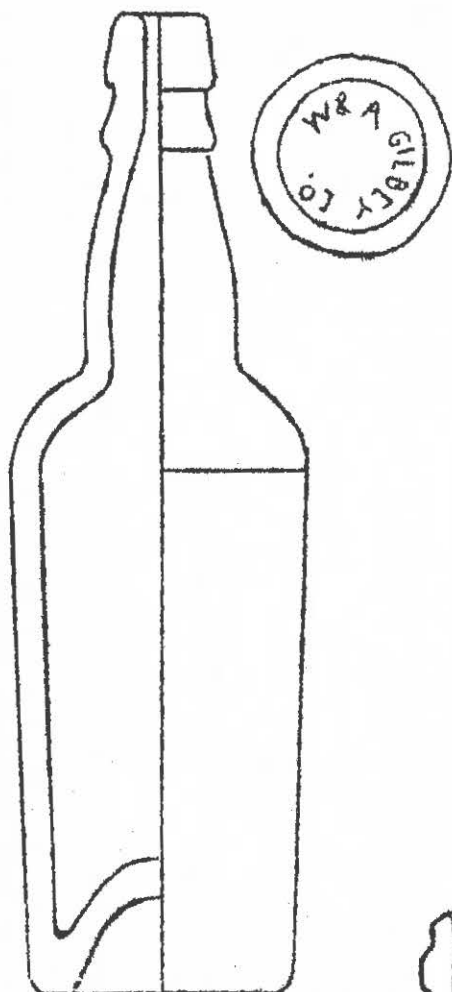
83. Wine bottle, one quarter size, olive-green, moulded, probably third quarter of 19th century, probably English or American, only one found on the site.

84. Wine bottle, one quarter size, olive-green, moulded, probably last half of 19th century, possibly English, only one found on the site.

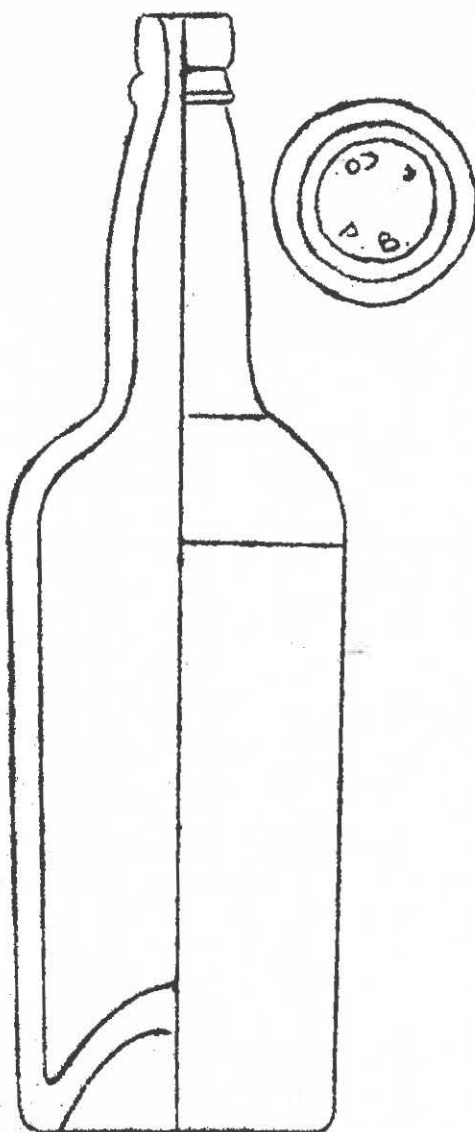


85. Wine bottle, one quarter size, dark olive-green, moulded, probably last half of 19th century, probably American or English, only one found on the site.

