COVER IMAGES

‘Summer Flowers’ pattern plate; small gold pendant; wine-style glasses from the Farrow assemblage; lathe turning marks on a button, showing raised area where turning tool could not reach.

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Editorial

The humanities are currently facing serious political, social and economic challenges, causing major concerns for universities and the cultural heritage management and museums sectors, not only in Australia and New Zealand, but also for our colleagues in Canada, the USA and the United Kingdom. In Canada for instance, budget cuts have hit hard at the archaeological work of Parks Canada – not only have the numbers of archaeological staff been cut, but funding for the system of artefact repositories that serve their respective regions has also been reduced. I was fortunate to visit Québec in 2011 looking at some of their distinctive ventures based on colonial period archaeology, such as the Pointe-à-Callière Montreal Museum of Archaeology and History and the public archaeology programs of the World Heritage listed Québec City. In both cases I was struck by the strong and fruitful collaboration between the city and regional heritage authorities, museums and local universities. Pointe-à-Callière is a highly successful business and tourist destination that also supports ongoing archaeological field schools with students and staff from the University of Montréal, while I observed similar close collaboration between the staff of the Ville de Québec, Parks Canada and Laval University (eg Moss 2009)1.

In this atmosphere of fiscal constraint, it seems somewhat ironic therefore that in Australia we have recently seen several significant initiatives that go to the heart of a long term problematic in the relationship between heritage management and historical archaeological research: namely, how to store and facilitate access to the accumulated wealth of archaeological data collected largely under the auspices of heritage management legislation. 2011 saw the launch of NSW Archaeology Online, an on line digital archive of grey literature, hosted by the University of Sydney Library, that has already made over 1,000 unpublished historical archaeological reports available (Gibbs and Colley in press). A related initiative is being developed at La Trobe University – the Australian Historical Archaeology Database (AHAD) for historical archaeological catalogue data and associated stratigraphic and historical records. While a third project, based at the University of NSW, the Federated Archaeological Information Management System (FAIMS), was also awarded Australian federal government funding to develop a suite of tools to enhance archaeological data sharing (Ross 2012). While each of these projects is university based, all feature significant collaboration across the museum and cultural heritage management sectors. While these projects face challenges in terms of building the sustainability of their digital archives and tools, they are a hugely important first step in building a vibrant research future for historical archaeology, opening new possibilities for cross-sector and cross-disciplinary collaboration and providing exciting opportunities for education and training. For those of us also concerned with the ethics of heritage management and conservation, digital archives and data sharing tools will also help provide the much needed evidence and new products to justify continued public investment in archaeology. It will be fascinating to monitor the building impact of the availability of these on line resources for archaeology through the lens of journals like Australasian Historical Archaeology.

I turn now to the volume at hand – Volume 29 of AHA continues to demonstrate the growth in material culture studies in Australian historical archaeology, with papers on three different categories of artefacts – buttons, ceramics and glass. The papers on ceramics and glass present richly contextualised analyses focusing on material culture in the construction and maintenance of class and social status, through ideologies of gentility (Hayes) and temperance (Lampard and Staniforth). While the third study of the buttons from the North Brisbane Burial Ground (McGowan and Prangnell) analyses, dates and identifies the buttons recovered from 34 burials, not only shedding light on burial practices of the period, but also providing comparative material for future studies.

Davies, Lawrence and Turnbull however, return to one of the central interests or themes of the historical archaeology of Australia and New Zealand: the effects of the 19th century mining boom on landscape and environments, especially in this case the rapid development of infrastructure for hydraulic power. Using both archival research and archaeological survey on a broad landscape scale, the authors skilfully illuminate a complex history of interaction and competition between government and private interests in the scramble to control precious water resources.

This volume also includes two research notes on industrial sites - one on a blacksmith’s shop near Townsville in northern Queensland (Clarkson) and the other looking at the remains of whaling around Port Gregory on the mid-west coast of Western Australia (Rodrigues). Clarkson’s paper Forging Ahead presents her work in progress on the excavation of a small blacksmith’s business and its role in colonial expansion and settlement of this part of Queensland in the latter part of the nineteenth century. Rodrigues’ report on whaling related remains around Port Gregory confirms the archaeological potential and heritage significance of these vulnerable shoreline sites, which it is hoped may be the subject of further investigation in the future.

