

London Mustard Bottles

ABSTRACT

A generic bottle form for powdered mustard has been identified using archaeological and documentary sources. These bottles are characterized by a tall narrow square body with flat or concave chamfered corners, a comparatively wide mouth and short neck. Some examples are embossed, some are not. The history of the production of these bottles in both North America and Britain is examined.

INTRODUCTION

One of the primary goals of glass container research is to establish the intended contents for the different container forms. During the 18th and early 19th centuries, a rather limited number of multi-purpose forms were being made which complicates the task of product identification. However, during the second half of the 18th century a group of bottles emerged which had an exclusive and long-lived association between the appearance and size of the bottle and its intended contents. Some of the more successful of these were Turlington's Balsam of Life, British Oil, Godfrey's Cordial (Griffenhagen and Young 1959), and Essence of Peppermint (Jones 1981). During the second half of the 19th century the practice of using specially designed containers for specific products became relatively common and continued into the 20th century. Two of the most successful developed during this period were Perry Davis's Vegetable Painkiller and the Coca-Cola bottle. Alternative products to these were available but would have been sold in differently designed containers and under different names.

During the 19th century, bottle forms were also developed which came to be associated with types of products rather than specific

ones. These generic forms, used for such things as mineral waters, colognes, club sauces, snuffs, mustards, and liquors, would be used by many different companies who would, at the same time, be using other available forms for similar products. Some specialized containers eventually became generic. The generic forms tend to be long-lived, many of them continuing in production for over 100 years. The forms have been, or were, internationally recognized and manufactured by more than one company in more than one country.

This paper isolates a generic form used for dry mustard. The physical appearance of the bottles, their usage, dating and countries of manufacture are discussed.

Mustard

Mustard is a general name applied to two different, but related, domesticated/wild plants, *Sinapis alba* L., known as white mustard, and *Brassica nigra* (L.) Koch, known as black or brown mustard. (The following discussion on the uses of mustard is based on information in: *Encyclopaedia Britannica* 1910-11:97-98; Grieve 1977 [1931]: 566-71; Nelson 1951:470; Stillé and Maisch 1879:1296-1300.) The leaves of the mustard plant are used as a vegetable, either cooked or in salads. The seeds have been used whole or ground for medicinal purposes and as a spice or condiment.

The medicinal use of mustard dates from at least the time of Hippocrates, who used it for a variety of purposes. The seeds, swallowed whole, are a laxative. Ground mustard swallowed with a considerable quantity of water is a prompt and efficient emetic. Generally, however, the powdered form is more familiar in its use in mustard plasters or in mustard baths. The mustard tends to draw blood to the surface of the skin, thus drawing it away from inflamed areas of the body such as the nasal or bronchial passages. Mustard is a very powerful blistering agent and great care must be

exercised in its use as it can cause ulcers which are difficult to heal.

In food, mustard seeds are used both as spices and in condiments. Whole seeds are one of the constituents in mixed pickling spices or are added to prepared mustards. Prepared mustards are condiments and generally accompany meat dishes. They are made by mixing ground seeds with vinegar or unfermented wine and a variety of spices. The formula varies from one manufacturer to another and from one type to another (for some examples of recipes see Brannt 1890: 424–27). The many French mustards, of which the Dijon varieties are the most famous, are of this type.

The powdered mustard is a mixture of both white and black mustard seeds and, for a number of reasons, may be adulterated with other substances, generally wheat flour, capiscums, turmeric and salt. According to *Larousse Gastronomique* (Montagné 1961: 639), English mustard is usually sold as a powder. The powder is used as a spice in the preparation of sauces or is mixed into a paste with water and is eaten as an accompaniment to meat dishes.

Production of dry mustard on a commercial scale is generally believed to have started in the 1720s. The story, repeated in many 19th and 20th century sources, is as follows. A Mrs. Clements of Durham began grinding mustard seed in a mill and developed a way of separating the flour from the husk. The resulting bright yellow farina became very popular, was apparently approved by George I, and was marketed successfully by Mrs. Clements for many years under the name "Durham Mustard." The 11th edition of the *Encyclopaedia Britannica* gives the date as 1720 while Mrs. Beeton (1968 [1861]:216) gives the date as 1729, two years after the death of George I, who always figures prominently in the story. No 18th century source for this story has been found and it has been impossible to verify it.

Several elements of the story are plausible. Durham County was noted for its production

of mustard in the 18th and 19th centuries (W. A. L. Seaman 1971, pers. comm.). Arthur Young (1967 [1771]: n.p.) in his six month tour through the north of England stated that there was much mustard cultivated around Durham and that crops worth as much as £100 an acre had been known. "Durham mustard" appears repeatedly in North America newspapers during the second half of the 18th and the first half of the 19th century and several companies were still offering it in the second half of the 19th century. There is also considerable evidence for the production of mustard flour on a commercial scale from at least the mid-18th century onward. The famous Keen firm apparently began producing powdered mustard in 1742 (Norwak 1975:111). Benjamin Jackson, formerly of London, advertised as a mustard and chocolate maker in Philadelphia in 1758 (McKearin 1970:30); John Ingram advertised his "Flower of Mustard" in the *Boston Gazette* in 1752 (Dow 1927:272–73); Wagstaff and Hunt were also manufacturing powdered mustard in Philadelphia in 1760 (Bishop 1967 [1868]:578–79); and Jonas Phillips, operating a glass warehouse in Norwich, England, also sold flour of mustard in the late 1750s and early 1760s (Smith 1975: 54).

Many types of dry mustard eventually became available. J. & J. Colman of Norwich, for example, offered, between the 1870s and World War I, 15 varieties of dry mustard, including four qualities—Double Superfine (often abbreviated to DSF), Superfine, Fine and Seconds—and had several different "types" such as Genuine, Fine Aromatic, London, and "the humblest grade of the Colman range, the Durham quality" (Norwich School of Art 1977:25–28).

Dry mustard was sold by the pound. In 19th century Quebec newspaper advertisements, for example, mustard was advertised in quantities of ¼, ½, 1, 2, 3, 4, 7, and 8 pounds. Containers mentioned were kegs, jars, bottles, boxes, and in the second half of the 19th century tins became common. Colmans began

using them as early as the 1850s (Norwich School of Art 1977:6). Probably the two best known mustard containers are the two-colored stoneware wide-mouthed jars and the barrel-shaped glass bottles, both of which were widely used in the second half of the 19th century. From North American archaeological evidence, another widely used container, at least during the first half of the 19th century, was the small square glass bottle which is the subject of this paper.