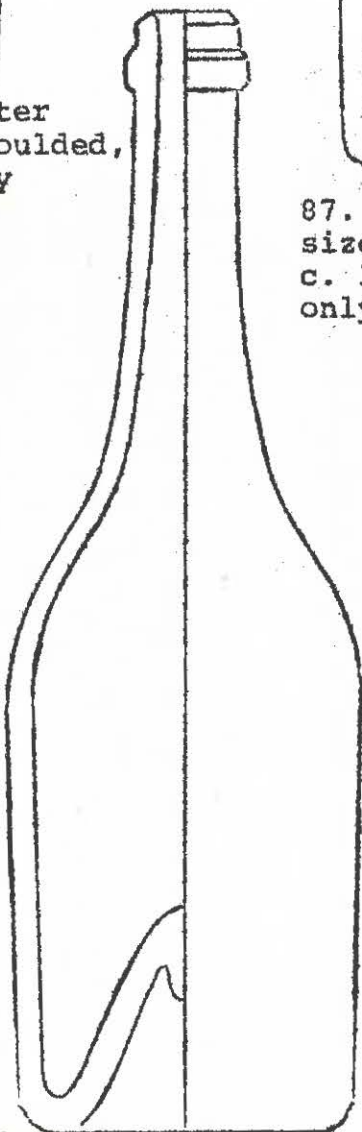




86. Wine bottle, one quarter size, dark olive-green, moulded, probably c. 1840, probably English, two found on the site.

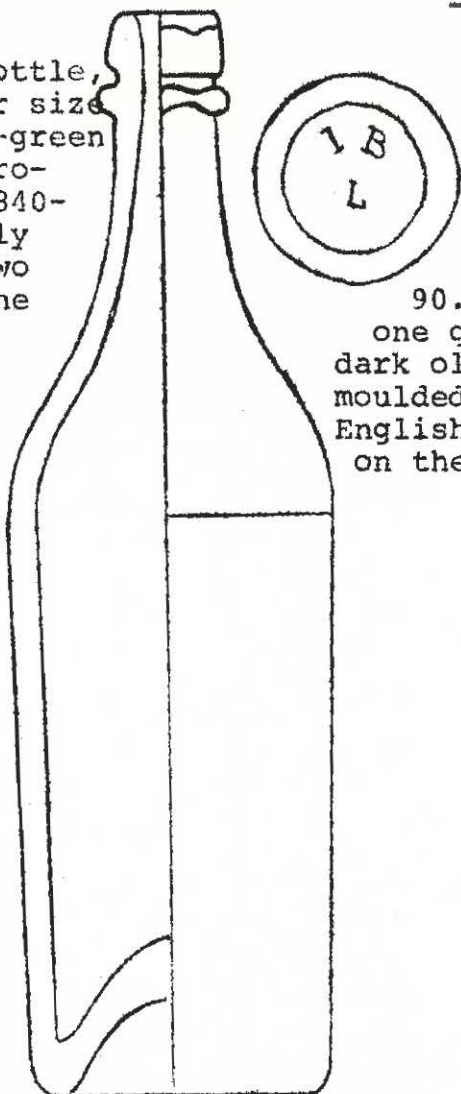


87. Wine bottle, one quarter size, dark olive-green, moulded c. 1820-40, probably English, only one found on the site.

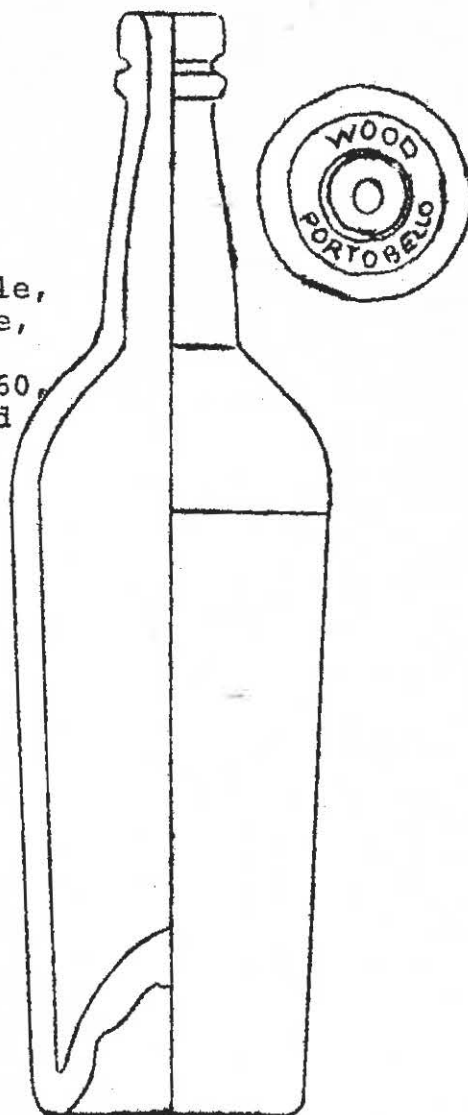


88. Champagne bottle, one quarter size, dark olive-green, moulded, probably late 19th century, possibly 20th century, French, only one found on the site.

