



NEWSLETTER OF THE LONDON CHAPTER,
ONTARIO ARCHAEOLOGICAL SOCIETY

c/o Museum of Ontario Archaeology
1600 Attawandaron Road, London, ON N6G 3M6



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17-05 - 17-06

It looks like spring has finally arrived! We will be holding our annual Chapter picnic in conjunction with Archaeology Day at the Longwoods Conservation Area west of London, as usual. The scheduled date for picnic this year is July 14, 2019, the second Sunday of July (not the third Sunday as it was in past years). Mark your calendars and come and join us! More details of this event will appear in a future *Kewa* and on our website.

The next London OAS Meeting at the Museum will be on Thursday September 12, 2019. The speaker and topic are to be announced.

Speaker's Night is held the 2nd Thursday of each month (January to April and September to December) at the Museum of Ontario Archaeology, 1600 Attawandaron Road, near the corner of Wonderland & Fanshawe Park Road, in the northwest part of the city. The meeting starts at 7:30 pm. Doors open at 7:00 PM and as usual there will be free juice and cookies!

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The Codd Bottle: Rarity and Ingenuity in Ontario Archaeology

Alexandra Kisielewski



Figure 1: Example of Codd Bottle.

Glass bottles -- an incredibly common sight in both historical archaeology and present-day activities. However, some glass bottles raise the interest of the archaeological community beyond the norm through distinctive characteristics such as shape, colour, embossing, or context. One such rare bottle has been found in Ontario during excavations in 2015 related to the construction of the new Toronto Court House. Nestled between the streets of Chestnut, Armoury, and Center in downtown Toronto, archaeologists with Timmins Martelle Heritage Consultants in 2015 uncovered a rare object in Ontario archaeology: a Codd stoppered bottle. This article will explore in more detail what the Codd bottle is, its relation to other similar bottles of the time, and the presence of such bottles in the Ontario archaeological record.

What Is A Codd Bottle? - Patents and Manufacture

Hiram Codd (1838-1887) of Camberwell, London, was originally a mechanical engineer who worked for a cork company before inventing the Codd closure for carbonated drinks (Munsey 2010). Having been invented in the late 19th century and used into the 20th century, the Codd bottle could eliminate the use of corks, prone to popping from the build-up of pressure in carbonated beverages. This type of closure is known by various names including Codd stopper, marble-in-the-neck bottle, and globe stoppered bottles. In the simplest terms, the Codd design had a rubber sealed area in the lip of the bottle, in which a glass marble would rest and seal the bottle from the build-up of carbonation within (Figure 1). Hiram Codd released a series of patents to introduce the new internal closure, as well as for variations in the design of the bottle. The multitude of patents include modifications in the neck of the bottle and the location where pinch points prevented the glass marble from falling down into the base of the bottle or impeding the flow of liquid in the mouth of the bottle. While Codd stoppered closures were very common in England, not many examples of such bottles have been found in Canada, and specifically Ontario.

A description of the Codd bottle will make it easier to identify the working parts in the patent images below. According to Nathan Bender (2016), a stopper is defined as: “a closure held in place by means other than gravity and engaged primarily within the vessel bore.” The Codd bottle was an internal stopper that most commonly used a glass marble in the vessel bore. However, the marble alone cannot keep the bottle sealed. A Codd bottle’s other working parts include a pinched neck, and a rubber ring. The pinch points in the neck of a Codd bottle are unusual, but ultimately

the most noticeable and defining feature at first glance. Codd himself referenced them in his 1870 patent as “transverse passages” for stopping the glass marble (Lockhart n.d.). In conjunction with the marble, and the rubber ring, a tight seal is formed. The Codd bottle came in two different capacities, a 10 oz and a 6 oz, although variations of this exist.

Each of the several patents that Codd took out had different improvements over the earlier versions. Codd received his first English Patent, No. 3,070, in 1870. This patent mentions details of the pinched neck, as well as materials such as glass, wood, cork, India-rubber or gutta-percha for the stopper. Also noted is the first acknowledgement of a bottle opener used to push the marble down into the bottle (von Mechow 2018a). A year later, in 1871, Codd received Patent No. 2,212 describing the means by which the contraction in the neck of the bottle is made. “...formed by pressing in the sides so that the neck at the part assumes an oval form. Above the contraction the neck is widened to form a recess into which the stopper rolls when the liquid is being poured out.” (Lockhart n.d.:2). Also noted in this patent is a brief description of the process by which the bottle is filled: upside down (von Mechow 2018a). The reason for this way of filling is so the marble would seat itself against the rubber ring in the mouth of the bottle from the pressure of carbonation (Munsey 2010). Not long after Codd’s bottle had been introduced into the English market, he received an American Patent on July 23, 1872, No.129,652. The Patent No. 2,621 which Codd also received in 1872, is his most famous patent and is known as Patent 4. Figure 2 is an image of Patent No. 2, 621 from September 3, 1872. The improvement in this patent is a design to keep the glass marble out of the mouth of the bottle when being poured. A U.S. patent was also received for this improvement, No.138,230 in early 1873 (Figure 3) (Lockhart n.d.). An excerpt from this 1873 patent is as follows:

Now, my Invention consists in so constructing such bottles that when they are opened by forcing back the stopper, the stopper may not fall down into and impede the water way or channel by which the liquid is poured from the bottle but may be sustained above it in the upper part of the neck and there retained. The liquid as it is poured out of the bottle then flows freely beneath the stopper and without coming in contact with it so that the escape of the liquid is unimpeded... (Munsey 2010).

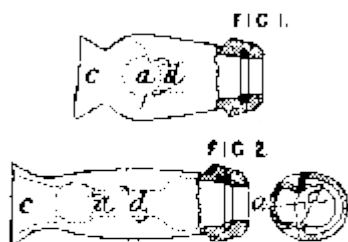
Not only was a U.S patent created, but so too was a Canadian patent. According to the Unitts (Unitt and Unitt 1972) the patent was registered in 1876 and was a variation of the original Codd, but with a different style of lip. Embossing on bottles prove that many Ontario companies used the Codd stopper, but very few use the Canadian patent. During the 1880s other inventors had the idea to make improvements upon the marble-stopper idea and took out their own patents to do so. And while Codd had originally held the licenses to bottle rights, after the patents had expired anyone could manufacture the bottles. (Lockhart n.d.). It is of importance to note that in order to manufacture the patented Codd bottle one had to pay Hiram Codd a yearly license fee. This changed in the coming years, however:

“...by mid-1873 he had granted 20 and received a further 50 applications...By 1874 the license was offered free to bottle manufacturers as long as they purchased the marbles, sealing rings, and used Codd’s patented groove tool solely, from him.” (Munsey, 2010).

1872

2621. Codd, H. Sept. 3.

Bottle necks; bottle necks, making.—In the neck of a bottle for aerated liquids are formed inclined projecting ridges *d, d*, Fig. 1, one on each side, and the lower part of the neck *c* is contracted. When the ball stopper *a* is pushed in to open the bottle, it rolls down the projecting ridges till it is stopped by the



contraction. It is then allowed to roll to the opposite side of the ridges *d*, which prevent it from returning when the bottle is inclined for pouring the liquid. The moulds, in which the bottles are blown, are formed with projections to produce the ridges *d* in the neck when the bottle is blown. In a modification, Fig. 2, the lower part of the internal projecting ridges *d* is curved. The stopper *a*, when the bottle is inclined, is prevented from returning to the mouth by the curved portions of the projecting ridges *d*. If the stopper is made with a stem, the stem may be made much shorter when using the inclined ridges.

Figure 2: Codd Bottle Patent.

Patented just two years after the Roorbach, The Stewart Patented Stopper was another form of ball stoppered internal closure. This bottle had only one licensee, the U.S. Bottle Manufacturing Co., to manufacture the bottles, and was located in Findlay, Ohio. Patented in June of 1885 by William Stewart, the floating ball stopper is almost identical to that of the Roorbach. Bill Lindsey, author of the *Historic Glass Bottle Identification & Information* website agrees that the two are very similar and cannot understand why the Stewart Patented Stopper was even given a separate patent from the Roorbach because of the similarities between the two (Lindsey 2019). According to the *North American Soda and Beer Bottles* website, this stopper was only in until 1890. While others tried to market variations of the Codd bottle, none were as successful as the original.