In thanking Kate Quirk for her continuing work as Reviews Editor, I would also like to draw readers’ attention to the review of the important new overview of Australian historical archaeology by Susan Lawrence and Peter Davies. This impressively comprehensive work is already proving to be an indispensable reference book and works particularly well in providing both researchers and students with a skilful synthesis of the major themes in historical archaeological research in Australia. It certainly fills a major publication gap in a field of research that has changed so much since Connah’s earlier overview, Of the Hut I Builded published in 1988. Connah’s review of Lawrence and Davies in this volume contains some reflective ‘future casting’ about ‘where to next’ for historical archaeology – perhaps a move away from its past emphasis on the social issues of ‘gender, status, ethnicity and identity’ to more environmental concerns, responding to current interest in climate change and environmental history? I think this turn is highly likely, but I suspect that identity will continue to be a key concern for historical archaeologists in the context of ongoing cultural globalisation, and this interest will draw oxygen from the expanding fascination with memory and heritage. Perhaps also the so called ‘material turn’ in the humanities and social sciences (Bennett and Joyce 2010) will challenge archaeologists to re-state their approaches, methods and theories of human interaction with the material world in the face of competition from cultural studies!

Linda Terry continued her meticulous and efficient work as Editorial Assistant for this volume. I am so grateful to Linda for her organisation and skill and she is a joy to work with— thanks so much Linda! I also extend my gratitude to all members of the Editorial Board, with special thanks to Jon

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1 Thank you to my hosts and guides in Québec including William Moss, Louise Pothier, Christina Cameron and Dina Bumburu.
Prangnell, Iain Stuart and Jane Lydon for extra advice and support. Thanks also to the authors and anonymous reviewers whose work is integral to maintaining a quality journal. Finally I am very pleased that Volume 30 of *Australasian Historical Archaeology* will focus on historical archaeological research in New Zealand, following the very successful 2011 Australasian Society for Historical Archaeology conference at the University of Otago.

**REFERENCES**


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TRACY IRELAND
INTRODUCTION

The South Australian temperance movement, begun in the early nineteenth century, did not gain political and legal traction until the end of the century (Potter 1999). In a 100-year period Australia’s perception of alcohol changed from a substance of medical benefit to a poison, or at least something to be taken in moderation. This move was led by the middle-class, both in Australia and abroad, who used the temperance movement as a means of defining their social status (Reckner and Brighton 1999:63). Working-class perceptions, on the other hand, have not been well recorded. Using a comparative and historically sensitive approach, the differences in three working-class assemblages are used to explore their attitudes towards alcohol.

For the purpose of this paper, working-class is defined as any family whose main source of income is derived from manual labour (for further discussion see Briggs 2005:9-12). The three assemblages discussed cover the spectrum of the working-class, from the residents of Quebec Street, who lived in rented accommodation and had no savings, to the Farrow and McKay families who owned their homes and had small amounts of capital to invest elsewhere. No commonality or class consciousness is assumed between the families, allowing differences in the archaeological assemblages to direct conclusions regarding the place of alcohol in the construction of social status.

HISTORY

Port Adelaide (Figure 1a) was proclaimed in 1840, four years after the settlement of South Australia, following a previous attempt to establish a port further up the Port Adelaide River (Couper-Smartt 2003:57). Built on swampy ground, development in Port Adelaide was slow, frequently being set back by drainage and flood issues. As with the study of the majority of ports, the commercial aspects have overshadowed the residential and Port Adelaide is no different in this respect. With the development of the Port came housing for those working in the associated industries. Related here is the history of three such houses and the people who occupied them: tenements in Quebec Street and the Farrow and McKay cottages on Jane Street.