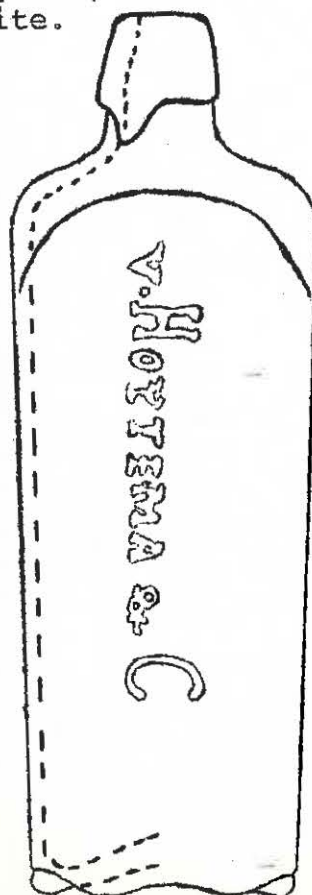
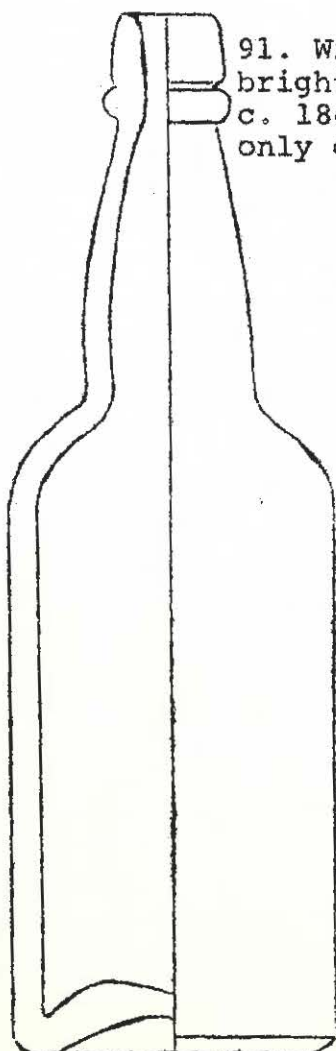
89. Wine bottle, one quarter size dark olive-green moulded, probably c. 1840-60, probably English, two found on the site.



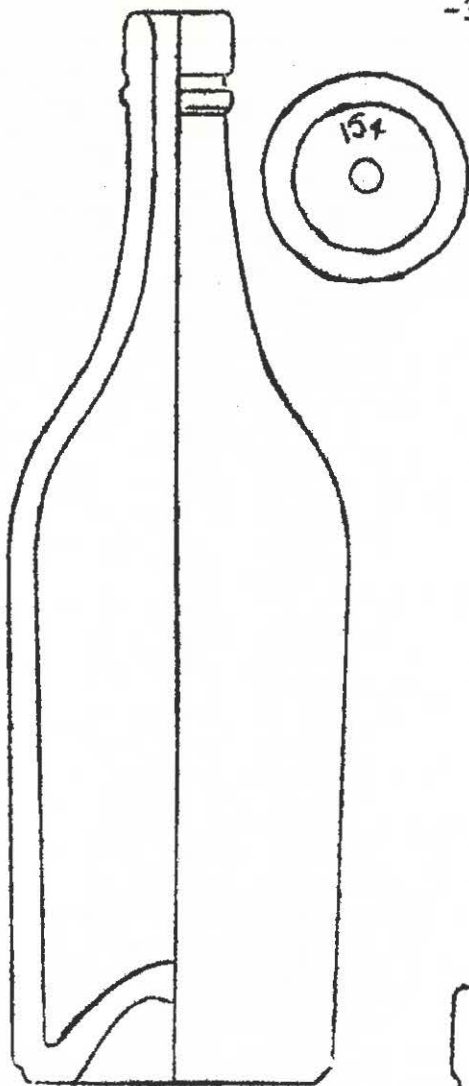
90. Wine bottle, one quarter size, dark olive-green, moulded, c. 1840-60, English, two found on the site.