The commonality of the Codd bottle, the Roorbach, the Stewart, and other variations is the use of a round ball acting as the stopper in the bottle neck. This object prevents liquids from being released. In a Codd bottle, more likely than not, it would be a glass marble. However, a glass marble at this time was prized for more than just a stopper in a bottle. The bottles were frequently broken by children in order to get the marble inside (Unitt and Unitt 1972). So more often than not, the Codd bottle was broken to retrieve the glass marble, as may be the case from the Toronto

At this point, Codd basically had total control over the manufacture of Codd bottles, as well as the separate internal components.

Competition in the bottling world was fierce, and other bottle designs very similar to Codd's were being patented and released at about the same time, *The Roorbach Ball Stopper* and *The Stewart Patented Stopper* being two examples. The Roorbach Ball stopper was patented by William L. Roorbach in February 1883, with the purpose of using a rubber ball and the build of internal pressure to hold the ball in place inside the double groove of the neck. Similar in technical design to the Codd bottle, this style of closure had little popularity. Interesting to note, is the shape of the Roorbach bottle:

These [Roorbach Ball Stopper] bottles seem to always have a very wide and somewhat short variation of a blob finish, almost surely to facilitate the ball and gasket use.... The overall shape of the bottle is reminiscent of a wide necked Hutchinson soda." (Lindsey 2019).

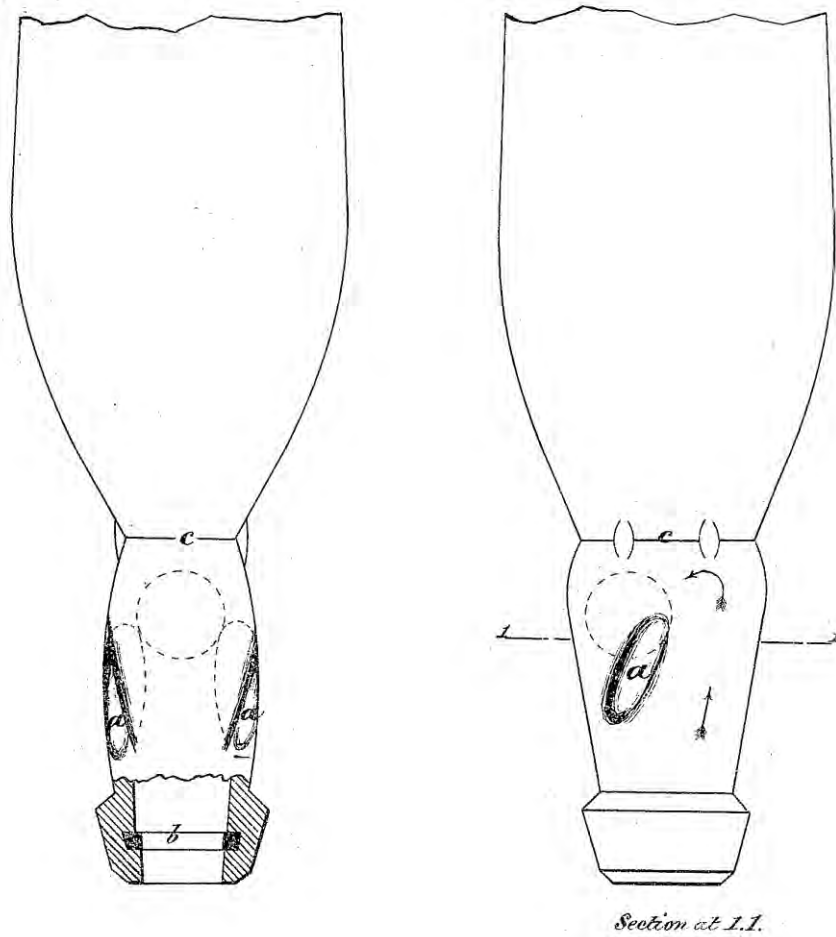
The Roorbach seems to be a combination of two common soda bottles of the time; the Codd and Hutchinson, both of which were competitors to the Roorbach. This bottle was also called the Twitchell Floating Ball Stopper and was marketed by Twitchell & Brother, a supply company for bottlers out of Philadelphia (von Mechow 2018a).

H. CODD.

Bottles for Effervescing Liquids.

No. 138,230.

Patented April 29, 1873.



Witnesses
J. Caspary
Geo. Pitt

Inventor.
H. Codd

W. P. PHOTO-LITHOGRAPHIC CO. N. Y. (SERRAVALLO PROCESS)

Figure 3: Codd Bottle US Patent, 1873.

site example. These precious marbles are noted by Munsey to have been produced in two factories in London; “one in Kennington and the other in Camberwell, which was run by F. Barrett, the son of Richard Barrett his [Codd’s] financial backer” (Munsey 2010). The Stairfoot Station Heritage Park webpage also mentions that the glass marbles were supplied from the Thomlinsons at the Manor Flint Glassworks as well, starting in 1895 (Stairfoot Station 2019). It is also interesting to note the process by which the marble was inserted into the neck of the bottle. Codd’s 1873 U.S. patent describes this process:

First, the bottle was blown into a mold: when the bottle has been removed from the mold a glass marble previously heated is dropped into the bottle through the neck; the ring or head is then formed at the top of the neck in the ordinary manner by means of the tool above described. After the bottle has been allowed to cool a ring of... elastic material... is inserted into the groove formed around the interior of the head.” (Lockhart n.d.)

Given all of the complicated procedures needed to manufacture a Codd bottle, one would assume that the Codd bottle would be expensive to produce. Indeed:

The Codd bottle cost between four and five pence each and that was rather expensive in those days. As there was no deposit on bottles there was no incentive to return the bottles when empty (Munsey 2010).

And with no incentive, members of the public buying Codd bottled beverages could gain some of the cost of the bottle back by keeping the bottle and marble. However, this reluctance to return bottles to the manufacturers caused many businesses to go broke (Munsey 2010). So, in 1880 Codd organized a London bottle exchange to return empty Codd bottles:

So now many thousands of empty bottles could be returned to their rightful owners via the bottle exchanges, which charged a small fee on each bottle for providing this service- 1 penny per gross of 144 (Munsey 2010).

This process would help recover the bottles that manufacturers needed to continue producing and hopefully avoid going under. Being produced from various pieces/components did not help bring the cost of production down either. There was a base, intricate neck, as well as the marble needing to be manufactured. Also adding to the price was a rubber washer to help keep the marble in place. This rubber seal would need to be replaced frequently (Munsey 2010). All in all, the bottle was not inexpensive to manufacture. The following excerpt is from the *National Bottlers Gazette* (New York, New York) January 1886, describing the reduction in the price of the Codd bottle because manufacturers are now located in New Jersey, New York, and Philadelphia instead of Barnsley, England (von Mechow, 2018b).

CODD'S PATENT BOTTLES. REDUCTION OF PRICE

Hiram Codd & Co. have pleasure in informing the trade that they have made arrangements with the well-known firm of WHITNEY BROS., of Glassboro, N. J., New York and Philadelphia, for the manufacture and supply of Codd's Patent Bottles, and that, in consequence for such arrangements, the price of the bottle for the coming season will be

Reduced to \$9.00 per Gross.

To secure proper attention and the advantages of a winter made bottle, orders should be sent to the undersigned as early as possible.

HIRAM CODD & CO.,
22 Commerce St. New York”

This step was an important one in the history of the Codd bottle, for the investment of Hiram Codd in the North American bottle market. Moving some manufacture to the U.S. instead of continually exporting their product from England was an attempt to bring the Codd bottle into greater popularity across the world.

Hiram Codd had also designed a specific bottle opener, called, not surprisingly, the “Codd Bottle Opener.” It’s a simple idea, pressing down the ball and breaking the seal it had produced. “Other inventors modified Codd’s own patented opener but in all cases, the marble would drop, opening the bottle. Codd’s openers were made of boxwood, lignum vitae, or sycamore...” (Munsey 2010). However, in private, most people used a finger to push down on the marble. This type of opening the bottle was most common in America and Munsey notes that one of the reasons Codd bottles weren’t popular in the U.S. was for just this reason. Many people consuming the beverages inside a Codd bottle did not have clean hands from their work tasks and therefore were reluctant to use the bottles with dirty hands which could spread germs (Munsey 2010). The hygienic issues associated with opening the bottle, as well as the cleaning of the bottle and re-use of the rubber seal, led to a decline in popularity of the Codd, but was not its demise. That was held in the hands of William Painter and the Crown Cap.