Quebec Street (Figure 1b) was located over 200m from the commercial centre of Port Adelaide and development was therefore slow as flood and drainage issues were not addressed as a matter of priority. Around 1863 John Robert McDonald built four wooden cottages of two rooms each at what is now 15 and 17 Quebec Street (allotment 108 prior to sub-division, subsequently referred to as 108 Quebec Street to indicate historical configuration and size). These cottages were rented to a rapidly changing assortment of people, 63 families in all, between 1863 and 1900. Rate assessment records and births, deaths and marriages indexes indicate the residents can generally be characterised as families of between two and eight children with a father participating in manual labour and a mother who performed house duties and may have also worked outside the home (Briggs 2005:83). Little information could be discovered for the majority of residents beyond names, dates of birth, marriage and death. Where it could, the
historical record indicates that the residents of 108 Quebec Street lead lives that could be seen as unrespectable by Victorian standards. At least two occupants had absconded from vessels they were serving on and three had venereal diseases associated with a promiscuous lifestyle.

The most detailed evidence of life in the Quebec Street cottages comes from the inquest into the suicide of Mary Wynes, reported in the Port Adelaide News (1882:8c-d). Wynes committed suicide while “of unsound mind” and was possibly suffering postnatal depression after the birth of her second child. The inquest highlighted the interplay of family and friendship ties in the cottages and neighbourhood. The evidence of local police Sergeant Doyle indicated that the families lived beyond the bounds of strict Victorian morals – Doyle being called on at least one occasion to defuse an argument between Mary and some of her relatives (her mother and father-in-law lived in another of the cottages). Doyle also gave evidence that he occasionally brought beer for Mary and other witnesses stated that although she had been a sober woman in the past she had recently turned to drink.

The inquest not only gives an insight into the residents, but also wider attitudes towards alcohol amongst the working-class. The consumption of alcohol by women was not wholly behind closed doors – Mary being supplied by Sergeant Doyle and also sharing a drink with her neighbour Mr Martin on occasions. There were, however, bounds in the consumption of alcohol that Mary had crossed in the weeks leading up to her death.

The Farrows of Jane Street occupied their own house of four rooms for 30 years between 1855 and 1885. John and Johanna had six children, three of whom survived into adulthood. The Farrow’s were reasonably well off, owning their own home as well as rental properties in the same street. John, however, still worked as a labourer for the Port Adelaide Council and the archaeological evidence suggests Johanna took in laundry (Briggs 2005:198-199). The documentary evidence for the Farrow family strongly indicates that Johanna, at least, was in favour of total abstinence from alcohol. Johanna was one of the few women who received high praise from Reverend Joseph Coles Kirby, the leader of the temperance movement in South Australia and who was based in Port Adelaide. Kirby was said to “cherish her memory” (Kiek 1927:164). Kirby was a strongly opinionated, uncompromising man and it is unlikely he would have high regard for Johanna if she did not conform to his philosophy in full. A plaque memorialising her service as a Sunday School teacher still hangs in the Port Adelaide Uniting Church today.

The McKay’s are slightly more enigmatic. George and Mary bought the property next door to the Farrow’s in 1849, although it remained mortgaged until they sold it in 1876. The couple occupied the four to six room house of brick and wood with their four surviving children. Their eldest son, William (1836– ), was married in 1861 and probably moved out of home around this time. George senior is listed in the Street Directories as a sail maker, a profession believed to have been taken up by his son Griffith before he became a Master Mariner (Waters, et al. 2004:10). George senior also seems to have become a captain and, according to his obituary, was “engaged in developing the coasting trade of the colony, as was succeeded by his son, Captain Griffith McKay. He was a respected member of the society in which he lived…” (South Australian Register 23 May 1882, supplement:1882a). There is little other available evidence on which to base an estimation of the family’s respectability.

There were marked differences between the residents of the two sites. Quebec Street was occupied by larger families who, documents indicate, occasionally lived outside the accepted Victorian moral standards. On the Jane Street site all available documentation indicates the Farrow and McKay families could be defined as “respectable”. Johanna seemingly actively pursuing the temperance ideal. Some of these differences can be seen in the archaeological record.