Square Mustard Bottles

The bottles are characterized by a tall square body with either flat or concave chamfered corners and a relatively wide mouth (Figures 1–7). Based on 15 complete or almost complete examples and dozens of fragmentary bottles, the sizes range as follows: bottle height 129–148 mm; neck-finish height 18–29 mm; bore diameter 20–29 mm; body height 102–127 mm; base dimensions 35 × 35 mm to 42 × 42 mm. The liquid capacity of nine bottles, measured to estimated filling height, varied from 105–135 ml. Four of these bottles were also filled to filling height with powdered mustard currently on the market and were found to contain 47.25 g (105 ml), 51.60 g (125 ml), 47.60 g (115 ml), and 44.70 g (105 ml). At 28.35 grams per avoirdupois ounce, the mustard capacity of these bottles was slightly less than 2 ounces. The size and general appearance of these bottles are so consistent within the group that they are easily recognizable, even in fragmentary form.

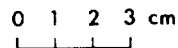
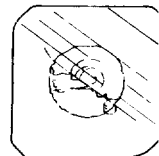
The technology used to make the bottles varies according to the period of manufacture. The bottles which have been examined have all been made in two piece open and shut molds which have left a diagonal mold line crossing the base (Figures 2, 3, 4, 5, 6) and two vertical lines on the neck and shoulder. Occasionally, a horizontal line can be found encircling the top of the neck at the termination of the two vertical lines (Figure 7). The horizontal line appears to have been caused by the

glass expanding slightly over the top of the mold. In the process of shaping the finish this line was usually eliminated. In almost all cases the finish was formed by folding glass left at the end of the neck in towards the bore. Subsequent tooling gave the lip a straight, slightly everted, or even flanged exterior profile (Figures 1, 9, 7). All examples have pontil marks (Figures 2, 3, 4, 5, 6). The bottles made by these techniques would date up to the 1860s.

The production of this type of bottle continued into the last half of the 19th century (see below). Although no examples have been seen by the author, the manufacturing technology used to make the later bottles can be inferred from the general changes in glass technology which occurred during this period. The bottles would not be empontilled; they would be blown in a two piece body mold with a third base part; and the lips would be formed by a finishing tool.

The square mustard bottles are found in colorless lead glass and in varying shades of light green glass which may or may not contain considerable quantities of lead oxide. The presence of lead in the colored glasses was suspected when several examples exhibited a strong “white” fluorescence under a short-wave ultra-violet light. Six green and one colorless example were tested using density (see Elville 1951:256–61) with the results confirmed by using an Energy Dispersive X-ray Fluorescence (EDX) machine. Three of the six green ones were of non-lead glass but three contained substantial quantities of lead oxide—18.36%, 19.00% and 30.00% (Louis Lafèche 1980, pers. comm.). The colorless example contained 34.56% lead oxide. “Full” lead glasses contain between 30.00 and 35.00% lead oxide. It is impossible at this point to use this composition difference to establish either a country of manufacture or a date difference. However, it is important to point out that glass color alone cannot be used to determine glass composition.

Examples of the mustard bottles have been



18 G 2 B 20 . 2
24 . 11 78
J. Kietivier

FIGURE 2. Mustard bottle embossed [LON]N/... o5. Parks Canada archaeological collections.

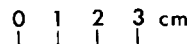
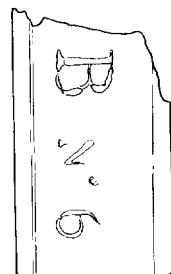
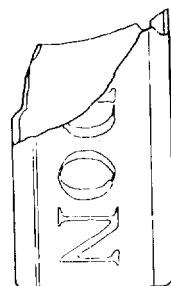


FIGURE 1. Mustard bottles embossed LONDON and LONDON/MUSTARD: a, obverse; b, reverse. From the collection of the late Charles Gardner. Bottle height 140 mm.

FIGURE 3. Mustard bottle embossed [LON]ON/... B No 6. Parks Canada archaeological collections.

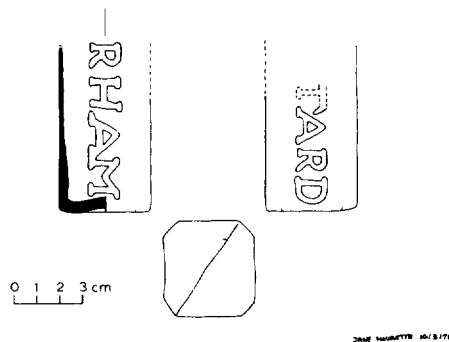


FIGURE 4. Mustard bottle embossed [DU]RHAM/[MUS]TARD. Parks Canada archaeological collections.

found unembossed and embossed LONDON, LONDON/MUSTARD, [LOND]N/... o5, [LON]DON/... B No. 6, DURHAM/MUSTARD, HY WHEELER/LIVERPOOL, ... KINS/S[UPER]FINE/DURHAM/MUSTARD, and KENTUCKY. The unembossed and LONDON examples occur most frequently on archaeological sites in North America. The LONDON examples have been the key to tracing the history of this form in the documentary record. For the convenience of this report, the term "London type" will be used to refer to the entire group of bottles.

While it was possible to identify the LONDON examples in the documentary sources, it proved very difficult to positively locate the unembossed examples and the form