The Codd bottle was enormously successful in England, however, it had serious competition in the American bottle market, namely from that of the Hutchinson closure. Born in Buffalo, N.Y., Charles G. Hutchinson would spend time working in Chicago, Illinois at his father’s bottling plant, where in 1883 he would become a member of the firm, W.H. Hutchinson & Son. Attempting to eliminate the use of corks in bottling, Hutchinson was granted patent No. 213,992 in April of 1879. David Graci summarizes the design: “Hutchinson’s simple wire design in a figure eight shape, with a button holding a rubber disk that effected the seal when pulled up into the neck...” (Graci, 2003). To accommodate different bottles, there were three lengths of wire and five washer sizes to fit all types of bottles (Lief, 1965). The Hutchinson stopper would eventually lead the pack in bottle closures in America in the late 19th century, as can be seen in an ad for the National Bottlers Gazette published January of 1889 where:

Without printing a word in their ad, the W.H. Hutchinson Co. produced a very grand cartoon caricature of a prize fighter, who represented the Hutchinson stopper, being victorious over all competitor’s, which was drawn by ace company salesman, W.G. Smithers (Graci 2003).

Similar to the Codd bottle, the Hutchinson was opened primarily by hand. One would hit the stem of the wire loop with the hand which would push down the closure, opening it. However, just as the internal Codd closure had hygienic issues, so too did the Hutchinson. Stoppers would not always be replaced regularly by bottlers, and because of its internal location in the bottle, cleaning

for re-use was difficult. These reasons led to complaints about hygiene from the public (Lindsey 2019). The dates for the Hutchinson closure cover quite a large range compared to other closure ideas of the time, some of which may have lasted only a year or two. Most Hutchinson bottles fall into the following date range:

Tooled finish Hutchinson bottles date from the mid to late 1880's to the effective end of production for this style in the mid-1910s, with most bottles dating between the late 1880s and 1912 (Lindsey 2019).

The dating of the Hutchinson is very similar to that of the Codd, meaning that they were both in competition with one another. In the end though, both would be phased out by the same ruling closure.

The Crown Cap by William Painter would successfully take over the bottle industry. Patented in February of 1892, with patent No. 468,226, Painter had created a closure that was both cheap and disposable. Made of a compressible material, the metal cap had a fluted skirt that would crimp onto a bottle head. In this case, "each of the crimps within the skirt is forced beneath a thick rounded lip of the glass finish, each serving as a separate lever locking the cap in place" (Bender 2016). The corrugations meant that the Crown Cap could be crimped onto the lip of any bottle. However, the Crown Cap took some time before being accepted into the bottling community despite the salvation that Painter marketed it out to be.

Painter even created the Crown Cork and Seal Co. to manufacture and advertise his new invention. The Crown Cork System was first marketed on June 1, 1893 with a two-page ad.

One page contained a large picture of a champagne style bottle adorned with a crown cap, and text explaining what a crown cork cap, crown bottle, application machine, and the advantages were to using this revolutionary system. In explaining the crown bottle, Painter pointed out to bottlers that they 'do not tie themselves irrevocably to the Crown Cork and Seal Co., because bottles made for the Crown are equally adapted to ordinary corks, should it become necessary or desirable to use them' (Graci 2003).

David Graci makes an interesting point: both Painter and Codd used the ever-popular previous form of closure, the cork, as a way to lure bottlers into trying their new patents. This connection to the cork was a marketing success, both the Codd and Crown Cap being successful. The second ad that was released by William Painter in 1893 included ways in which the Crown Cap system caps could be opened. "...using a corkscrew, spoon or fork handle, pocket knife or a regular opener, which would serve the purpose" (Graci 2003).

The bottle market was already full of functional closure types, and the crown cap was seen to be a large investment. Even though Painter made available the correct machinery to manufacture the crown cap, the large investment was still a deterrent. Indeed:

virtually all crown finish bottles date to after ca. 1894-1895, since in 1893 a national depression (the famous "Panic of 1893") made investment capital very scarce for

several years deterring the use of new and expensive equipment like that needed to accommodate this new closure (Lindsey, 2019).

However, the Crown cap did begin to gain popularity, and by 1896 the Crown Cork and Seal Co. built a new five storey building that had all modern conveniences for the time to accommodate the expansion and success of the company (Graci 2003). What truly rocketed the Crown Cap to success was the automation of bottling machines; specifically, the Owens Automatic Bottling Machine. The year 1905 was when the first license for the Owens Automatic Bottle Machine was issued. As a result, all machine-made crown caps date to this year or after. Graci (2003) notes this combination meant most patentees stopped looking for new bottle closures. The Crown Cap with the Owens machine was the most efficient way to produce a low cost, single use closure. With little competition now, the Crown Cap closure could be offered for even lower prices, and with the Owens Automatic Bottling Machines, the closure could be used commercially.

Codd In Toronto

The number of Codd bottles found in Canada is limited. When narrowing the search to just Toronto, Ontario, Canada, finds are even more elusive. While many bottles can be categorized as a ‘Codd’ bottle based on obvious features, each patent, and therefore each variation on the Codd bottle, is limited. The following is a description of characteristics for the Codd bottle found at the Toronto Court House archaeological site. Figures 4-5 display some of the unique characteristics of this find and inserted below is a description of the bottle.

Bottle: Aqua, Mold Blown, Smooth Base, Long Tapered Collar, Codd Glass Ball Stopper, Toronto, ON, Canada.

Dimensions: H- 22cm; 8 ^{11/16}" W- 6.4cm; 2 ^{1/2}"

Embossed: on base; Trident shape **Shape:** Codd Bottle

Manufacturer: **Mold:**

Material: Glass **Form:** Cylindrical

Capacity: 10 oz

Notes: There is raised embossing on the base of the bottle which appears to be the form of a trident. This bottle also displays an applied lip.

The age of this bottle could hypothetically range from 1872 to 1910 (or later). Since the only embossing on the bottle is the trident on the base (Figure 5), I cannot readily identify a markers mark to give a date of manufacture. There is a possibility that beverage manufacturers could use labels attached to the outside of the bottle instead of embossing. The label would easily deteriorate over time or from environmental conditions. The range of dates chosen are based on Hiram Codd first starting manufacture of these internal stoppered bottles in 1872 and that they ran out of popularity around 1910, or just after because of the gaining popularity of the Crown Cap. However, as explained later on, the date may be pushed further back.

The location that this bottle was excavated from is also of important historical value. It was uncovered in the most northern lot of the excavation in the fill pile of what was a handbag factory. Unfortunately this location gives no direct context and doesn't provide much more information about the bottle. What is interesting is that this area in Toronto was old St. John's Ward, a neighbourhood for new immigrants. Archaeologist, historian, and author Karolyn Frost (2017: xiii)



Figure 4: Toronto Site Codd Bottle Views.

opened their own soda-water factories locally. These Jewish soda-water businesses were Fauman Bros., Halpern Brothers, and the Paris Soda Water Manufacturing Company (Hood 2018). Archaeologically, there are two businesses whose products are most common in the ward: Clark Bros. and James Walsh. Soda water was popular in impoverished areas such as The Ward because of a lack of clean, safe drinking water. The Clark Bros. (1879-1900) were housed nearby at 229 Queen West and used a logo of a wheel on their bottles. They used the popular Hutchinson style closure on their bottles. This style of closure was the most popular found in The Ward, however, crown caps and the Codd bottle were also present (Hood 2018). While this manufacturer does not match the embossing on the Toronto Codd bottle, it is interesting to note the abundance of bottles found in the Ward, as well as the opportunity for new immigrants to build a business in the soda water industry. This bottle holds not only historical value in its rarity of a Codd style internal closure, but also for its context in an early immigrant neighbourhood in Toronto.

While the bottle manufacturer and soda water producer are not readily identifiable on this Toronto Codd bottle, could the glass manufacturer have been located in Toronto? As part of the British

calls old St. John's Ward the "beating heart of Black Toronto." Frost notes that in the 1830s this area received many new immigrants from all over the world. "For thousands, the little houses and tenements lining those narrow streets were the last stop on the Underground Railroad" (Frost 2017).

