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THE RING SEAL BEER/CHAMPAGNE BOTTLE

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Introduction

The dark green ring seal beer / Champagne (or ‘RSB’) bottle (Figure 1) is the most commonly encountered bottle form in New Zealand archaeological sites that date from the 1880s to the early 1900s. It is well-known that it was used for a variety of contents in addition to champagne and beer, but some confusion and reliance on assumptions still continues when this bottle form is discussed in archaeological contexts. This paper attempts to clearly set out the morphology, history and use of this bottle form, based on verifiable historical and archaeological sources. The analysis includes the results from the examination and measurement of 60 complete bottles, from a variety of sites, mostly held in the University of Otago Department of Anthropology & Archaeology collections. It is intended that this paper will assist in the quantification and interpretation of this type of artefact in future analyses.

Glassware Analysis

The analysis of glassware from historical archaeological sites is generally carried out with two main aims: to determine the chronology of the site in question, and to examine the consumption habits of the people that lived or worked there. Chronological analysis is generally based on bottle manufacturing technology, for which the best reference source is the SHA website (www.sha.org/bottle/index.htm). The identification of contents is often based on assumptions about particular bottle forms being associated with particular contents. Good examples are the Worcestershire sauce and square gin bottles. A useful reference for this ‘type’ based approach is Figure 3 in Bedford (1986).

The main complicating factor in associating bottle ‘types’ with contents is the historic reuse of bottles. In nineteenth century New Zealand virtually all bottles were imported, as the first bottle manufacturing plant of any note did not open until 1922 (Tasker 1989: 44). Once in New Zealand bottles could be disposed of immediately after their contents were consumed, or recycled many times by local businesses, not necessarily with the same contents each time.

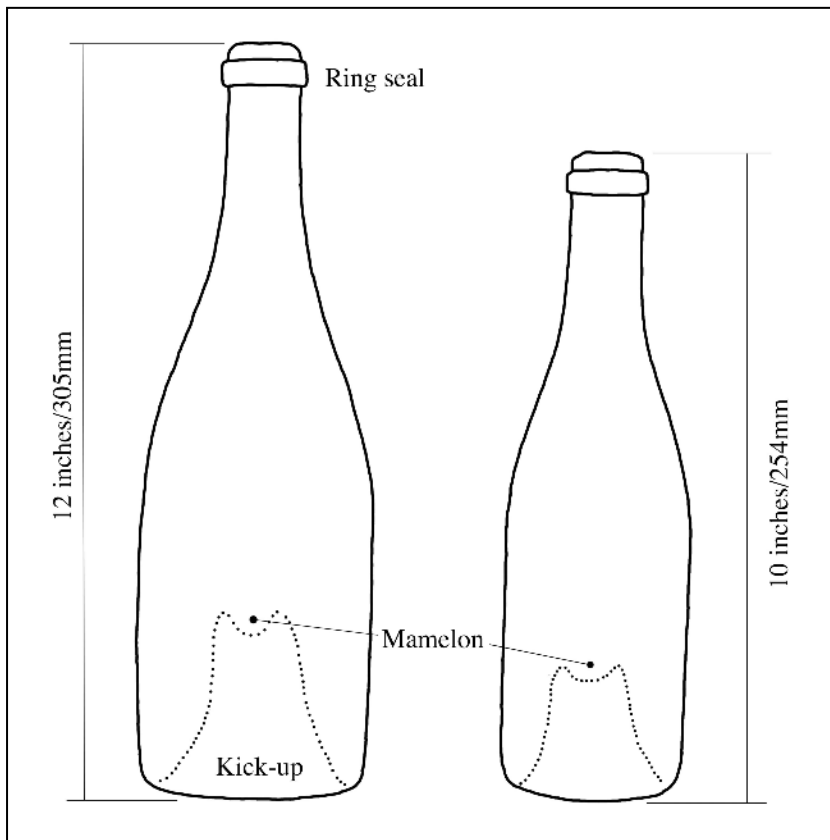


Figure 1: The two sizes of the RSB/Champagne bottle

In the Otago goldfields Ritchie & Bedford (1983: 237) have found evidence of European-manufactured bottles with Chinese labels.

Because of this complexity of use, it has been suggested that archaeological glass assemblages should be analysed in a very descriptive way, using glass colour and body form rather than the 'folk taxonomy' approach (Middleton 2005; Smith 2003, 2004). This has the advantage of being completely objective, and provided a consistent terminology is used it should allow good comparisons between sites. But this approach leaves unanswered the important question of the actual (rather than assumed) final contents of the bottle, and thus the actual activity that the bottle represents.