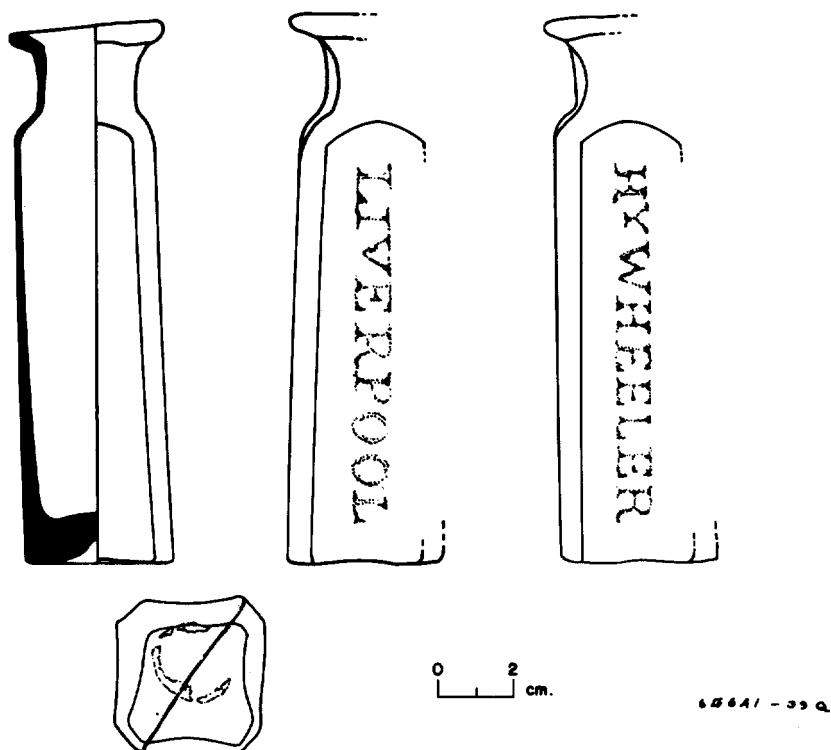


FIGURE 5. Mustard bottle embossed HY WHEELER/LIVERPOOL. Parks Canada archaeological collections.



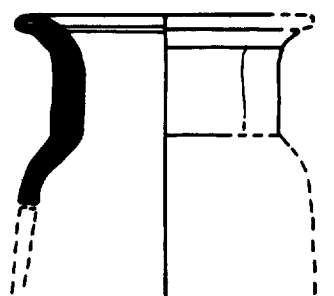
FIGURE 6. Mustard bottle embossed . . . KINS/S[UPER]FINE/DURHAM/MUSTARD. Fort Snelling, Minnesota, archaeological collection.

in general. The documents used were primarily lists and tended to cryptic. It was found that the terms mustard bottle, mustard square and mustards did not necessarily refer to the "London type" mustard bottles. Even contemporary illustrations were open to interpretation.

Mustard in bottles begins to be mentioned in the 1750s. An advertisement in the *Halifax Gazette*, 30 March 1752, lists "Bottle Mustard." Advertisements by both Jackson and Wagstaffe & Hunt in the late 1750s mention mustard bottles (McKearin and Wilson 1978:262). By the 1760s there are indications through glassmakers' advertisements that a glass container for mustard existed. In 1769,

Richard Wistar advertised in the *Pennsylvania Chronicle* that he had snuff and mustard bottles for sale (Palmer 1976:11). In 1762 the Glass House in Gravel Lane, Southwark, London, advertised pints and half-pints for snuffs and mustards (quoted in Buckley 1930:148).

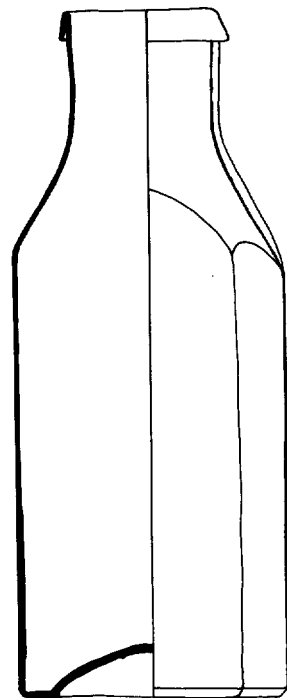
The form of these early bottles is suggested by an illustrated advertisement of Benjamin Jackson, chocolate and mustard maker, in the *Pennsylvania Gazette*, August 1758 (illustrated in McKearin 1970:30; McKearin and Wilson 1978:263). The bottle shown in the advertisement has a short neck and wide mouth with a rectangular body of some type. The sides appear to be slightly concave and



0 1 2 3 cm

FIGURE 7. Mustard bottle finish showing glass folded inward to form the lip which is then tooled to a flanged exterior profile. The horizontal line left by the top of the mold is visible under the lip. Parks Canada archaeological collections.

the lip form is indistinguishable. In horizontal cross section the body may be a flat octagonal, that is with two long sides and six shorter sides of equal length (Figure 9), a rectangle with chamfered corners (Figure 8) or a true square with chamfered corners. The archaeological evidence from North America suggests that either the flat octagon or the rectangle with chamfered corners, both with straight sides, are more likely. Flat octagons in dark green glass are frequently found in contexts of the second half of the 18th century (see Noël Hume 1969: Fig. 32, Fig. 40 center; Brown 1971:160–61; McKearin and Wilson 1978:270 Fig. 72 No. 1; Ashurst 1971:119–20). These generally have a string rim under a slightly everted lip. However, rectangular bottles with chamfered corners, in lighter shades of green glass, have also been recovered in 18th century contexts, on at least two sites in Canada, Fort Beauséjour/Cumberland in New Brunswick and Fort Amherst on Prince Edward Island, and at Fort Ligonier in Pennsylvania (Grimm 1970: Plate 63, 169–70). These bottles appear to have a relatively short



0 1 2 3 cm

FIGURE 8. Rectangular bottle with concave chamfered corners. Glass is folded outwards to form the lip. Jones collection.

neck and a flanged lip. It is difficult to say at this point which of these two forms would have been used for powdered mustard although there is some evidence that the pound and half pound sizes were in dark green glass. Both of the archaeological forms were probably used for a variety of products which required a wide-mouthed container of a particular size.

In the second half of the 19th century, short-necked, wide-mouthed bottles which were either flat octagons or rectangles with

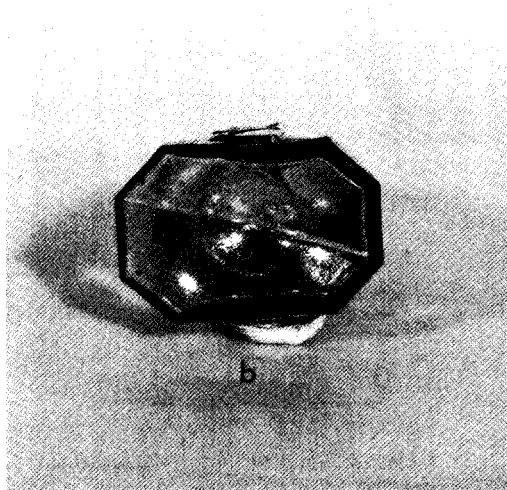


FIGURE 9. Flat octagonal mustard bottle embossed LONDON: a, height 128 mm obverse; b, base 43 × 66 mm. From the collection of the late Charles Gardner.