While the area was full of housing for new immigrants, The Ward also contained small businesses for which the new immigrants would try to build a life for themselves in Toronto. Towards the end of the nineteenth century, over a dozen soda and mineral water bottling companies were created in Toronto (Hood 2018). Most of these businesses were started by British immigrants, however Jewish immigrants also took up residence in The Ward, and some of which



Figure 5: Trident Mark on Bottom of Toronto Bottle.

Commonwealth, Canada would receive exports from England, including newly patented items such as Codd bottles. The Codd bottle would have more than likely have been imported from England and then sold to carbonated beverage companies for use and indeed, Codd bottles were used by some manufacturers in the city of Toronto as briefly detailed here. A reference that is used frequently is examining Toronto soda bottles is that of Dean Axelson's (2000) who gives a very detailed examination of Toronto businesses, bottle types, and characteristics of bottles including capacity, colour, and locations.

One company that is known to have used Codd bottles in Toronto is *Excelsior Bottle & Beverage Works Ltd.* According to Axelson (2000), "This company is not listed in the directory but was in business in West Toronto from 1931 to 1935 under the proprietorship of Eno Ballayello". The *Excelsior Bottle & Beverages Works Ltd.* example of a Codd is a clear, 8" bottle found in West Toronto with the embossing "*Bagley &*

Co. Ltd. Makers" (Herr 1970). This company) is the bottle manufacturer, from Knottingly, England that existed from 1898-1962. This glasshouse, which produced soda bottles, was one of the first in adopting the Owens Automatic Bottle Machine, having previously used the semi-automatic Ashley-Arnall equipment. What's most interesting here is the date that *Excelsior Bottle and Beverage Works Ltd.* circulated their beverages throughout Toronto; 1931 to 1935 is past the time frame that the Codd was thought to be popular. The Crown cap would be dominating the soft drink market at this time, so why was this short-lived Toronto beverage company still using the Codd bottle? And why were Codd bottles, thought to be phased out by now, still being imported and circulated throughout Toronto? Was there a niche market in Toronto, such as The Ward where there was a reliance on carbonated beverages? These questions remain unanswered but beg for the possibility that the date of popularity for the Codd in Canada be pushed later into the 1900's.

A second carbonated beverage producer in Toronto that used Codd bottles to hold their product was that of *Paris Soda Water Manufacturing Co.* mentioned briefly earlier. Axelson (2000) lists this company as being in the business of aerated waters from 1906 to 1908, along with the name of the proprietors, location of businesses, and the mention of offices in London and Montreal. Only one Codd bottle is referenced in Axelson's work from this manufacturer. The bottle is "a light green, stocky 10oz Codd stopper bottle 2 9/16" wide and 8 15/16' high. Embossed: THE PARIS

SODA WATER MANUFACTURING C^O (in a large arch) / TRADE (then a large star of David) then MARK / TORONTO ONT (in reverse arch). On the back of the bottle in smaller letters in the lower 1/3 of the bottle are the words THOMAS BURDETT / AGENT / MONTREAL / RICH^D COOPER AND C^O. LT^D/ MAKERS / PORTOBELLO / SCOTLAND". A Star of David logo is also on the bottom of the bottle (Axelson 2000:96). The Paris Soda Water Manufacturing Company was run by Chaim Saliter, David Schwartz, and Max Shea, Eastern European Jewish immigrants. Like the Paris Soda Water Manufacturing Company, many firms in The Ward had multiple partners, making it impractical to use their names as the brand as was commonly done by English manufacturers (Hood 2018).

The name Thomas Burdett seen on the Paris Manufacturing bottle mentioned by Axelson (2000) also appears on 3 other known bottles according to von Mechow (2018b), all of which are glass, soft drink, Codd bottles from Montreal, Quebec. Born in England, Burdett was from Montreal, Quebec, Canada and operated a hotel beginning in 1870 and years later patented a beer cooler and pump. "As such he was an agent for all sorts of goods from billiard tables to gasoline lighting systems. It also included soda fountains and bottle supplies and he was an agent for the glass maker Richard Cooper & Son Ltd., of Scotland" (von Mechow 2018b). In the notes section of von Mechow's description of Thomas Burdett, Burdett is listed as supplying soda fountains and confectioners' supplies from 1906-1927, as well as soda water and bottlers' machinery from 1906-1921. The final name embossed on the Paris Manufacturing bottle is Rich Cooper & Co., Ltd. This manufacturer, from Portobello, Scotland, was producing soda bottles. After the creation and eventual dissolution of a previous partnership, the name Richard Cooper & Company became a limited company in 1895. According to von Mechow, there are seven Codd bottles listed with the name Richard Cooper & Company, Ltd. The locations of these are mostly from Montreal, Quebec, but also include Hamilton, Bermuda, and Toronto, Ontario. Truly fascinating is the ability to track the movement of this bottle from England, where the bottle was manufactured by Richard Cooper, to Montreal, Quebec, where the agent Burdett received and sold the bottle, and finally to Toronto, Ontario where Paris Soda Water Manufacturing purchased and sold the Codd bottle with their aerated liquid inside to the public.

A third business in Toronto using the Codd bottles was *J.J. McLaughlin*. McLaughlin had a large business in the city of Toronto, located throughout the years in the downtown area; all locations of which are a few blocks from the location the Toronto Codd bottle was discovered. The trident shape on the base of the Toronto Court House bottle unfortunately does not match the embossing of the bottles manufactured by J.J. McLaughlin. McLaughlin started his business on Berti Street, then moved to the corner of Queen and Victoria Streets, and finally to Sherbourne Street between the years of 1888- 1894. McLaughlin also moved to other areas of Canada, such as Ottawa, Edmonton, Alberta, and even a branch in the United States in Buffalo, New York (Axelson, 2000). "J.J. was listed as a manufacturer of soda water, mineral water, ginger ale, ginger beer, etc. from 1888 to 1906." (Axelson 2000). Axelson's work mentions two McLaughlin Codd stoppered bottles. One, an aqua, 10 oz, Codd stopper bottle 2 3/8" wide and 8 5/16". Embossed with "J.J. McLaughlin (in an arch) / (Logo of a large, wide base mortar & pestle with the mortar handle on the right) / TRADEMARK (in small letters and arched in reverse) / TORONTO/ RD65433 (along bottom edge of bottle)". Axelson also notes that on the bottom of the Codd is written THE/ NIAGARA /BOTTLE. The second Codd bottle with mention of J. J. McLaughlin is that of an aqua, 6 ounce Codd stopper. Embossed with "J. J. McLaughlin (in arch) / -.- / MAN^{FG}/CHEMIST/

TORONTO (The last word is in reverse arch)” Notes: There is no mortar and pestle...the bottom of the bottle is embossed THE/ NIAGARA/ BOTTLE.” (Axelson, 2000). According to von Mechow, the Niagara Closure was registered by Barnett & Foster in January of 1887 and circulated between 1887 and 1930. “It was an improvement on the Codd closure, which consisted of lugs on both sides of the neck to hold the marble stopper when the contents were poured out.” (von Mechow, 2018b). On the website Soda and Beer Bottles of North America, there are 18 known Niagara Closure Codd bottles, only three of which are in Canada, and one of which is in Campellford, Ontario. The names Barnett & Foster usually appear on the reverse heel of these bottles, and are a company from London, England that operated from 1858-1997 (von Mechow 2018b). Manufacturing bottling machinery and essences for soft drinks, the company was based out of London, England (Grace’s Guide 2019c). A common trend in the history of Ontario Codd bottles is to see the Codd bottle itself being manufactured in England and subsequently imported to Canada.

While there may be more Toronto beverage producers that used Codd’s ball stoppered closure, the number of businesses that are known to have used them are limited. It may be that some are yet unknown being not in the records or simply missed in research. The trend seen here is that the Codd bottles are being manufactured and imported from England and used for Toronto based soda and mineral water companies. But why are the bottles not being imported from the much closer glassworks such as Whitney Bros., in New Jersey, New York, or Philadelphia? Maybe being part of the commonwealth meant that there were certain motions in place to aid in the importation of English products into Canada as opposed to sourcing from the United States.