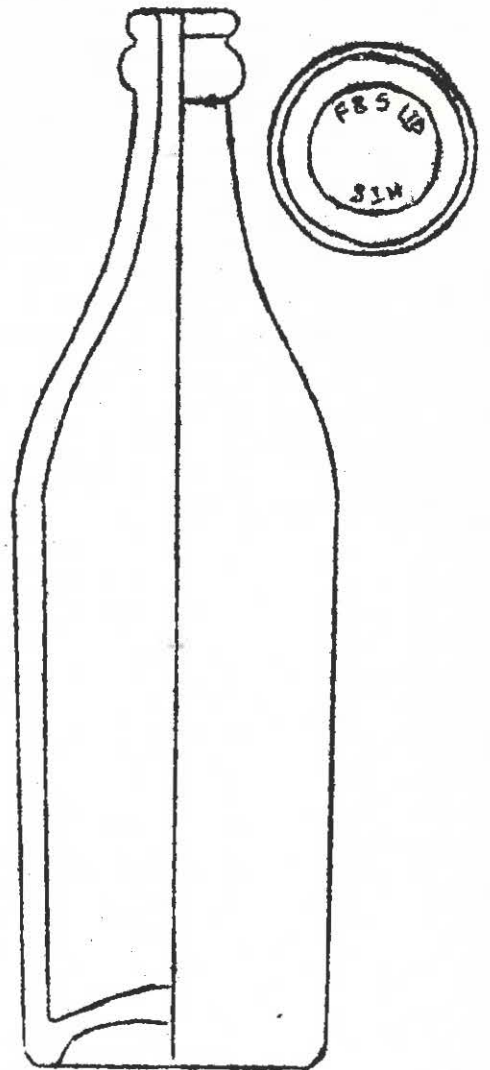
91. Wine bottle, one quarter size, bright olive-green, moulded, c. 1840-50, probably English, only one found on the site.



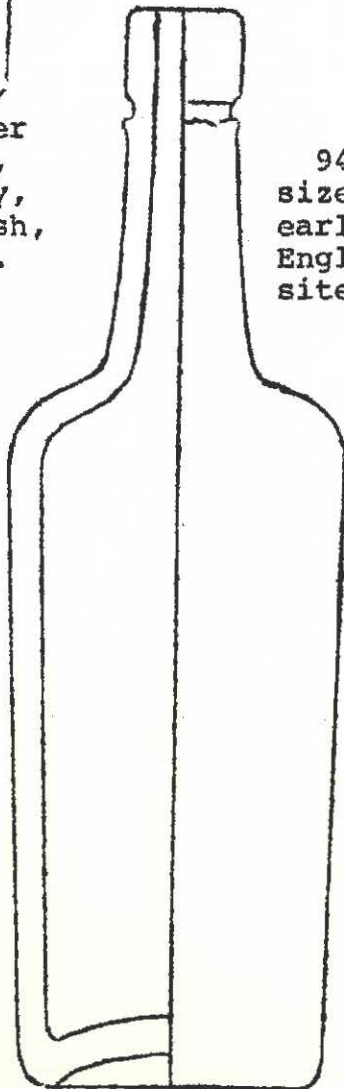
92. Gin bottle, one quarter size, square-bodied, dark olive-green, moulded, late 19th century, possibly early 20th century, Dutch; only one found on the site.