STATISTICAL METHODS

The basis of this research is formed by excavations undertaken for one of the author’s (Lampard) PhD (Briggs 2005). Between 24 September and 6 October 2002 a team of over 40 students excavated four trenches in the rear yard of 15 Quebec Street. Trenches one (6x2m) and two (2x2m) proved to be the most informative regarding the period under investigation and the artefacts recovered from Trenches three and four have been excluded from this study. Trench one uncovered the foundation wall of the c1860 cottages, sheet deposits associated with the lane and some underfloor deposits. Trench two comprised mainly brick rubble from the demolition of the cottages and underfloor deposits. All deposits were excavated by hand and sieved through three, five or ten mm mesh. Due to the nature of the deposits and rental patterns it was not possible to tie deposits to particular occupants or cottages. The assemblage has therefore been analysed using Murray and Mayne’s research that indicates occupancy patterns have little effect on artefact assemblages (2001:79; 2003).

The second excavation took place between 11 September and 2 October 2003 in the car park at the rear of the South Australian Maritime Museum in Jane Street. A team of over 60 students and volunteers excavated an area of 12x4m, uncovering the rear yards of the Farrow and McKay cottages.

The glass assemblages were processed in the Archaeology Laboratory at Flinders University. After cleaning, the glass was sorted according to colour, with undiagnostic fragments being catalogued together. Finishes, bases and embossed fragments were catalogued separately into an Access database designed by Lampard. The style of the vessel fragments was determined with reference to a range of glass analysis and bottle collecting guides (Arnold 1985; 1987; 1997; Boow 1992; Jones 1986; Jones and Sullivan 1989; Roycroft and Roycroft 1979).

The easiest method of analysing artefacts is to count how many there are. The concern of any artefact analysis, however, is how interdependent that count is. In other words, how fragmented the assemblage is. For this reason Chaplin (1971, p. 67) has stated that, while counts are easy to determine, it is “time completely wasted for it allows no comparisons to be made between any two sites because the [fragmentation] bias which is certainly present cannot be detected or determined”.

While this may be an over-reaction, it is evident that a count of artefacts, by itself, is not an accurate reflection of the assemblage and since inter-site comparison is the main basis of this research fragmentation needs to be addressed.

The most commonly used technique to balance the number of fragments is a Minimum Vessel Count (MVC) (Hesse and Wapnish 1985, p.113). The basic aim of a MVC is to determine the minimum number of vessels the fragments could have come from. This is achieved by choosing one part or element and counting its frequency. The part chosen must occur only once in a complete artefact. For example, when calculating the MVC for bottles either the finish or the base can be used. Body fragments cannot be used, as there is no way of identifying whether the fragments came from the same vessel, even based on colour and thickness, as these two variables can alter drastically even in one vessel. An MVC is not affected by fragmentation. The MVC is used in this paper to alleviate the issues of bias associated with fragment counts. The MVC however, has its own weaknesses. While it lessens
the bias of fragmentation, it is also conservative and will underestimate the number of vessels in an assemblage – it provides an absolute minimum number of vessels as compared to an absolute maximum provided by a fragment count. As there is no reliable means of finding a middle ground, fragment counts and MVCs have been provided below.

There are many ways to calculate minimum numbers. One of the biggest problems in inter-site comparisons, using published material, is that the reader does not know how the number was arrived at, thereby lessening the value of the comparison using published data (Klein and Cruz-Uribe 1984:26). Part of this problem has been avoided in this analysis by Lampard determining all MVCs. So as not to perpetuate this problem and to make this research comparable with any future research, the MVCs discussed in this paper were calculated in the following way. Bases were ultimately chosen to calculate the MVC, being the most commonly occurring component. The MVC was calculated across all contexts in an assemblage and only included bases that were over 75 per cent complete. Where this paper refers to assemblages not excavated by Lampard the figures have been calculated from artefact databases, not from published data. Comparisons have been based on the MVC percentages to allow for the variation in frequencies between the sites.

Bottle form and function

The question of ascribing bottle function/contents on the basis of form is a vexed one. The analysis of the contents of intact, corked wine-style bottles from the wrecks of the William Salthouse, Sydney Cove and the James Matthews have indicated that this style of bottle was used for a range of alcoholic beverages, including cider (Staniforth 2003:84-5, 121, 134). It is therefore possible that not all the wine-style bottles from the sites contained wine and likewise that the champagne-style bottles did not contained champagne and so on.