chamfered corners continued to be offered. Examples containing ground pepper were recovered from the *Bertrand*, which sank in 1865 (Switzer 1974:60–61, 63, 99). The bottles had incurved sides, were $6\frac{3}{4}$ inches high (172 mm), had a 1 inch bore diameter (26 mm) and held $8\frac{2}{3}$ [fluid?] ounces (brimful capacity). The size is slightly smaller than the example in Figure 8 which is 170 mm tall, has a bore diameter of 31 mm and holds 10 U.S. fluid ounces brimful. At estimated filling height, this bottle held, depending on how thoroughly the mustard was compressed, between 127.50 grams and 147.00 grams of mustard, which works out to between 4.50 and 5.18 avoirdupois ounces, either a generous $\frac{1}{4}$ pound or a skimpy $\frac{1}{2}$ pound. Similar bottles, in two sizes, were being recovered in the American southwest by bottle collectors in the 1960s. Some had labels for allspice and nutmeg (Ferraro and Ferraro 1964:52–53). What appears to be a similar bottle is illustrated in the 1887 Whitall Tatum catalog in the “Mustards etc.” list and is labelled “Flat $\frac{1}{4}$ lb mustard” (Whitall, Tatum & Co. 1887:78). Another example is

illustrated in the 1904 Whitney Glass Works catalog where it is called a fancy flat mustard (Lohmann 1972:46). All of the above bottles appear to have at least some concave sides and this may be a characteristic feature of the flat-sided bottles used for mustard and other powdered spices. An additional link between dry mustard and the flat octagonal form is provided by the bottle illustrated in Figure 9.

Although the above discussions have been inconclusive, there is no doubt that a rectangular and/or flat octagonal bottle form was used from the second half of the 18th century and throughout the 19th century to hold powdered mustard. Because there was more than one contemporaneous bottle form for mustard, further clarification of the term “mustard bottle” is needed to identify the square mustards of the “London type” in the documentary sources.

The term “mustard squares” has been found frequently in English glass lists. In the Day Book for 1 July 1781 to 30 June 1782, from Lord Delaval’s bottle glassworks at Seaton Sluice (near Newcastle upon Tyne)

pint mustard squares and pound mustard squares are listed as part of the year's production (on file, Northumberland County Record Office 2DE 11/6). A price list for 1803 mentions "mustard squares" per gross [in "white" glass] and in green glass (Prices of Glass Goods . . . Feb. 15th, 1803); another from 1829 mentions Mustard squares common and ditto green (reprinted in Hughes 1958:24–25). As these are both flint glass lists, the bottles were probably offered in colorless glass (which may or may not be lead glass) as well as in green glass (which may or may not have had a significant lead content). An early catalog from the London wholesale firm of S. Maw (1839:39) lists Mustard Squares in ½ and 1 pound sizes under the heading "Black Glass Bottles, Carboys, etc." A Pellatt [and Green] price list dated 1 January 1830 has Mustard Squares, all sizes, in green and white [colorless] glass. A slightly later Apsley Pellatt list (1838?) includes Mustard Squares in ½ and 1 pound sizes under the heading "Flats ovals or octagon." The Hudson's Bay Company began sending mustard flour to North America by the "square" in 1798 and used the term intermittently until 1851 (Krause 1971:3).

It cannot be assumed that the above references refer to the square "London type" bottles. The word "square" has often been used loosely to describe rectangular objects as well as those with four sides of equal length. For bottles, "square" has probably also been used to describe rectangles with chamfered corners and flat octagons. Basically, "square" could mean "not round." The Colman company, for example, used the word square to describe both its rectangular and its square mustard tins in the late 19th century (Norwich School of Art 1977:26).

The second consideration is size. All the "London type" mustard bottles available for measurement have been very close in size and those measured for capacity held less than 2 avoirdupois ounces of ground mustard. This amount is considerably less than either a ½ or 1 pound and can probably be considered less than the ¼ pound size range although one

piece of evidence suggests that it might not be. In the 1904 Whitney Glass Works catalogue (Lohmann 1972:46) "Flat Mustards, Extra Weight" are listed according to size and actual capacity. The 3 ounce size held 3 ounces, the ¼ pound size held 2 ½ ounces and the 1 pound size held 5 ⅓ ounces. "Extra weight" meant that more glass was used to make the bottles than would normally be the case. As the same molds would be used to make bottles of regular weight, the extra glass would be forced into the interior of the bottle, thus substantially reducing its volume. It is quite common in the late 19th century to find a size used as a name but which is considerably different than the actual capacity of the bottles. It is possible that the ¼ pound bottles mentioned in various documents may have been of the square "London type" but no actual evidence has been found to support this. The "square" mustards in the pound and half pound sizes, however, are undoubtedly not the "London type" and probably refer to the rectangular or octagonal forms discussed above.

Finally, in some lists the terms "mustards" and "mustard pots" were used. These, however, referred to vessels for serving mustard at the table. As there is a tendency for these lists to concentrate on certain types of wares, a careful examination of the list will usually provide a clue to the usage of the object. If the list is primarily for tablewares and particularly if it contains parts of cruet sets, then the object was probably used on the table and not as a commercial container. However, some tableglass lists also offered vials and small bottles of generic types, such as Turlington's Balsam of Life, of which the "London type" mustard bottles appear to be an example.

London Mustard Bottles

London mustard was a type of dry mustard. The earliest reference found to it was located in an advertisement in the 23 June 1806, *Montreal Gazette*:

N. Graham . . . *Groceries*—Muscavado and loaf sugar, cocoa, best ground coffee, chocolate, cloves,

cassia, boxes raisins, capers, French olives, brandy fruits, ketchup, London mustard, anchovies, rose water, macaroni, vermicelli, garden seeds etc. . . .

Crosse and Blackwell had a "Superior London Mustard, in lb. and half lb. Bottles" (Clark 1854:6). Colman's still offered London mustard in the late 19th century and continued to do so until the 1920s when this type was dropped (Norwich School of Art 1977:28–29). In the 1930s Mrs. Grieve (1977 [1931]:568–69) referred rather scathingly to London mustard as being "almost always adulterated and many samples consist of little but flour, coloured with turmeric and flavoured with pepper."

The bottles embossed LONDON or LONDON/MUSTARD were used for this type of mustard (Figure 1). An order dated March 1775 by the Administration of the Norwegian Glass Industry to the bottle house at Biri mentions "*Cantin Fladsker* with stamp LONDON" (Ada Polak 1977, pers. comm.). According to Ada Polak, *Cantin Fladsker* was a term used by 18th century Norwegian glass factories to refer to all bottles of square shape with a short neck. Because of the broad use of the term *Cantin Fladsker* and because the date of the order is 30 years earlier than other located references to London mustard, the Norwegian order cannot at this point be taken to refer to the "London type" mustard bottles.