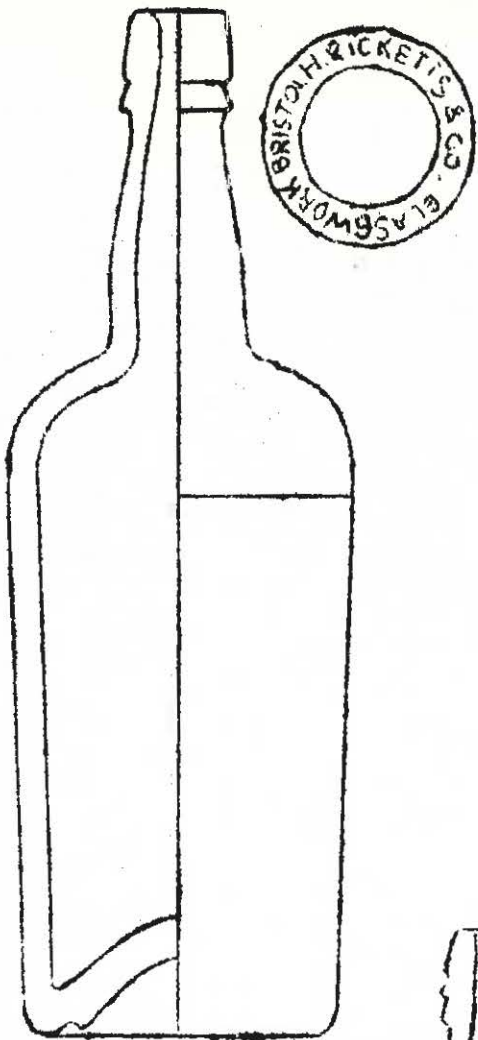
93. Wine bottle, one quarter size, olive-green, moulded, second half of 19th century, probably American or English, only one found on the site.



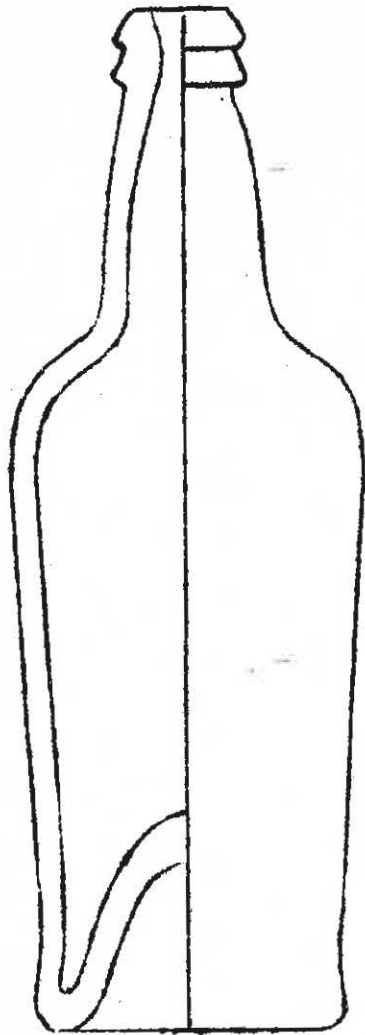
94. Wine bottle, one quarter size, olive-green, moulded, early 20th century, probably English, only one found on the site.



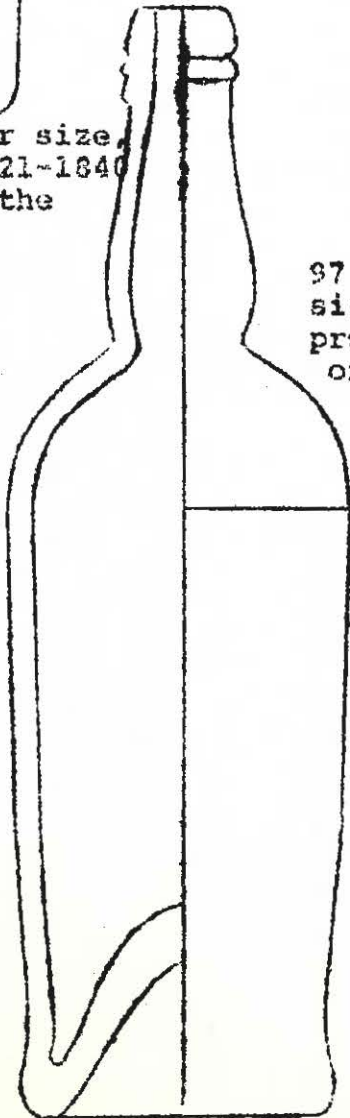
95. Wine bottle, one quarter size, olive-green, moulded, late 19th century, probably American or English, only one found on the site.