The reuse of bottles for other purposes, once the original contents had been emptied, also needs considering, as pointed out by Buchs (1987). Penny Crook’s analysis of bottles from 1 Carahers Lane and 128 Cumberland Street in The Rocks, Sydney, found marks consistent with the reuse of the bottles (Crook 2000:22). Crook notes that the majority of these marks were found on alcohol-related bottles and suggests they may have been refilled at the local hotel. Ken Arnold (1997:95) states “people did not buy bottled beer – they simply took ‘their’ bottle down to the hotel to be refilled …”. At Mary Wynes’ inquest Sergent Doyle gave evidence that he occasionally bought Mary alcohol, and that on the Thursday before her suicide he had bought her a pint of beer (Port Adelaide News 18 April 1882:Sc). Although not specified by Doyle, it is possible that this was brought to Mary in a recycled bottle. While no reuse marks were noted during cataloguing it is possible, and even probable, that such use occurred, if not for a trip to the pub then for other uses around the home, such as water or preserving.

The multipurpose nature of bottles makes analysis in archaeological contexts difficult. Given this, no attempt is made here to suggest the exact contents of each bottle – hence the use of the term ‘style’ following the description (eg wine-style). In order to advance discussion and to allow for some meaningful analysis of the assemblages, while it is noted that form does not always equate to contents, it is assumed that bottle forms generally will denote whether the contents were alcoholic or non-alcoholic.

RESULTS

From the 2149 glass fragments recovered from Quebec Street a MVC of 51 was calculated. Eight of the MVC could not be ascribed a function. Of the remaining 43 there were three were case gin-style bottles, two champagne-style bottles, one half-pint bottle, an ink well, two medical-style bottles, one sauce bottle, three tumblers and 29 wine-style bottles. No aerated water-style bottles were included in the MVC and only 17 fragments were found. Overall, 68.63 per cent of the MVC was related to alcohol consumption (Table 1).

A MVC of 48 glass vessels was calculated from 2437 fragments associated with the McKay cottage. The McKay

<table>
<thead>
<tr>
<th>Table 1: Glass artefact Minimum Vessel Count from Quebec Street and the Farrow and McKay Cottages by Form</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specific Identification</strong></td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>Aerated Water-Style Bottle</td>
</tr>
<tr>
<td>Ale-Style Bottle</td>
</tr>
<tr>
<td>Bottle (unidentified)</td>
</tr>
<tr>
<td>Case Gin-Style Bottle</td>
</tr>
<tr>
<td>Champagne-Style Bottle</td>
</tr>
<tr>
<td>Cosmetic-Style Bottle</td>
</tr>
<tr>
<td>Decorative Hollowware</td>
</tr>
<tr>
<td>Ink Bottle</td>
</tr>
<tr>
<td>Jar</td>
</tr>
<tr>
<td>Medical or Cosmetic-Style Bottle</td>
</tr>
<tr>
<td>Medical-Style Bottle</td>
</tr>
<tr>
<td>Pickle-Style Bottle</td>
</tr>
<tr>
<td>Salad Oil-Style Bottle</td>
</tr>
<tr>
<td>Sauce-Style Bottle</td>
</tr>
<tr>
<td>Serving Vessel</td>
</tr>
<tr>
<td>Shot-Style Glass</td>
</tr>
<tr>
<td>Tumbler</td>
</tr>
<tr>
<td>Vinegar-Style Bottle</td>
</tr>
<tr>
<td>Whiskey-Style Bottle</td>
</tr>
<tr>
<td>Wine-Style Bottle</td>
</tr>
<tr>
<td>Wine-Style Glass</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td><strong>% of MVC alcohol related</strong></td>
</tr>
</tbody>
</table>
assemblage was slightly more diverse, 12 forms being identified. Pickle-style bottles formed the largest group with a count of 11, followed by ten medical-style bottles, nine unidentified bottles and eight wine-style bottles. A minimum number of two was determined for aerated water-style and case gin-style, while there was one each of salad oil-style, sauce-style and whiskey-style bottles. The remaining three were a serving vessel, a tumbler and a wine-style glass (Table 1).