The first indisputable reference is in an advertisement in the New York *Evening Post* for 18 February 1808, which mentions "London Mustard Squares" (McKearin and Wilson 1978:263, 739 n. 48). Intermittent references to the production of London mustard bottles in the United States can be found for most of the 19th century. Several lists by Dr. Dyott of Philadelphia include Mustard (plain) and Ditto (London) in the period between 1818 and 1828 (see McKearin 1970:38, 45; Putnam 1968:24). Examples were found on the site of the Gloucester Glassworks, Clementon, New Jersey which operated between ca. 1800–1825 (Richard Morcom 1971, pers. comm.; K. Wilson 1968:

191–93). The Free Will Glass Manufactory in New Jersey had molds for London Mustard when they started production in the fall of 1835 (Van Rensselaer 1969:151). Mustard London, Mustard Plain appear together under Patent Medicine Vials in an undated list for the Williamstown Glassworks of New Jersey (reprinted in Horner 1969; dated 1853/54 in McKearin and Wilson 1978:387). Several of the above lists provide documentary support for the archaeological evidence that unmarked mustard bottles of the "London type" were also produced.

London Mustard also appears under Patent Medicine vials in an 1875 Wm. McCully & Co. catalog (Innes 1976:225). In the 1876 and 1880 Whitall Tatum catalogs, London mustard appears under Mixed Ware: Mustards etc. (Whitall, Tatum & Co. 1876:44; 1971 [1880]: 49) although by 1887 it was no longer offered. A search of several late 19th and early 20th century catalogs did not uncover any references to London mustard bottles. Since they were still listed in the wage lists for 1903–04 of the American Flint Glass Workers Union (1903:12) under Mustards, some production of the bottles probably continued into the 20th century.

The presence of the London mustard bottles in the patent medicine vial lists mentioned above does not indicate that it was regarded as a patent medicine. Other nonmedical products such as ink, cayenne, and varnish bottles were also included. Rather, it supports the argument that both the London and the unembossed mustards were a generic shape and that they were comparatively small in size.

Documentary evidence for the production of the bottles in England is scarce. Price and Company, a flint glass house in Gateshead, ordered molds cut "LONDON" in 1811 and in 1822 and had two molds repaired in 1825 (Ellison 1975:157, 180). Canadian archaeological evidence is strong, however, for a considerable British production of both the London and the unembossed mustards. Fragments of these bottles are numerous at several

British military sites in Canada—Fort Beauséjour/Cumberland in New Brunswick; Quebec City, Fort Lennox, and Coteau-du-Lac, Quebec; Fort George, and Fort St. Joseph, Ontario.

A letter written to the Excise Office in London by C. T. Thornhill, White & Co., Deptford Glass Works near Sunderland, Durham, in August 1812, indicates that they had been accustomed for many years to exporting to foreign countries “Flint Glass Bottles of different sizes and shape filled with Mustard, Lavender and other Waters, Essences, Preserves and similar Articles” (Great Britain . . . 1812:421). It had apparently been the practice of this firm to actually fill the mustard bottles at the factory. Although the shape of the bottles was not mentioned, the fact that the mustard was packed in flint glass suggests a colorless lead glass of which many square examples exist in the archaeological record. The other products mentioned in the list may also have had generic shapes. Durham, of course, was well known for its mustard production.

London mustard was also available in Europe. An illustration of a London “*Sennepsglas* [mustard glass]” is included in the series of drawings probably dating to the late 1850s from the Holmegaards glass factory in Denmark. Holmegaards may have been producing the bottles or may have been importing them from England and then selling them through their own catalog (Buchwald and Schlüter 1975:13[55], 33[101], 142).

Variations of the LONDON bottle exist. A few examples embossed LONDON/MUSTARD have been found as well as ones with incomplete inscriptions on the reverse side (Figures 2, 3). These, however, are the same shape as the LONDON and unembossed bottles.

The flat octagonal bottle embossed LONDON (Figure 9) was also probably used as a container for London mustard. The bottle is 128 mm tall, with a body height of 95 mm, and base dimensions of 43 × 66 mm, and

probably held considerably more mustard than the square examples. Unfortunately no capacity measurement was taken of this bottle. The embossing on this bottle suggests that the flat octagonal form, of which this is a good example, was being used for dry mustard. The bottle cannot be considered as a variant of the square bottle.

The popularity of London mustard and dry mustards in general can be inferred from even a cursory examination of the archaeological record. Numerous square mustard bottles, some embossed and some not, have been recovered from several British military forts in Canada (see above), one site alone having 46 examples (Jones 1975). Twelve examples of London Mustard were recovered from a trash pit at Washington-on-the-Brazos, Texas (L. Corkill 1973, pers. comm.). Examples were found at Fort Gadsden, Florida (Poe 1963:2), at Fort Atkinson, Nebraska (Carlson 1979:85–86, 232–33), from an Indian burial in eastern Oklahoma (M. Wilson 1968:84–85), at Pope’s Freehold in St. Mary’s City, Maryland (George Miller 1980, pers. comm.), and at Batsto, New Jersey (Budd Wilson 1972, pers. comm.).

Durham Mustard Bottles

“Durham” mustard was being produced by 1760. In that year, in Norwich, Jonas Phillips advertised that he sold wholesale “The Right Superfine Durham Flour of Mustard” (Smith 1975:54). In Philadelphia Benjamin Jackson was advertising that he made flour of mustard superior to English Durham (Bishop 1967 [1868]:579). A mid 19th century source described Durham mustard as follows:

Mustard seed to the amount of one sixth only, and in many kinds not nearly so much as that, enters into the composition of the best Durham mustard, which is Durham only in name, the rest being composition of some kind, colored with turmeric, and spiced with capsicums (Hunt 1842:194).

John Balmbrough manufacturer of Ainsley’s Celebrated Durham Mustard advertised in 1856 of the purity of his product:

The Nobility, Clergy, Gentry, and Inhabitants generally of Durham and its vicinity, are respectfully informed that the above CELEBRATED MUSTARD is made from the finest selected Samples of English Brown Seed, on the principles which first gave to Durham its celebrity for the Article, combined with every Improvement which science has since developed. The greatest skill and attention is observed in the preparation of the Seed, which is desiccated in a manner known only to the above Proprietor, whereby all its great strength, aromatic flavour, and strong piquant qualities are retained. It is warranted to be free from every adulteration, such as Turmeric and other chemical preparations, and, to prove it, analyzation is at all times invited. Sold Wholesale and Retail in Bottles, Bladders and Casks; and, to protect the Public from being imposed upon, each Label with the Bottles, Bladders, &c., will have upon it a representation of Durham Cathedral and the City of Ams, together with the Signature of the Proprietor, and without which it is not GENUINE (W. A. L. Seaman 1971, pers. comm.).