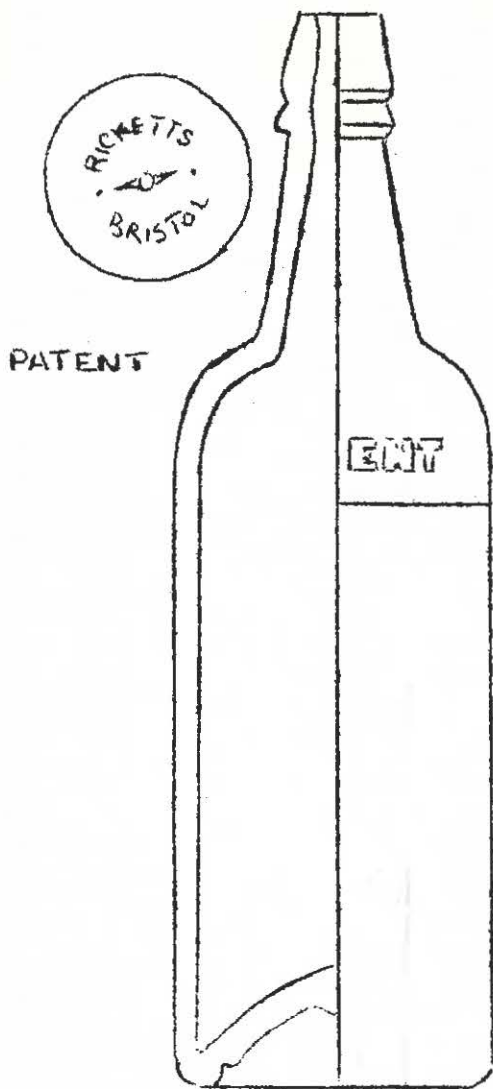
96. Wine bottle, one quarter size, live-green, moulded, c. 1821-1840, probably English, only one found on the site.



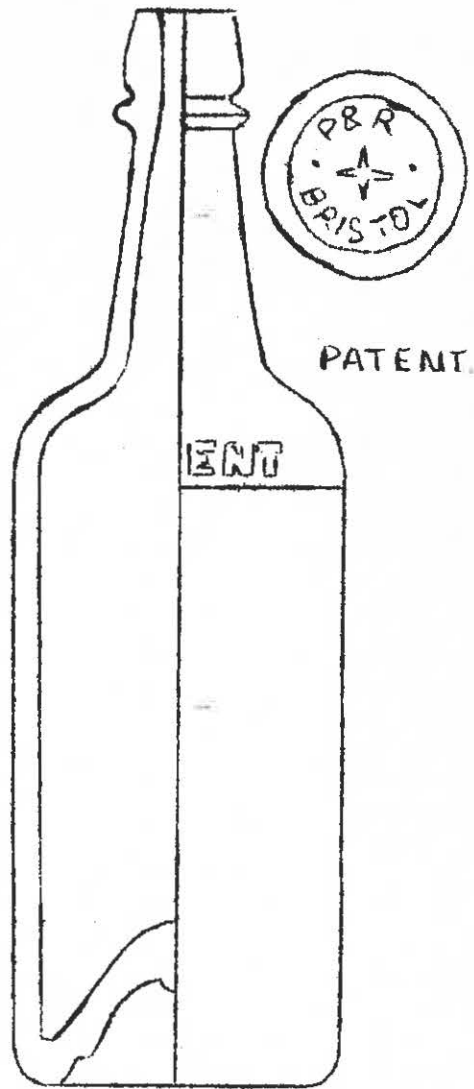
97. Wine bottle, one quarter size, dark blue, c. 1780, probably English, five found on the site.