To display the rarity of the Codd bottle in Ontario, below is a compiled list of known Codd bottles from cited sources, excluding personal bottle collection sites such as eBay. Details such as embossing, size, and colour of the bottle are frequently listed in almost all sources. This list is collected from the website *North American Soda and Beer Bottles*, authored by Tod von Mechow (2010). The bottles in this list are found not only in the Greater Toronto area, but other areas of the province of Ontario as well. This list shows the rarity of Codd bottles in Ontario, but also the lack of information for recorded bottles.

Crystal Spring Mineral Water Company

57200AC Embossed: (♠) CRYTAL SPRING MINERAL WATER Co / (♠) REGIS (♠) TERED \ S (in diamond) / (motif of mortar and pestle in shield) / (♠) TRADE (♠) MARK / (♠) TORONTO, ONT. (all in doughnut) / CHEMISTS (in banner) //c // b // 602.
Bottle: Glass, Codd Bottle, Two Leaf Mold, 9 1/16 x 2 ½
Notes: The “o” in “Co” is raised and underlined

1. Aqua, Smooth Base, Long Tapered Collar, Hand Blown, Codd Glass Ball Stopper, Toronto, ON, Canada

Excelsior Bottle & Beverage Works, Limited (1931-1935)

57203AA Embossed: (♠) EXCELSIOR BOTTLE & BEVERAGE / WORKS/ LTD (♠) WEST TORONTO // (♠) BAGLEY & Co LD / KNOTTINGLY // b // 2577
Bottle: Glass, Codd Bottle, Two Leaf Mold, 8 1/8 x 2 3/8
Notes: The “TD” in “LTD” is raised and underlined. The “o” in “Co” and the “D” in “LD” are raised slightly.

1. Clear, Smooth Base, Long Tapered Collar, Hand Blown, Codd Glass Ball Stopper, Circulated: 1931-1934, Toronto, ON, Canada
2. Aqua, Smooth Base, Long Tapered Collar, Hand Blown, Codd Glass Ball Stopper, Circulated: 1931- 1934, Toronto, ON, Canada

J.J. McLaughlin (1888-1906)

54088AA Embossed: (r) J.J. McLAUGHLIN / (motif of mortar and pestle) / (L) TRADE MARK / TORONTO/ R/D 65433 // c // // b // THE / NIAGARA / BOTTLE
 Bottle: Glass, Codd Bottle, Two Leaf Mold, 8 3/8 x ?
 Notes: The “c” in “McLAUGHLIN” is raised and underlined.
 1. Aqua, Smooth Base, Tapered Collar, Hand Blown, Codd Glass Ball Stopper, Toronto, ON, Canada

La Gasosa Bottling Works

54076AA Embossed: (r) LA GASOSA / (r) BOTTLING WRKS / BETTER DRINKS / (L) WINDSOR ONT. // EXTRA STRONG GLASS / DALE BROWN & Co. Ld. / TRADE MARK / SWINTON ENGLAND //
 Bottle: Glass, Codd Bottle, Two Leaf Mold, 7 1/2 x ?
 Notes: None
 1. Aqua, Smooth Base, Long Tapered Collar, Hand Blown, Codd Glass Ball Stopper, Windsor, ON, Canada
 2.

Paris Soda Water Company

54079AA Embossed: (r) PARIS SODA WATER MFG. Co / TRADE (motif of Star of David) / (L) TORONTO, ONT. // THOMAS BURDETT / AGENT / MONTREAL / (r) RICHARD COOPER & CO LTD / MAKERS / (L) PORTOBELLO / SCOTLAND //
 Bottle: Glass, Codd Bottle, Two Leaf Mold, 8 15/16 x 2 9/16
 Notes: The “D” in “RICHD” and both the “o” in “Co” and the “D” in “LTD” are raised and underlined.
 1. Aqua, Smooth Base, Long Tapered Collar, Hand Blown, Codd Glass Ball Stopper, Toronto, ON, Canada

Pilgrim Brothers

53375AA Embossed: (r) PILGRIM BROS. / (r) REGISTERED / (/) TRADE (motif of eagle) (L) MARK / (L) HAMILTON //
 Bottle: Glass, Codd Bottle, Two Leaf Mold
 Notes: None
 1. Aqua, Smooth Base, Long Tapered Collar, Hand Blown, Codd Glass Ball Stopper, Hamilton, ON, Canada

Pilgrim Brothers & Company (Pre- 1893- 1912+)

53978AD Embossed: (r) PILGRIM BROS. & Co. / (r) REGISTERED / TRADE (in banner motif) (motif of eagle) MARK (in banner motif) / (L) HAMILTON (all in oval plate) // c //
 Bottle: Glass, Codd Bottle, Two Leaf Mold
 Notes: Details are not certain
 1. Aqua, Smooth Base, Long Tapered Collar, Hand Blown, Codd Glass Ball Stopper, Hamilton, ON, Canada

Sutherland, J.W. [sourced from Maple Leaf Auctions]

5324AB Embossed: (L) R G D / TRADE (motif of scales in shield) / MARK / HAMILTON // J.W. SUTHERLAND // // b // (r) C. S & Co LD
 Bottle: Glass, Codd Bottle, Two Leaf Mold
 Notes: The “o” in “Co” and the “D” in “LD” are raised and underlined.
 1. Aqua, Smooth Base, Long Tapered Collar, Hand Blown, Codd Glass Ball Stopper, Hamilton, ON, Canada

One final source of information concerning Codd bottles in Ontario is from Barb Leskovec of Parks Canada (personal communication 2019). She has passed on information concerning Codd bottles from the year 1870 to 1915. From the information given, five bottles were listed with the Codd closure and two of these items were glass Codd bottle closures found at Fort George, Niagara-on-the-lake. One of these two bottles is listed as a Soda/ Mineral water bottle made from glass, with the number of objects as 1 despite a quantity of 3 [assuming it is broken]. The second glass object is listed as a Beer bottle, with a quantity of 1 [assuming it is whole]. The description of this object is the following: “WIRE BAIL” “BUFFALO CO-OP BREWING CO., N.Y.” This glass Codd bottle is from Buffalo, N.Y., not far from the location of Fort George, which is along the Niagara river. Interesting to note, is a Codd bottle being used to hold beer. Codd bottles are most commonly used for soda or mineral water. This example is the first mention of a Codd beer bottle. The other three bottles are from Fort George Commons, or Murney tower, and are listed as being made of composite materials, iron, or metal with no other descriptive factors other than container closure or bottle stopper. The fact that these bottles are made of materials other than glass excludes them as Codd’s. In research thus far, a Codd stoppered bottle made of metal, iron, or composite has not been found. It is however, interesting to note that there were Codd bottled carbonated beverages being consumed by those occupying a fort. Unfortunately, the bottles found at Fort George and the Toronto site are the only examples of Codd bottles in the archaeological record that can be accessed easily. There may be other archaeological examples that are yet undiscovered in the records or undiscovered archaeologically.

The challenge presented archaeologically is that the Codd bottles themselves may not be fully intact. As is the case in Fort George and Toronto, the bottles may be broken into several pieces. This makes identification of a Codd bottle more complicated. However, as discussed previously, the design of the Codd bottle lends telling clues for identification. For example, the glass marble, rubber ring, and intricate neck design are all traces of evidence. Noteworthy about the marble is that most, but not all, have seams around the middle of them, which may help in identification of the marble being used in a Codd bottle versus other marble uses. In simple terms, glass marbles are made by heating the glass and cutting them into sections called slugs, and then rounding them into shape; or shaping by using two interlocking parallel screws that the glass would travel along. Either of these options would create no seam. Marbles used for toys would also presumably have no seams, for it would hinder the roll of the marble in play. Could these Codd bottle marbles have been made faster or cheaper in a mold knowing that the marble did not have to be perfect, as in gameplay?

Other characteristics to look for in identifying Codd bottles include the lip of the bottle having a groove to hold a rubber ring and the neck of the bottle being pinched. Embossing can also lead to recognition of a Codd. For instance, a bottle embossed with *Codd, Hiram & Company* would be quite obvious, for Codd was the namesake for the style of bottle and holder of the original patent. *Codd & Rylands* or *Dan Rylands* also easily identify a Codd bottle, as Dan Rylands was a business partner of Hiram Codd and played a large part in producing and modifying Codd bottles once the original patents by Hiram Codd ran out. All of these features distinguish the Codd bottle from other soda, or glass bottles of the time. While broken Codd bottles are difficult to recognize, looking for these identifiers may help.