At Colman's Durham was regarded as "the humblest grade of the Colman range" (Norwich School of Art 1977:28). In the second half of the 19th century references to Durham mustard were generally accompanied by a company name.

Several square bottles embossed DURHAM/MUSTARD (Figure 4) were recovered from Coteau-du-Lac, a fortified canal on the St. Lawrence River (Jones 1975). Other than references to Durham mustard itself, no documentary evidence for the manufacture of the bottles was located.

A bottle embossed . . . KINS/S[UPER] FINE/DURHAM/MUSTARD (Figure 6) was found at Fort Snelling, Minnesota (Ted Lofstrom 1977, pers. comm.). The company has not been identified. Superfine is a term used frequently to describe mustard flour.

Hy Wheeler, Liverpool Bottles

The history of this company has been traced using the *Liverpool Directories* by Naomi Evetts (1979, pers. comm.). Henry Wheeler appeared in the Directories between 1790 and 1811 variously described as an oilman, a perfumer, and tea dealer or as operating an

Italian and Oil Warehouse. In 1811 the firm became Henry Wheeler & Son. In 1816 he appears to have retired and continued to be listed until 1829 as a gentleman. Between 1816 and 1821, Henry Wheeler, Jr. was in partnership with a Robert Wheeler. Between 1821 and 1829 Henry Wheeler, Jr. operated the business alone. Between 1829 and 1835 he is listed as a gentleman. Italian warehouses and oilmen specialized in a wide range of animal and vegetable oils used for lubricants, lamps, cooking, and for making paints, varnishes, and soaps (Ashdown 1974:170). They sometimes carried condiments such as olives, anchovies, pickles, and so on, but generally not spices. Examples of the Wheeler bottles have been recovered from the Richelieu River (Figure 5), Fort Lennox, and Coteau-du-Lac, Quebec; Fort George, and Fort St. Joseph, Ontario.

Kentucky Bottles

Two examples embossed KENTUCKY are illustrated in Edelen (1974:828), but no additional information is available.

Uses

Although dry mustard could be used as an emetic or in the preparation of mustard plasters and mustard baths, the primary usage of both London and Durham mustard appears to have been as a condiment or spice. In newspaper advertisements which list a tremendous variety of goods, the dry mustards are included with the foodstuffs, such as condiments, spices or "provisions." The medical items are located elsewhere in the lists.

One medical item which does appear frequently that should not be confused with the dry mustards is Essence of Mustard. The patent for this medicine was taken out by Robert Johnston in 1798 and became well known as Whitehead's Essence of Mustard (Proprietaries of Other Days . . . 1927:840). From a label preserved in the Parks Canada

Reserve Collection, it obviously was intended to be used as a linament. The inclusion of the London mustard bottles in the patent medicine and vial listings by the glassmakers is a reflection on the nature of the container (see above), not on the intended usage of the contents. It is obvious, too, from several sources cited above that London and Durham mustard were regarded as condiments.

Adulteration of flour of mustard was frequently deplored and frequently denied. After Britain passed its Adulteration of Food and Drugs Act in 1875, manufacturers were forced to describe their products on the label. Colman's used the term "Warranted Pure" for the unadulterated mustards and "condiment" (later "compound") for the mixed articles (Norwich School of Art 1977:26). In Canada, after the passage of an equivalent act in 1875, a group of analysts was appointed to investigate 180 samples of a variety of foods. Of six mustard samples, all were found to be adulterated with wheat flour and colored with turmeric (Morrell 1960:108-110). As mustard flour tends to be oily, the wheat flour was often added to improve the texture of the oilier, inferior grades (Norwich School of Art 1977:26). Turmeric was added to improve the color and peppers to increase the pungency. The adulteration, which was done for good commercial reasons, would affect the medicinal usefulness of the dry mustard. The effects of its potentially dangerous applications would be rather uncertain when the strength of the mustard was not known. Nevertheless, the powdered mustards were undoubtedly used on occasion for medicinal purposes.

Conclusions

There were groups of bottles being produced in the 19th century which can be considered generic in nature. The bottles had, with only minor variations, a standard shape and size(s) that was internationally recognized, were manufactured over a long period

of time by many glass companies in several countries, and were used by many different wholesale and retail firms to contain a certain type of product. Some types had embossed markings while others did not.

A generic bottle form for powdered mustard has been identified using archaeological and documentary sources. The bottles held about 2 ounces of mustard powder, had a tall square body with chamfered corners, a short neck, and wide mouth. Embossed examples indicate that different varieties of dry mustard, such as London and Durham, would have been packaged in these bottles. Based on the bottles embossed LONDON, the form appears to date from ca. 1800 to ca. 1900. It was made in the United States, Great Britain, and possibly Denmark. Alternate glass bottle forms were also being used for dry mustards but in larger sizes, such as ¼, ½ and 1 pound.

The unembossed examples are problematical. When found dating to the first half of the 19th century and particularly when found in conjunction with bottles marked LONDON one can probably assume that they also held mustards. In the second half of the 19th century, however, a closely related form was being used for capers (see Putnam 1965:213; Beatson & Co. [1892]:37-8; Norwack 1975:108) and for snuff (see Buchwald and Schlüter 1975:33 [55]). Variants of the form are still used for some brands of capers and chutneys. By the last third of the 19th century, probably the only unequivocal survivor of this form as a generic mustard container would be those embossed LONDON.

The mustards themselves were generic products. Durham and London mustard were made by many manufacturers in Britain and the United States. They were sold as condiments or spices but could have had a secondary use in mustard baths or plasters.

Several observations need to be made in connection with this paper. The terminology used in many of the glassmakers' documents was so vague or misleading (although probably perfectly understood at the time), that

great care had to be taken in deciding what the various terms meant. Even the contemporary illustrations were open to interpretation. The danger of depending on only one or two lists for certain types of information was very apparent. It is hoped that the terminology discussed in this report will apply to most lists encountered by subsequent researchers. Secondly, measuring the capacity of the bottles using mustard, and using a dry rather than a liquid measure, helped to link the actual examples to the documentary record. The capacity was found to be an integral part of the square "London type" mustards. Thirdly, in determining the uses of the powdered mustards, their placement within retail lists was found to be significant. Finally, finding a suitable term to use for the square mustard bottles has been difficult. It is suggested that "London type" mustard bottle, although not strictly accurate, is reasonably exclusive.