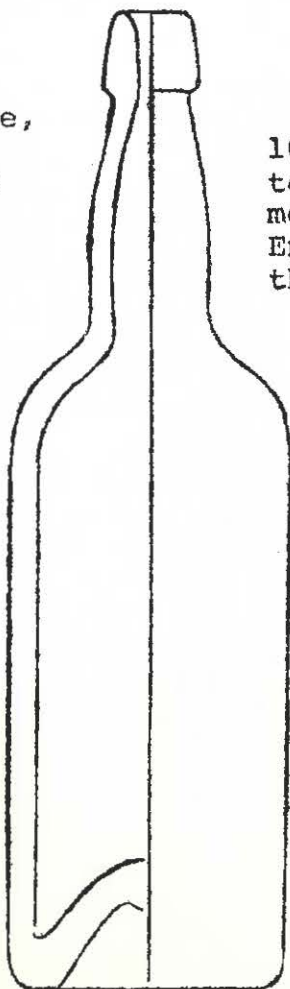
98. Wine bottle, one quarter size, dark olive-green, moulded, c. 1830, probably English, six found on the site.



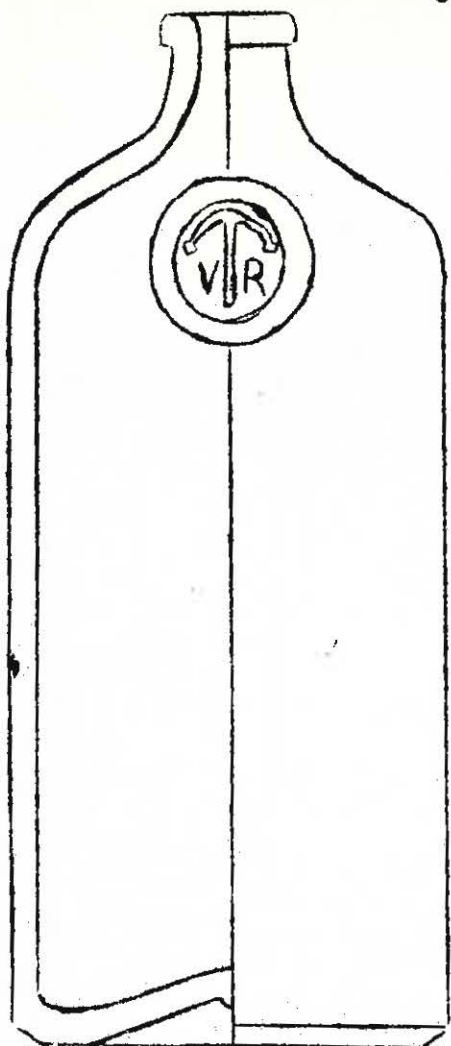
99. Wine bottle, one quarter size, olive-green, moulded, c. 1821-1840, English, only one found on the site.



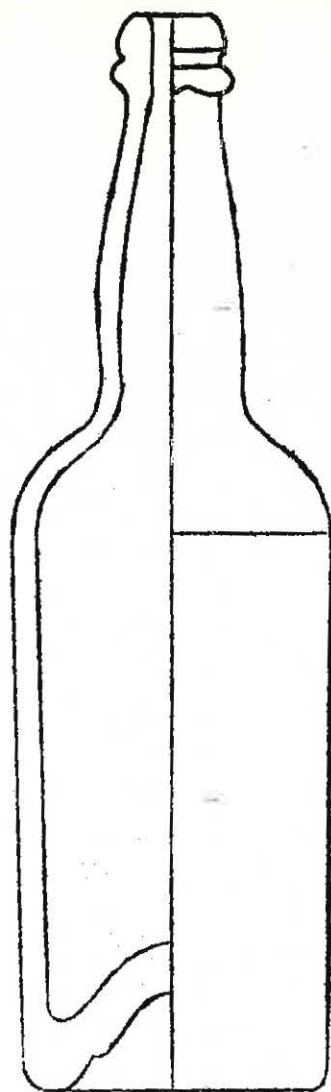
100. Wine bottle, one quarter size, dark olive-green, moulded, c. 1821-1840, English, only one found on the site.