The best way of confidently identifying the past contents of a bottle is by label and/or bottle top capsule information, both of which survive regularly in small numbers in archaeological contexts (eg Harris, in Campbell *et al.* 2009; Petchey & Innanchai 2012). The correlation of label information with bottle form can then be used to define a known range of contents for that form, and if the sample size is large and diverse enough a good idea of the relative frequencies of use of that form can be developed.

The Ring Seal Beer/Champagne Bottle Form

The RSB bottle is typically made from dark green glass, has a round body with a long sloping shoulder that merges seamlessly into the neck, and a high basal kick-up with a (common but not ubiquitous) distinctive mamelon (Figure 1). The diagnostic neck has a single band finish, often referred to as a ‘ring seal,’ below which the cork tie-down wire was seated. The RSB is distinguished from other contemporary ring-seal bottles by its dark green colour and distinctive sloping shoulder. The bottle was produced in two standardised sizes, sometimes referred to as the ‘two pint’ (or ‘quart’) and the ‘pint.’

In the sample of 60 bottles that were measured for this paper 41 were of the larger size, and 19 of the smaller size. The height, maximum diameter and dry weight of each bottle was recorded. Each bottle was then filled with tap water to 50mm (2 inches) below the lip and weighed again, in order to calculate the maximum useable volume. Surviving corks varied in length up to 48mm long, indicating that the 50mm clearance is appropriate. Table 1 summarises the results of these measurements.

Dimension	Large (Metric)	Large (Imperial)	Small (Metric)	Small (Imperial)
Max. height	311 mm	12.14 in.	260 mm	10.24 in.
Min. height	295 mm	11.61 in.	242 mm	9.53 in.
Av. Height	305 mm	12 in.	252 mm	9.91 in.
Max. dia.	95 mm	3.74 in.	77 mm	3.03 in.
Min. dia.	88 mm	3.46 in.	73 mm	2.87 in.
Av. dia.	92 mm	3.6 in.	74 mm	2.93 in.
Max. weight	1192 g	42 oz.	785 g	27.7 oz.
Min. weight	761 g	26.8 oz.	576 g	20.3 oz.
Av. weight	1042 g	36.8 oz.	654 g	23.1 oz.
Max. capacity	812 ml	1.43 pint	409 ml	0.72 pint
Min. capacity	662 ml	1.16 pint	338 ml	0.59 pint
Av. capacity	773 ml	1.36 pint	388 ml	0.67 pint

Table 1: Maximum, minimum and average values for height, diameter and capacity for both large and small RSB bottles. Both metric and imperial values are given.

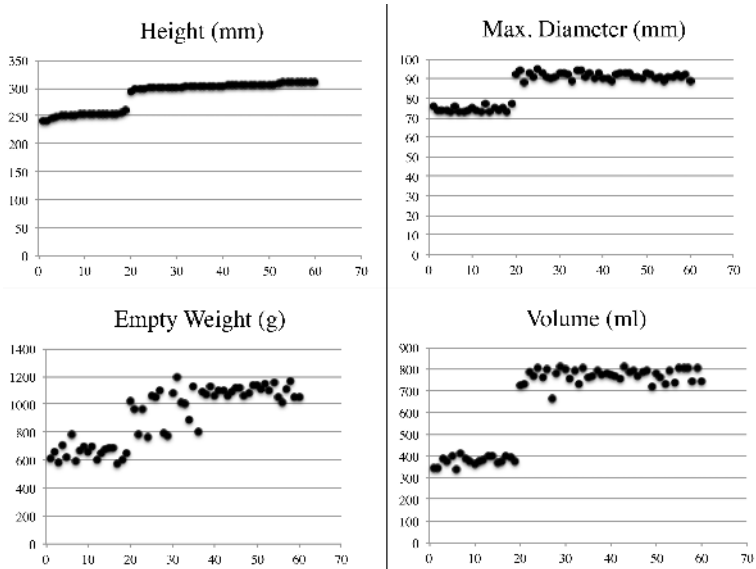


Figure 2: Plots of RSB/Champagne bottle dimensions and volumes



Figure 3: From left, Black Beer, RSB/Champagne, Crown Beer. 100mm scale.

From this table it can be seen that the larger size has an average height of 12 inches (305mm) and capacity of 1.36 pints (773ml), while the small size has an average height of just under 10 inches (254mm) and capacity of 0.67 pint (388ml). This is clearly somewhat removed from 2 and 1 pints, and actually represents nominal capacities of $1\frac{1}{3}$ and $\frac{2}{3}$ imperial pints.