ACKNOWLEDGEMENTS

The following persons and institutions have been most generous in sharing their time and research resources: W. A. L. Seaman, Durham County Record Office; H. J. Haden, Wordsley; L. J. Skinner, Maws Limited; Richard Morcom, Philadelphia; Naomi Evetts, Liverpool Record Office; Dr. A. W. Clark, Beatson Clark and Co., Rotherham; Pharmaceutical Society of Great Britain, London; Corning Museum of Glass, Corning, N.Y.; Northumberland County Record Office, Newcastle upon Tyne; Public Record Office, London; and the National Library of Canada, Ottawa. For bringing to my attention examples of embossed bottles, I would like to thank Budd Wilson, New Jersey; Ted Lofstrom, Minnesota Historical Society; George Miller, Parks Canada, Ottawa; and the late Charles Gardner. I would also like to thank Louis Laffèche, Parks Canada for his analysis of seven glasses; J. Métivier, J. Moussette, K. Gilles, and S. Martin for the drawings; Antony Pacey and Louise Lepine for their assistance in locating newspaper advertisements.

REFERENCES

- AMERICAN FLINT GLASS WORKERS' UNION
1903 *Price List for Tank Glass Adopted by the American Flint Glass Workers' Union for the Blast of 1903 and 1904*. Pittsburgh. Copy on file, Corning Museum of Glass.
- APSLEY PELLATT, (LATE PELLATT & GREEN) GLASS MAKER AND CUTTER, FALCON GLASS WORKS, HOLLAND STREET, SOUTHWARK, LONDON. NET MEDICAL PRICE LIST
Dated by hand, November 1838 (?). London. Copy on file, Pharmaceutical Society of Great Britain.
- ASHDOWN, JOHN
1974 *The Oil Jar as a London Shop Sign*. *The London Archaeologist* 2(7):166-70.
- ASHURST, DENIS
1971 *Excavations at Gawber Glasshouse, near Barnsley, Yorkshire*. *Post-Medieval Archaeology* (1970) 4:92-140.
- BEATSON & CO.
[1892] [Catalog], Rotherham Glass Works. Copy on file, Beatson Clark and Company, Rotherham, Yorkshire.
- BEETON, ISABELLA
1968 *The Book of Household Management, Comprising Information for the Mistress, Housekeeper, Cook, Kitchen-Maid, Butler, Footman, Coachman, Valet, Upper and Under House-Maids, Lady's-Maid, Maid-of-all-work, Laundry-Maid, Nurse and Nurse-maid, Monthly, Wet, and Sick Nurses, etc., also, Sanitary, Medical, & Legal Memoranda; with a History of the Origin, Properties, and Uses of All Things Connected with Home Life and Comfort*. Reprint of 1861 edition. Jonathan Cape, London.
- BISHOP, J. LEANDER
1967 *A History of American Manufactures from 1608 to 1860: Exhibiting the Origin and Growth of the Principal Mechanic Arts and Manufactures, from the Earliest Colonial Period to the Adoption of the Constitution; and Comprising Annals of the Industry of the United States in Machinery, Manufactures and Useful Arts, with a Notice of the Important Inventions, Tariffs, and the Results of Each Decennial Census*. Reprint of 1868 edition. Johnson Reprint Corporation, New York.
- BRANNT, WILLIAM T. (EDITOR)
1890 *A Practical Treatise on the Manufacture of Vinegar and Acetates, Cider, and Fruit-Wines; Preservation of Fruits and Vegetables by Canning and Evaporation; Preparation of Fruit-Butters, Jellies, Marmalades, Catchups, Pickles, Mustards, etc.* Henry Carey Baird & Co., Philadelphia.
- BROWN, MARGARET KIMBALL
1971 *Glass from Fort Michilimackinac: A Classifica-*

- tion for Eighteenth Century Glass. *The Michigan Archaeologist* 17(3-4).
- BUCHWALD, GUNNAR AND MOGENS SCHLÜTER
1975 *Kastrup and Holmegaard's Glassworks Denmark 1825-1975*. Kastrup and Holmegaard's Glassworks, Copenhagen.
- BUCKLEY, FRANCIS
1930 Old London Glasshouses. I. Southwark. *Journal of the Society of Glass Technology* 14:137-49.
- CARLSON, GAYLE F.
1979 Archeological Investigations at Fort Atkinson (25WN9) Washington County, Nebraska 1956-1971. *Nebraska State Historical Society Publications in Anthropology* 8.
- CLARKE, A. R.
1854 *Catalogue of Choice Teas, foreign fruits, wines, segars, groceries and various foreign delicacies, selected expressly for family use*. Philadelphia. Copy on file, Pennsylvania Historical Society.
- DOW, GEORGE FRANCIS
1927 *The Arts & Crafts in New England 1704-1775: Gleanings from Boston Newspapers Relating to Painting, Engraving, Silversmiths, Pewterers, Clockmakers, Furniture, Pottery, Old Houses, Costume, Trades and Occupations etc. etc.* The Wayside Press, Topsfield, Massachusetts.
- EDELEN, HENRY CHARLES
1974 Nineteenth-century Kentucky glass. *Antiques* 105 (4):825-29.
- ELLISON, MARGARET
1975 The Tyne Glasshouses and Beilby and Bewick Workshop. *Archaeologia Aeliana* Fifth Series 3:143-193.
- ELVILLE, E. M.
1951 *English Tableglass*. Country Life, London.
- ENCYCLOPAEDIA BRITANNICA
1910-11 Mustard. 11th ed. 19:97-98.
- FERRARO, PAT AND BOB FERRARO
1964 *The Past in Glass*. Sparks, Nevada.
- GREAT BRITAIN. PUBLIC RECORD OFFICE
1668- Customs 48. 54:419-24. [Correspondence relating to the management of the Excise].
- GRIEVE, MRS. M.
1977 *A Modern Herbal. The Medicinal, Culinary, Cosmetic and Economic Properties, Cultivation and Folklore of Herbs, Grasses, Fungi, Shrubs and Trees with all their Modern Scientific Uses*. Reprint of 1931 Edition. Penguin Books, Harmondsworth, England.
- GRIFFENHAGEN, GEORGE B. AND JAMES H. YOUNG
1959 Old English Patent Medicines in America. *Contributions from the Museum of History and Technology*, Bulletin 218, Paper 10.
- GRIMM, JACOB L.
1970 Archaeological Investigation of Fort Ligonier 1960-1965. *Annals of Carnegie Museum* 42.
- INNES, LOWELL
1976 *Pittsburgh Glass 1797-1891, a History and Guide for Collectors. Illustrated with Photographs*. Houghton Mifflin, Boston.
- HORNER, ROY C.
1969 *Tempo*. Author, New Jersey.
- HUGHES, G. BERNARD
1958 *English Glass for the Collector 1660-1860*. Lutterworth Press, London.
- HUNT, F. (EDITOR)
1842 Pepper and Mustard. *Merchants' Magazine and Commercial Review* 6(2):194.
- JONES, OLIVE R.
1975 Catalogue of the Glass Bottles and Other Miscellaneous Glassware Excavated at Coteau-du-Lac, Quebec. Ms. on file, Parks Canada, Ottawa.
1981 Essence of Peppermint, a History of the Medicine and its Bottle. *Historical Archaeology* 15(2).
- KRAUSE, ERIC R.
1971 Information on Essence of Peppermint and Mustard. Ms. on file, Parks Canada, Ottawa.
- LOHMANN, WATSON M.
1972 1904 Whitney Glass Works Illustrated Catalog and Price List with Historical Notes 1900-1918. Pitman, New Jersey.
- MAW, S.
1839 *A Catalogue of Surgical Instruments, Pharmaceutical Implements, Dispensary Utensils & Vessels, in Glass, Earthenware, Metal etc. Boxes, in Paper, Wood, Etc. Machine Spread Plasters, Labels, etc., etc. including nearly every Requisite for the Surgery, Dispensary, or Drug Department*. S. Maw, London.
- McKEARIN, HELEN
1970 *Bottles, Flasks and Dr. Dyott*. Crown, New York.
- McKEARIN, HELEN AND KENNETH M. WILSON
1978 *American Bottles & Flasks and their Ancestry*. Crown, New York.
- MONTAGNÉ, PROSPER
1961 *Larousse Gastronomique. The Encyclopedia of Food, Wine & Cookery*. Crown, New York.
- MORRELL, C. A.
1960 National Problems in Canada. In *Pure Food and*