British Codd Bottles

Originating from England, the Codd bottle was very popular across the country. Countless examples of English Codd bottles exist. Such bottles provide a history of key players in the success story of the Codd bottle. Below is a series of Codd bottles from a personal collection, acquired at antique stores and purchased online. The issue with personal collections is that most of the time, the characteristics of the bottle are not recorded, and therefore accessible, to the public. This limitation can skew information gathered about certain glassworks, soda water companies, and Codd bottles in general. The following descriptions are an effort to record the information in a private collection and make it available to the public. The bottles in this group are all of British origin and vary in size and colour. Unfortunately, not much information is available about certain specific manufacturers and British glass bottles.

- 1) **Bottle:** Purple, Smooth Base, Long Tapered Collar, Mold Blown, Codd Glass Ball Stopper, Blackpool, England

Dimensions: H- 23cm; 9.05''

W- 6.5cm; 2.55''

Shape: Codd Bottle

Manufacturer: Partington & Co

Mold: Two piece with applied lip

Material: Glass

Form: Cylindrical

Capacity: 10 oz

Embossed: PARTINGTON & C^o (r) / (motif of combined capital letters P & C) /BLACKPOOL (u)

Base: No embossing

Notes: The “o” in “Co” is underlined. Rubber seal and purple glass marble are still in place.

- 2) **Bottle:** Aqua, Smooth Base, Long Tapered Collar, Mold Blown, Codd Glass Ball Stopper, Ripon, England

Dimensions: H- 24cm; 9.44''

W- 6.5cm; 2.55''

Shape: Codd Bottle

Manufacturer: W. Wells & Sons

Mold: Two piece with applied lip

Material: Glass

Form: Cylindrical

Capacity: 10 oz

Embossed: Front: W. WELLS & SONS (r) / REGISTERED (r) / (motif of lion on hind legs) / (motif of lion in a shield with a dotted background) / TRADE (/) / MARK (\) / RIPON (u)

Back: PATENT SAFE GROOVE (r) / 4/ SOLE MAKER / DAN RYLANDS (u) / BARNSELY

Base: No embossing

Notes: no rubber seal; aqua glass marble is present.

- 3) **Bottle:** Aqua, Smooth Base, Long Tapered Collar, Mold Blown, Codd Glass Ball Stopper, Manchester, England

Dimensions: H- 19.2cm; 7.55''

W- 5.5cm; 2.16''

Shape: Codd Bottle

Manufacturer: Redfearn Bros, Barnsley

Mold: Two piece with applied lip

Material: Glass

Form: Cylindrical

Capacity: 6 oz

Embossed: Front: JOHN DYSON (r) / TRADE (/) / (motif of horse on hind legs) / MARK / ARDWICK (u) / MANCHESTER (u).

Back: REDFEARN BROS (r) / MAKERS / BARNSELY (u)

Base: B (8), B(8), R

Notes: rubber seal has fallen into the bottle; aqua glass marble is still present.

- 4) **Bottle:** Aqua, Smooth Base, Long Tapered Collar, Mold Blown, Codd Glass Ball Stopper, Thirsk, England

Dimensions: H- 19cm; 7.48''

W- 5.5cm; 2.16''

Shape: Codd Bottle

Manufacturer:

Mold: Two piece with applied lip

Material: Glass

Form: Cylindrical

Capacity: 6 oz

Embossed: Front: E. JOHNSON (☞) / TRADE (/) / (motif of combined E and J) / MARK (\) / THIRSK (☪).

Base: III0

Notes: rubber seal has fallen into the bottle; aqua glass marble is still present.

- 5) **Bottle:** Aqua, Machine Made, Codd Glass Ball Stopper, Blackpool, England

Dimensions: H- 24cm; 9.44''

W- 6.2cm; 2.44''

Shape: Codd Bottle

Form: Cylindrical

Manufacturer:

Material: Glass

Capacity: 10 oz

Embossed: Front: MINERAL WATERS (☞) / (motif of bird) / E.L. NEWSOME'S L^{TD} / TRADE MARK / BLACKPOOL (☪).

Base: ;10 OZ; 1182 / 34

Notes: rubber seal in place; glass marble is still present.

Information has been gathered about certain glass manufacturers on the bottles listed above. One such manufacturer, Redfearn, is embossed on a 6oz aqua Codd bottle, along with the name John Dyson, presumed to be the soda producer. Embossed on the back of the bottle is REDFEARN BROS (☞) / MAKERS / BARNSELY (☪). Redfearn was a glass works started in 1862 by the Redfearn family, in Barnsley, England. By 1910 the company became known as Redfearn Brothers, as listed on the 6oz Codd bottle. This determines the date of this bottle to be 1910 or after (Grace's Guide, 2019b). The dating of this bottle is intriguing because the Codd bottle was being phased out of the soda water industry at this time as the Crown cap closure was becoming prominent, being an easier and more cost-effective option. While the crown cap was gaining popularity, the British bottle market was still interested in producing and purchasing the Codd bottle. This situation was also being mirrored in Canada, and specifically Toronto.

Another bottle with an easily identifiable maker is that of a 10oz, aqua bottle with the embossing PATENT SAFE GROOVE (☞) / 4 / SOLE MAKER / DAN RYLANDS (☪) / BARNSELY on the back (Figure 6). While no information has been found on the name W. Wells & Sons embossed on the front, the name Dan Rylands is important in Codd bottle history. As noted above, Dan Rylands was in a short-term partnership with Hiram Codd, under the business name Codd & Rylands or Rylands and Codd, during which time they created several patents for Codd bottles. Once Codd had passed away, Dan Rylands created his own patents for improvements upon the bottle. According to von Mechow, Ryland's Safe Groove Closure is dated from c.1886-1915. After losing a battle with Hiram Codd for infringement of his tool for the function of making the groove in the lip that held the rubber piece, this patent was created. Listed on von Mechow's bottle webpage, there is only one bottle with the same embossing on the back, mentioning Dan Rylands. This bottle is embossed: (☞) J. W. JAMES / PURE MINERAL WATERS / (☪) LOS ANGELES // (☞) PATENT SAFE GROOVE / 4 / SOLE MAKER / (☪) DAN RYLANDS / (☪) BARNSELY // // b // JWJ (monogram). It is an aqua glass Codd bottle with a smooth base, long tapered collar from Los Angeles, CA, United States and was circulated between 1888-1891 (von Mechow, 2018b). While the number of known Codd bottles is low, there also seems to be an extremely low

chance that there are only two known Dan Rylands Patent Safe Groove Codd bottle, especially because of the gain in popularity of this closure at the time this bottle is dated to. So where are the other Rylands Safe Groove bottles? Chances are they are most likely in personal collections.

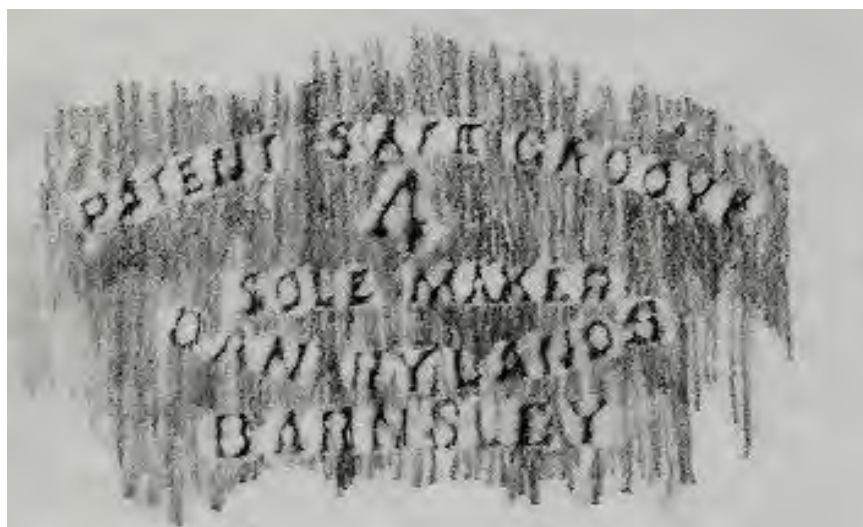


Figure 6: Rubbing of Inscription on Bottle.