The 3362 fragments from the Farrow cottage assemblage were calculated to form a minimum of 188 vessels. With over double the count of the Quebec Street and McKay cottage, there was also a wider variety of forms. Wine-style bottles accounted for 53 vessels, unidentified for 49 and medical-style bottles for 21. A minimum of 10 aerated water, eight tumblers, seven salad oil-style bottles, six wine-style glasses, five champagne and cosmetic-style bottles, four sauce-style bottles and serving vessels, three holloware vessels, two jars, medical or cosmetic-style and vinegar-style bottles and one ale-style bottle and one shot-style glass (Table 1).

Comparisons

In terms of alcohol-related bottles Quebec Street (68.63 per cent) had over double the percentage of the Farrow cottage (33.51 per cent) and two thirds more than the McKay cottage assemblage, with 22.92 per cent (Table 1). The extent of the difference, together with the use of MVC to reduce the bias of fragmentation suggests the figures are not coincidental. It is again noted that all three assemblages were retrieved from sheet deposits subject to similar taphonomic processes. What, therefore, could account for the variation?

The first variable presenting itself to account for this discrepancy relates to differing tenancy types: rental as opposed to owner-occupied. This explanation stands in contradiction to the research of Murray and Mayne (2001:79; 2003), who hold that such differences did not impact the assemblages formed at Little Lonsdale Street. It was on this basis that the Quebec Street assemblage was analysed as though it were a single household. Research in the Five Points district indicates that there is “no homogeneous pattern of smoking and drinking” (Reckner and Brighton 1999:80). Data extracted from the Five Points database (Table 2) indicates that there are large variations in alcohol-related items between the excavated deposits, across households and occupation periods. When the deposits are separated into those with known tenants and those created by multiple households slightly higher numbers are seen in the tenanted deposits.

Table 2: Data collated from Five Points Database calculating number and percentage of alcohol-related items

<table>
<thead>
<tr>
<th>Feature/Strata</th>
<th>Artefact Count</th>
<th>Glass MVC</th>
<th>No. Alcohol in MVC</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Known Households</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B- IV</td>
<td>4005</td>
<td>34</td>
<td>6</td>
<td>17.65</td>
</tr>
<tr>
<td>B-V</td>
<td>3118</td>
<td>57</td>
<td>6</td>
<td>10.53</td>
</tr>
<tr>
<td>H-IV</td>
<td>3006</td>
<td>15</td>
<td>2</td>
<td>13.33</td>
</tr>
<tr>
<td>N-IV</td>
<td>3892</td>
<td>82</td>
<td>20</td>
<td>24.39</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td></td>
<td></td>
<td>16.47</td>
</tr>
<tr>
<td><strong>Tenants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J-III</td>
<td>12913</td>
<td>116</td>
<td>15</td>
<td>12.99</td>
</tr>
<tr>
<td>J-V</td>
<td>25158</td>
<td>137</td>
<td>31</td>
<td>22.63</td>
</tr>
<tr>
<td>Z-II</td>
<td>3901</td>
<td>15</td>
<td>1</td>
<td>6.67</td>
</tr>
<tr>
<td>AN-III</td>
<td>10175</td>
<td>19</td>
<td>9</td>
<td>47.37</td>
</tr>
<tr>
<td>AL-II</td>
<td>1471</td>
<td>89</td>
<td>28</td>
<td>31.46</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td></td>
<td></td>
<td>24.21</td>
</tr>
</tbody>
</table>

Given the wide variations within and across the two groups at the Five Points, together with the findings from Little Lonsdale Street, there is little likelihood of the difference at Port Adelaide being attributable to tenancy type. That such a range exists displays personal or family preferences.

Even compared to the Five Points data the Quebec Street assemblage contains a far higher proportion of alcohol related bottles. The McKay and Farrow cottages, however, fall within the upper end of the range exhibited at Five Points. Quebec Street also exhibits a higher proportion than the boarding houses for mill workers in Lowell, Massachusetts. The only accessible figures for this site were published by Reckner and Brighton (1999:79) as a contrast to the Five Points data. Between 35 and 40 per cent of bottles from two Lowell excavations were related to alcohol. This large number has been interpreted as resulting from active resistance to the mill owners, whose control over their employees even extended to the prevention of alcohol consumption in the boarding houses (Beaudry, et al. 1991:285). Quebec Street is still well above the level described as ‘active resistance’ in Lowell.