Pure Food Legislation. edited by A. J. Amos, pp. 107-18. Butterworths, London.

NELSON, ALEXANDER

- 1951 *Medical Botany. A Hand-book for medical men and all who are concerned in the use of plants: nutritionists, dieticians, pharmacists and veterinarians.* E. & S. Livingstone, Edinburgh.

NOËL HUME, IVOR

- 1969 Glass in Colonial Williamsburg's Archaeological Collections. *Colonial Williamsburg Archaeological Series 1.*

NORWAK, MARY

- 1975 *Kitchen Antiques.* Praeger, New York.

NORWICH SCHOOL OF ART

- 1977 *The Advertising Art of J & J Colman Ltd.* Norwich. [This catalog was published to accompany an exhibition at the Norwich School of Art in 1977. No author was given.]

PALMER, ARLENE M.

- 1976 *The Wistarburgh Glassworks: The Beginning of Jersey Glassmaking.* Alloway Township Bicentennial Committee, Alloway, New Jersey.

PELLATT [& GREEN]

- 1830 *Reduced Net Prices.* London. Copy on file, Pharmaceutical Society of Great Britain.

POE, STEPHEN

- 1963 Archaeological Excavations at Fort Gadsden, Florida. *Notes in Anthropology* 8. Florida State University, Tallahassee.

PRICES OF GLASS GOODS, SOLD BY THE DIFFERENT MANUFACTURERS, IN ENGLAND: FEBRUARY 15TH, 1803.

- 1803 As above. Private collection.

PROPRIETARIES OF OTHER DAYS. A COLLECTION OF REMEDIES OF THE 17TH, 18TH AND 19TH CENTURIES, FAMOUS IN THEIR TIME, A FEW OF WHICH ARE STILL IN USE

- 1927 As above. *Special Issue The Chemist & Druggist-June 25, 1927:* 831-40.

PUTNAM, H. E.

- 1965 *Bottle Identification.* Author, Fontana, California. [Reprint of 1911 Illinois Glass Company catalog].

PUTNAM, P. A.

- 1968 *Bottled Before 1865.* California.

SMITH, SHEENAH

- 1975 Glass in 18th century Norwich. *The Glass Circle* 2: 49-64.

STILLÉ, ALFRED AND JOHN M. MAISCH

- 79 *The National Dispensatory. Containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicines. Including those Recognized in the Pharmacopoeias of the United States, Great Britain, and Germany, with Numerous References to the French Codex.* 2nd ed. Henry C. Lea, Philadelphia.

SWITZER, RONALD R.

- 1974 The Bertrand Bottles, a Study of 19th-Century Glass and Ceramic Containers. *Publications in Archaeology* 12. National Park Service, U.S. Department of the Interior.

VAN RENSSLAER, STEPHEN

- 1969 *Early American Bottles and Flasks.* Revised reprint of 1926 edition. Edited by J. Edmund Edwards. J. Edmund Edwards, Stratford, Conn.

WHITALL, TATUM & CO.

- 1876 [Catalog]. Whittall, Tatum & Co., Philadelphia. Copy on file, Corning Museum of Glass.
1971 *Whittall, Tatum & Co. 1880. Flint Glassware, Blue Ware, Perfume and Cologne Bottles, Show Bottles and Globes, Green Glassware, Stoppers, Druggists' Sundries.* Reprint of 1880 catalog. The Pyne Press, Princeton.
1887 *Annual Price List.* Whittall, Tatum & Co., Philadelphia. Copy on file, Corning Museum of Glass.

WILSON, KENNETH M.

- 1968 Gloucester Glass Works, Clementon, New Jersey circa 1800-1825. *Journal of Glass Studies* 10:191-93.

WILSON, MIKE L.

- 1968 Two Historic Burials in the Three Forks Locale. *Bulletin of the Oklahoma Anthropological Society* 17:74-86.

YOUNG, ARTHUR

- 1967 *A Six Months Tour through the North of England.* Vol. IV. Reprint of 1771 edition. Augustus M. Kelley, New York.

OLIVE JONES
PARKS CANADA
1600 LIVERPOOL COURT
OTTAWA, ONTARIO K1A 1G2