There is, however, a connection between the two bottle manufacturers Redfearn and Dan Rylands: a soft drink company known as Franklin & Sons. According to *Graces Guide*, an online “...source of historical information on industry and manufacturing in Britain”, the three Franklin brothers began to produce and distribute soft drinks in Rickmansworth, England, in 1886. From 1897 and on, the company

Franklin & Sons supplied soft drinks for both Redfearn Bros., and Dan Rylands of Barnsley, among other local glass manufacturers (*Grace’s Guide* 2019a). It is interesting to see the same soda producer being in business among bottle manufacturers in England at this time. Specifically, in the central north western area of England, near Liverpool and Leeds. The English bottles within this small personal collection are all located relatively close to each other when looking at the country of England as a whole. Figure 7 is a map of locations that this small collection of English made bottles were manufactured. This area includes Blackpool, Manchester, Barnsley, Ripon and Thirsk. This region appears to be a hot spot for the production of Codd bottles, begun with Hiram Codd in Barnsley.

The following information has been obtained from the Stairfoot Station Heritage Park website. According to the website, “The group was constructed in 2017 with the aim of reviving and stimulating interest in the past social and economic history of Ardsley and Stairfoot Basin”. Preserving the history of the area, this group has much historic information concerning both Dan Rylands and Hiram Codd. What makes this area in England so important is that the Hope Glass Works, run by Rylands family, was located here and which held a license to manufacture Codd bottles. Originally coming to the area in 1867, Ben Rylands started his own business manufacturing glass jars and corked bottles along the canal. It wasn’t until 1873 that Ben Rylands had met Hiram Codd and not until 1874 did Rylands get granted a license from Codd to manufacture the Codd bottle. This license, however, had conditions like every other glassworks of the time, having to buy all marbles, seals, and the groove making tool from Hiram Codd. With gaining popularity, in 1877 Ben Rylands brought Codd into a partnership at the Stairfoot station and renamed the business Rylands and Codd. From 1877-1884 “the Hope Glass Works used the mark of ‘4’ on its glassware to signify its products attributes of accuracy, cleanliness, neatness, and strength. The markings appear on the reverse heel of the bottle” (Lockhart 2018). As



Figure 7: Location of English Codd Bottle Manufacturers.

popularity of the Codd bottle increased, so too did the demand, and two new glassworks were leased to operate under the Hope Glass Works name.

In 1881 Ben Rylands had passed and his son Dan Rylands took over the business. Ben Rylands and Hiram Codd's relationship is known to have been strained, and according to The Stairfoot Station website, "Dan was made to pay a premium renewal of the partnership, and agreed to rename the company Codd & Rylands". Together in 1882, they invented a new pressure release

valve, which was located in the neck of a Codd bottle, and which was called the Crystal Valve patent. While this proved that Rylands and Codd could work together, they ultimately broke up the partnership in 1884 with Rylands buying Codd out. Rylands continued making more patents in the glass industry, including some variations to the Codd bottle: The Safe Groove patents (made with Rylands alternative groove tool), The Reliance Patent, The Empress Patent, the Bulb closure patent, and the Acme Patent. Dan Rylands also created a different variation of the Codd bottle, called the Coloured Lip Patent, in which the applied finishes to the lip of the bottle were coloured differently than the rest of the bottle that was most commonly aqua. This feature was introduced in 1889 as an anti-theft bottle in which the manufacturer could easily pick out their own bottles. (Lockhart n.d.). As a result:

By this means a mineral water manufacturer could detect his bottles at a considerable distance when still in the crate. The ‘coloured lips’ forced other Codd-bottle makers to produce their bottles in amber, blue, brown, black, or green glass for the same reason of identification (Van den Bossche 2001).

Rylands became very successful in the bottle manufacture community, with his greatest success in the Codd bottle. His works were the largest manufacturer in Europe of Codd bottles “with its own gasometers, warehouse, grinding room (for marbles), mould and pattern shops, wire spinning shed, box factory, offices, engineering shops and engine warehouse...”. However, success does not always last and unfortunately in 1892 a fire in the box factory and a strike in 1893 led to financial loss for the company. Ultimately Dan Rylands took his own life in 1910, but the Hope Glassworks continued on with the manufacture of Codd bottles, and eventually the crown cap. “In 1897 the company changed its name to The Rylands Glass and Engineering Company Limited. Bottles made after this time were marked Rylands or The Rylands” (Stairfoot Station 2019). What is interesting, is the commitment of the Stairfoot station area to continue making the Codd bottle while new, automated bottling machines were becoming popular. The website mentions that the Codd bottle was still being made into the 1920s recession.

Another English figure in the story of the Codd bottle was Richard Barrett. While Codd had invented the idea for the globe stoppered bottle, he needed financial backing. In 1872 he was introduced to Richard Barrett, of London, whose sons owned *Malvern Mineral Water Co.* in Grove Lane, Camberwell. Barrett’s son took interest in Codd’s bottle invention and persuaded his father to become co-partner with Codd. “This enabled Codd to continue his research into the globe (or marble) stopper idea and in particular the tool used to form the essential groove in the lip of the bottle and in 1873 he perfected the Codd bottle” (Munsey 2010). Codd bottles produced by this pair have not been found, and years later Codd began a partnership with Ben Rylands producing bottles at the Hope Glass Works in Barnsley. Richard Barrett was instrumental in allowing Codd to not manufacture, but develop his idea of the Codd bottle.

In the Public Eye

The following is a series of advertisements that have been found concerning the Codd bottle. Noted in the ads may be the price of the bottles at the time the ad was run, or the location of the advertisements and the location at which the manufacturers may be listed. Figures 8 and 9 are also

advertisements for the Codd bottle run in *The British Trade Journal and Export World*, Volume 23.

From: *The Brooklyn Daily Eagle* (Brooklyn, New York) November 18, 1883 (von Mechow 2018b)

“CODD'S PATENT

—————
GLOBE STOPPERED BOTTLES
—————

A statement having been circulating in Brooklyn that we have granted an exclusive license or monopoly to one firm to use our patent bottles in Brooklyn, we beg to state that such is not the fact. We are prepared to give to any and every respectable bottler in Brooklyn and New York the benefit of our patent bottles, on the same terms to call.

HIRAM CODD & CO., 23 Park row, New York

From: *National Bottlers Gazette* (New York, New York) November 1883 (von Mechow 2018b)

Codd' Patent Globe Stoppered Bottle

THE ONLY PERFECT SODA WATER BOTTLE

1. Requires no corks, wire or fasteners
2. Is easy and quickly filed, requires no skilled labor, and avoids the breakage usually occurring in corking
3. Is perfectly clean, glass being the only substance with which the liquid comes in contact.
4. Is suitable for transportation, having no projecting stopper
5. Is manufactured at the Patentee's own works at Barnsley, Yorkshire, England, by the New Siemens Gas furnace and possesses all the well-known characteristics of the best make of English bottles.

BOTTLES FOR NOTHING

In submitting to the trade figures showing that the bottler who abandons corks in favor of Codd's Patent Bottles practically get his bottles for nothing. Messrs. Codd & Co. desire to say that such figures are based, not on any speculative estimates, but on results of actual working, the correctness of which Messrs. Codd & Co. are in a position to demonstrate to the satisfaction of every member of the bottling trade.

These results prove that with ordinary care the Codd Bottle is filled on an average twenty times, or in other words, that the total shortage arising from breakage, loss of bottles, stealing, etc., does not exceed five per cent on the total out turn.

This comparatively small loss of bottles arises partly from the very efficient protection afforded by Messrs. Codd and Co's peculiar system of licensing, which prevents their customers' bottles being used by any other bottler: and partly from the fact that the Codd Bottle is useless for any other purpose than that of the mineral water bottler. This fact being established by positive proof, the following figures speak for themselves:

1 Gross Codd's Bottles		20	Gross	Corks,	at	40c.....	\$8.00
net.....\$9.75		20	Gross	Ties,	at	13c.....	2.60
							\$10.60

Showing that the cost of the Codd Bottle is 85c less than the cost of corks and ties for the ordinary bottle, without reckoning the value of the extra labor on the cork bottle.