The bottles were all hand-made using cast-iron moulds, mostly turn moulds with 3 examples from two-piece moulds, and all had hand-applied tops. One example had embossing in the kick-up that read 'N&Co, 1786.' Although not present in this sample, bottles with embossed bodies (see Table 3 below) and machine-made bottles have been found (Bedford 1986: 35; Petchey 2008: 16; Ritchie 1986: 179; Young 1995: 140). Given the likely range of dates and places of manufacture from the randomly-selected collection, and the hand-made nature of the examples, some degree of variation would be expected. However, when the measurements are plotted (Figure 2), it is clear that the bottle dimensions are highly standardised, with only a small range in height or diameter. The greatest variation is in dry weight (the large and small bottle ranges actually overlap), but the capacities are remarkably consistent given this variation.

This standardisation of the bottle dimensions would have allowed the bottles to be easily crated for transport, and a reasonably consistent volume (although nowhere near modern standards) would provide the consumer with some assurance about the quantity of the product being sold. The large variation in bottle weight as a result of variation in glass thickness did not result in a concomitant variation in volume, indicating that although the bottles were hand-made, they were manufactured to meet the other three variables. This shows deliberate agency in production of a standardised product by different manufacturers for different customers prior to the introduction of automated manufacturing equipment.

The RSB/Champagne bottle form was preceded in common usage by the even more variable 'black beer,' and succeeded by the more standardised crown-seal bottle (Figure 3). The bottle form was in production in the very early years of the nineteenth century (www.sha.org/bottle/wine), but it was imported to New Zealand in large numbers only from the 1870s. The dates of widespread New Zealand use of the RSB form have been given variously from the 1870s/1880s until the 1910s/1920s (eg Bedford 1986: 29; Bickler *et al.* 2005: 167; Ritchie & Bedford 1983: 239; Young 1995: 119), this range existing because it was both phased in and phased out of use over time, and it can be found in association with both older and younger bottles.

The RSB/Champagne bottle thus forms not only a common type associated with particular contents (discussed below), but also a chronological marker, and an example of technological development in bottle manufacturing.

Historic Uses

As stated in the Introduction, it is well known that the RSB/Champagne bottle was used for a variety of contents. However, one enduring myth is that very large amounts of champagne were imported, and the bottles then reused in New Zealand for beer and other contents (eg Tasker 1989: 39). While some champagne certainly was imported (see discussion below), it is likely that many (if not most) RSB/Champagne bottles were imported containing beer. A first-hand account of the beer bottling process at the London export bottling company of Robert Porter & Co. in 1891 stated that ‘old champagne bottles are largely used’ together with an imported ‘similar’ type of bottle (*West Coast Times*, 28 March 1891: 3), and other beer bottling companies are also known to have preferentially used old champagne bottles because they were strong and able to survive a long sea voyage and rough handling (Hughes 2006: 86; 258). This makes it clear that the bottles were indeed manufactured as champagne bottles, but many actually entered New Zealand as second-hand bottles containing beer. Others were probably imported as empty second-hand bottles to meet local demand (Bickler et al 2005: 167; Young 1995: 119).

The archaeological identification of the actual contents of the bottles once in New Zealand is best made using surviving label and capsule information (Table 2). While by no means a complete list of RSB/Champagne bottles recovered from archaeological sites, Table 2 gives a good idea of the proven variety of contents. The bottle form certainly did enter New Zealand with imported Champagne, as attested to by the large assemblage recovered from the Wanganui Hotel site that contained Champagne or sparkling wine from Germany or Australia (Harris, in Campbell *et al.* 2009: 92). It is notable that French Champagne is conspicuously absent from this assemblage, although some labels were indecipherable. The use of the bottle for beer is also well documented (eg Bedford 1986: 35, Fig 10d; Hamel 2003: 54; Petchey 2001: 2), as is its use for non-alcoholic contents such as ginger ale and lemonade (Bedford 1986: 35, Fig 10f; Petchey 2002: 90; Ritchie & Bedford 1983: 247), and even condiments (probably vinegar) (Bickler *et al.* 2005: 168). What is particularly notable about the examples listed in Table 2 is not simply the variety of contents, but also the international nature of the companies, with British, Irish, German, Australian and New Zealand firms all represented. International trade was an important element in 19th century commerce, and the bottle data supports this.

Embossed RSB/Champagne shape bottles provide evidence for the purpose for which they were first manufactured (Table 3), but once again they could be subject to re-use with different contents. It seems unlikely that they would have been used by a rival company, but this remains untested archaeologically.