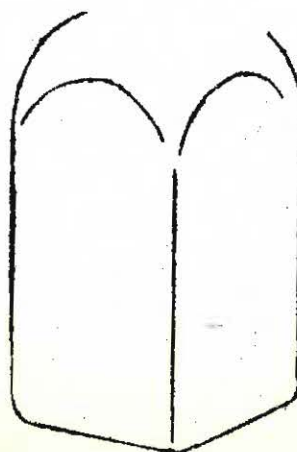
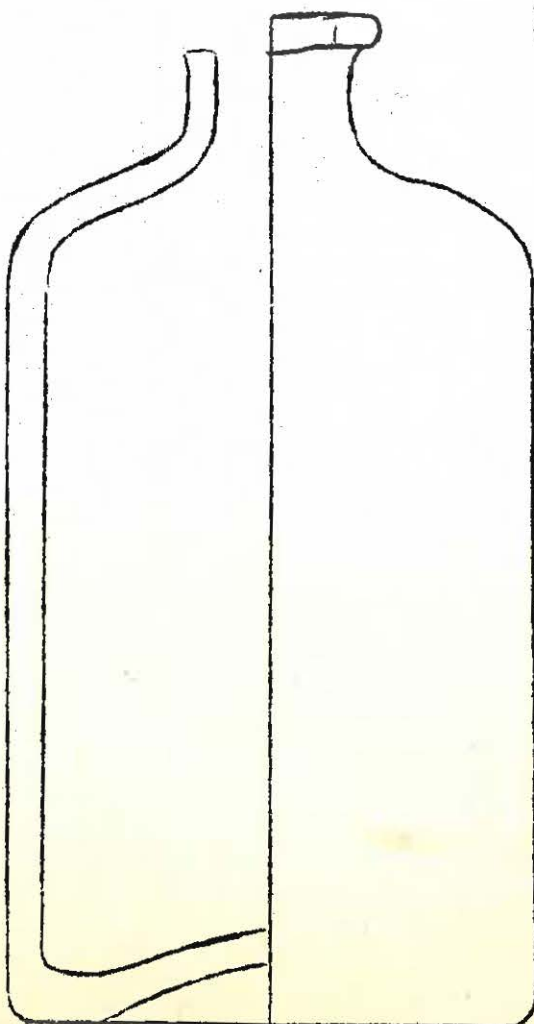
101. Wine bottle, one quarter size, dark olive-green, moulded, last half of 19th century, probably American, two found on the site.



102. Bottle of unknown use, one quarter size, dark olive-green, moulded, second half of 19th century, English, only one found on the site.



103. Wine bottle, one quarter size, olive-green, moulded, probably c. 1840, probably English, only one found on the site.



Side View

104. Square-bodied snuff or medicine bottle, one quarter size, olive-green, moulded, c. 19th century, probably American, possibly English, only one found on the site.

ABOUT THE AUTHOR --

An experienced diver and author of They Dared the Deep: A History of Diving, Mr. Robert F. Marx is one of today's authentic underwater pioneers. During his service with the Marine Corps, Mr. Marx took advantage of being stationed near Cape Hatteras to locate the hull of the famous ironclad of the Civil War, the Monitor and later discovered a sunken Spanish galleon with a rich treasure hoard off the Yucatan Peninsula of Mexico.

In 1962 he sailed across the Atlantic on a replica of Christopher Columbus' ship the Mina II, a voyage he later described in his book Following Columbus; and in 1964 Mr. Marx captained a replica of a tenth-century Viking ship on a 1200-mile voyage. Married to a historian, Marx has spent many years doing historical research in European archives and is the author of two books on highlights of naval history, The Battle of the Spanish Armada 1588 and The Battle of Lepanto 1571, in addition to his autobiography, Always Another Adventure.

Climaxing a lifetime of adventure, Mr. Marx assumed direction of the history-making excavation of the sunken city of Port Royal, Jamaica in 1965, as Underwater Archaeologist for the Government of Jamaica. In connection with his work in Jamaica Mr. Marx has written numerous articles and a book entitled Pirate Port. He is currently Director of Research with the Real Eight Company at Satellite Beach, Florida.

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The Caribbean Research Institute, a division of the College of the Virgin Islands, was established to encourage research and related activities for the Caribbean area and to provide a central research agency in the U.S. Virgin Islands to focus on both natural and social sciences, as well as the humanities.

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