Any bottler, therefore, who abandons corks and ties, and adopts the Codd bottle, will find his future bottle bill more than covered by his savings in corks and ties--in other words he will get his bottles FOR NOTHING.


HIRAM
No

CODD
23

&
Park

CO.
Row, New York

Packed in Hermetically-sealed Tin Cans of 1 lb., 3 lbs., 7 lbs., and 14 lbs. each.
MANUFACTORY—SOUTHAMPTON. London Office and Depot—39 Upper East Smithfield.

<p>TRADE</p>  <p>MARK.</p>	<p>Adolph Posener & Co. London.</p> <p>The "N'OIL" PIPE <small>REGISTERED.</small></p> <p>The Cleanest, Coolest, and most Economical Pipe ever invented. Each genuine pipe is stamped "N'Oil."</p> <p>Manufacturers of Briar, Meerschaum, and Clay Pipes, And all kinds of Tobacconists' Sundries, for all countries.</p> <p>EXPORT ORDERS RECEIVE PROMPT ATTENTION.</p>
---	--

<p>GOLD MEDALS.</p> 	<p>CODD'S PATENT GLOBE STOPPERED SODA WATER BOTTLE.</p> <p>For all Particulars of Codd's various Patents apply to HIRAM CODD, Sole Inventor and Patentee, 41 GRACECHURCH STREET, LONDON, E.C.</p> <p><small>Bottle for use in the London Postal District excepted.</small></p> <p>USED IN EVERY PART OF THE WORLD.</p>	<p>SILVER MEDALS.</p> 
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Figure 8: Hiram Codd Bottle Advertisement.

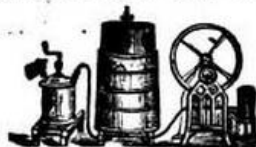
The ads shown above are from New York, New York. Most of the information available on von Mechow's bottle webpage is based on North American bottles, obviously leaving a gap in information on English bottle ads. However, it is important to note Codd's activity in the United States as well. In New York City, Hiram Codd himself opened up a manufacturing company and licensing agency for Codd bottles, labelled Codd, Hiram & Company (1880-1890), for which he obtained United States patents in the early 1870s (Von Mechow, 2018b). Originally, the soda bottles were manufactured in Barnsley, England until 1886 when Codd moved the manufacturing of the North American patent bottles to Glassboro, N.J. The bottles were then produced by the Whitney Brothers glass factory. The bottles manufactured by Codd, Hiram & Company are identified by embossed numbers, between 1 and 95, within a star. These number in a star embossed bottles are dated from 1880-1890. Lockhart (2018) makes an argument that the number 1-95 cannot identify glasshouses, because of the short period of time in which the bottles were manufactured, and the awfully high number of glasshouses:

If the licenses were restricted to the U.S., 95 bottlers or glass houses seem to be an unreasonably high number. In addition, we do not know whether these licenses were issued by Codd, himself, or by Codd & Co.

SODA WATER MACHINERY,

AND ALL APPLIANCES FOR THE MANUFACTURE OF

Soda, Potass, Seltzer,
Carrara,
Lithia, Magnesia,
and
Tonic Waters, &c.



Lemonade,
Ginger Beer or Ale,
Orangeade,
Nectar, Champagne Cyder,
Fruit Champagne, &c.

PRIZE MEDALS:—London, 1862, 1873, 1874; Vienna, 1873; Philadelphia, 1876; Cape, 1877; Paris, 1867 and 1878
Highest Award, Sydney, 1879-80; Three Prize Medals and First Class Certificates, Calcutta, 1884.

Latest Awards—3 Gold, 2 Silver, and 2 Bronze Medals, International Health Exhibition, London, 1884.

The man who enters into the enterprise of Manufacturing Aerated Drinks (with properly constructed machinery), in any districts where they are required, renders a real service to the public, and no business offers him a better return for a comparatively small outlay.

Our Machines are universally adopted throughout the world for the manufacture of all kinds of Aerated Drinks, whether in bottles, syphons, or counter fountains. There are in England alone over 2,000 factories where our Machinery is in use. They are the simplest, safest, and cheapest for the purpose, and produce a highly-charged gaseous water free from metallic or foreign contamination.

All our Machines have a Gasometer, and it forms a most important necessity where purity of product is required, as in this the gas is expanded and purified; it also removes the possibility of accidents by explosion, and avoids the necessity of complication—these we consider of greater importance than the saving of a few inches of floor space. Our valuable Book of Recipes and Instructions accompanies every Machine, and the most unskilled can at once produce Waters of the highest class by the information therein given.

No. 1, to make 700 dozen Bottles per day	£70 0 0		
No. 2, " 500 " " "	65 0 0	Bottling Apparatus for Corked Bottles	£9 0 0
No. 3, " 400 " " "	60 0 0	" " for Codd's Patent Bottles with Syrup Pump	10 10 0
No. 4, " 300 " " "	55 0 0	" " with Syrup Pump for Champagne Bottles	20 0 0
No. 5, " 200 " " "	50 0 0	" " with Syrup Pump for Syphon Bottles	14 14 0
No. 6, " 80 " " "	30 0 0		

The above quantities are for Lemonade and other saccharine drinks; if for splits, reckon double; if for very highly-charged Soda Water, reckon half. These Machines are all packed without taking apart, and can be set to work immediately on arrival. Many of these Machines have been in constant use for forty years without requiring any repairs. Recipes and every information given for manufacturing all the above Drinks, so that the most inexperienced can at once produce Waters of the highest class.

Agents for CODD'S Patent Globe Stopped Soda Water Bottle.
Sole Manufacturers of the "London Made" Syphon Bottle, 24s. per doz.
Inventors of Fruit Champagne. Sample Case, containing 1 doz., forwarded for 7s.
ILLUSTRATED CATALOGUE FORWARDED FREE.

BARNETT & FOSTER.
26^M Eagle Wharf Road, New North Road, LONDON, N.

Figure 9: Barnett and Foster Soda Water Machinery Advertisement, 1885.

Hiram Codd's death in 1887 seems to have sealed the fate of the company before the 1873 patent's expiration date in 1890. With this was the dissolution of the company. Hiram Codd was committed to marketing his bottle around the world.

Truly fascinating about the Codd bottle is that it is still in use today and not lost in the history books. One company that proudly manufactures the Codd bottle is *Khandelwal Glass Works*, from India. On their website, Khandelwal Glass Works (2019), the company gives a background into their history, and their commitment to the Codd bottle closure. Their vision is:

To be the one stop destination for anyone who needs Codd bottles. To capture the huge carbonated drinks market by providing them a unique and innovative packaging solution by providing consultation on setting up the Codd bottle and filling unit..."

This company also exports the empty Codd bottles they make around the world. It is incredible that these bottles are still available worldwide. Another company that manufactures Codd bottles in the 21st century is that of Ramune (Fig. 12). This Japanese drink is a carbonated lemonade in a Codd bottle closure and they even can be found in stores at local malls in London, Ontario.

Summary

The Codd bottle eventually lost popularity in the bottle market. While many modern-day examples exist, the Codd bottle is not widely recognized today. With the release and acceptance of Painters crown cap, a simpler and lower cost alternative to previous closures prevailed. By 1910, the soft drink industry was overrun by the crown cap, and with that most other types of closures were no longer in use. In the North American market, the Codd bottle unfortunately never had much popularity because of hygienic problems and therefore was not greatly missed with the onset of the crown cap. During the popularity of the Codd bottle, however, it had become the main mineral water and soda water bottle for manufacture in England. “Eventually all bottles sealed by a marble became known as Codd bottles, regardless of their manufacturer, design, or colour” (Munsey 2010:12). In Ontario, a small number of beverage manufacturers used imported Codd bottles to house their beverages and bring to the Toronto bottle market an ingenious method of internal stopping. With this also comes a glimpse into the early immigrant neighbourhood of St. John’s Ward, and the determination of some new immigrants to build themselves a life including soda water and carbonated beverages. While not commonly known today as a popular bottle style, the Codd did have a presence in the city of Toronto. Because of its rarity and uniqueness, the Codd bottle is a very collectible item in the present-day. The future will hopefully bring an increase in proper identification and documentation of Codd bottles in the archaeological record.

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