Site	Reference	Label/Capsule	Contents
Halfway House Hotel	Bedford (1986)	Cromwell Brewery, NZ	Ginger Ale
Halfway House Hotel	Bedford (1986)	Theyers & Beck Alexandra, NZ	Ginger Ale
Halfway House Hotel, Cromwell Chinatown	Bedford (1986), Ritchie (1986)	Bass & Co., Read Bros. 'Dog's Head' Bottling, London, UK	Pale Ale
Foresters' Lodge	Petchey (2001)	E&J Burke, Dublin, Ireland	Stout
Farmers	Petchey & Innanchai (2012)	E&J Burke, Dublin, Ireland	(Beer)
	Ritchie & Bedford (1983)	Theyers & Beck, Alexandra, NZ	Ginger Ale, Lemonade
Alexandra flood banks	Petchey (2002)	Thomson & Co. Dunedin, NZ	Ginger Ale
Wanganui Hotel	Harris in Campbell et al (2009)	Alfred Fenton, Melbourne, Australia	Quinine Still Champagne
Wanganui Hotel	Harris in Campbell et al (2009)	Deinhard & Co. Coblenz, Germany	Sparkling wine
Wanganui Hotel	Harris in Campbell et al (2009)	Kupferberg, Germany	Sparkling Moselle
Wanganui Hotel	Harris in Campbell et al (2009)	'ST R.OY/.R.IM' (incomplete)	Champagne
Cromwell Chinatown, Queenstown	Ritchie (1986), Hamel (2003)	Robert Porter & Co. London, UK.	Ale & Stout
Farmers	Petchey & Innanchai (2012)	Robert Porter & Co. London, UK.	(Beer)
Mountaineer Hotel	Brooks et al (2008) (Now in Otago University collection)	Thomson & Co. Dunedin, NZ	Cider
Britomart	Bickler et al (2005)	John Stephen, Gloucester, UK	Prob. vinegar

Table 2: Reported label and capsule information on green RSB/Champagne bottles. Contents in parentheses are generic

Site	Reference	Embossing	Contents
Halfway House Hotel	Bedford (1986)	Great Northern Brewery, Auckland.	(Beer)
Halfway House Hotel, Poplars, Sky City	Bedford (1986), Ritchie (1986), Young (1995)	Johnson, Liverpool, Registered Trademark.	
Waikouaiti Hall	Petchey (2008)	Hancocks Imperial Ale	(Beer)

Table 3: Reported embossed RSB/Champagne bottles

An additional use of the RSB/Champagne bottle appears to have been as a container or jar. Carefully sheared off and discarded bottle tops have been reported from Queenstown and Dunedin (Hamel 2001; Middleton 2009: 9), and the concomitant basal halves have been found in Central Otago (Bedford 1986: 29; Ritchie 1986: 203). In each case the upper *circa* 4 ½ inches/125mm of the neck was cleanly sheared off (probably by using heat). Ritchie (1986: 203) also reported the similar modification of green ring seal brandy bottles by Chinese to make heating and opium lamps.

Conclusions

The Ring Seal Beer/Champagne bottle is the most common bottle form found in historic archaeological sites of the *circa* 1880 to *circa* 1920 period in New Zealand. The bottles form a consistent morphological type, with identifiable manufacturing details typical of the period, and were used for a wide variety of alcoholic and non-alcoholic contents from local and overseas suppliers. Each bottle represents the consumption of a quantifiable volume of these contents. Analysis of this bottle type can therefore produce evidence of human agency and activity at both the international (trade, commerce and manufacturing) and local (sale and personal consumption) levels.

- The large RSB bottle is nominally 12 inches (305mm) tall and held a nominal 1 1/3 imperial pints (756ml) (actual average 1.36 pint, 773ml).
- The small RSB bottle is nominally 10 inches (254mm) tall and held a nominal 2/3 imperial pints (375ml) (actual average 0.67 pint, 388ml).
- Some examples were imported containing Champagne and other sparkling wines from Europe and Australia.
- More were probably imported containing beer (ale, stout etc) from Britain, having been purchased as second-hand Champagne bottles by British export bottling companies.
- Some were imported with other contents, including vinegar.
- Once in New Zealand the RSB was recycled by numerous local businesses with a wide variety of alcoholic and non-alcoholic contents. These included beer, cider, ginger ale, lemonade and other aerated waters.
- The RSB bottle manufacturing technology is representative of a period when hand-manufacture was still predominant, but there was an increasing degree of standardisation of product, assisted by the use of cast-iron bottle moulds.

- The RSB bottle fits into the technological progression from fully hand-made to fully machine-made bottles that is well-represented in the New Zealand archaeological record.

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