In comparison to an Australian excavation, the Wapping District of Hobart, Tasmania, Quebec Street still has a high percentage of alcohol bottles, although the Wapping percentage is between Quebec Street and the two Jane Street sites at 43.29 per cent (Austral Archaeology 2002: calculated from appendix 6). Casselden Place, Melbourne also lies in between with 52.39 per cent of bottles relating to alcohol (Goddin Mackay Logan and LaTrobe University 2005, calculated from Volume 4ii, appendix C, table 4). The assemblage of a geographically closer site, the Rookery in Adelaide, had roughly 38 per cent alcohol bottles (Austral Archaeology 1992:41), very close to that of the Farrow cottage. The Cumberland Gloucester Streets site in The Rocks has the closest figure to Quebec Street, with 57.38 per cent of glass bottles relating to alcohol in phases five and six – c1851 to c1900 (Crook, et al. 2006, calculated from Access Database). Comparatively, therefore, the two Jane Street sites fall at the bottom end of alcohol consumption in Australia, while Quebec Street displays the highest level within the compared sites.

DISCUSSION

In the examination of working-class sites, alcohol-related artefacts are a very divisive group, given recent attempts to ameliorate the preconception of the drunken, shiftless manual labourer, created by the nineteenth-century middle-class and perpetuated into the present (Reckner and Brighton 1999). In the attempt to refute this prejudice there has been a tendency to sanitise the working-class in the opposite direction. This re-evaluation obscures some of the diversity within the community. Quebec Street is a caution against this tide. Some of the residents at Quebec Street obviously enjoyed a drink; maybe one too many on occasion. Documentary research has shown that many of the residents, being deserters and destituutes, teetered on the edge of respectability. When Mary Wynes committed suicide it was insinuated that she had begun drinking heavily. That the Sergeant was willing to bring beer to Mary on occasions suggests that alcohol was still considered, by at least sections of the community, to be an acceptable drink for women. This could provide a clue to the higher number of bottles. Could these bottles represent the consumption of alcohol by women?

Port Adelaide, like most working-class areas of the period, had a ‘pub’ culture. At the end of the day men went to the pub for a drink. Whether women also drank regularly in pubs is difficult to ascertain. Temperance reformers couched their arguments in terms of saving men from drinking themselves to
death. Contemporary female temperance writers did not discuss women drinking in pubs, women were characterised as being temperate and their role was to save men (Potter 1999:457). Wright (2003) has discussed the prevalence of female publicans in colonial Victoria, but does not touch on whether women were also patrons. Wright (2003:6) suggests that women were seen as ideal licence holders as the provision of meals and accommodation was an extension of their domestic role and they added “respectability and maternal restraint” to the masculine pastime. The authors have found limited research indicating whether women frequented public houses. Harrison (1971:47) and Borraugh (1979:12) have both suggested that women were excluded from public drinking houses. In an Australian context Karskens (1999:164) writes that by the 1860s women in The Rocks could no longer drink in pubs as they had done in the convict period, as they would have been considered prostitutes. To enjoy a drink they had to take a jug to be filled at the hotel, or send one of their children.

Whether or not all working-class women were mindful of the moral danger of drinking in such establishments has been obscured by the actions of the middle-class temperance movements who, believing women should not be there, did not record their presence. As Borraugh (1979:12) puts it “The subject received scant attention because it was ‘too delicate’ to be discussed”. It does not necessarily follow that women did not visit the public houses of Port Adelaide. A vignette published by the Port Adelaide News and reproduced by Potter (1999:454) includes the sentence “There was [a girl] this week, aged about twenty, who was seen reeling about a public house, having been a little ‘overtaken’”. While obviously being used to illustrate a point, and therefore not necessarily true, the story does indicate that women drinking in bars was not completely unheard of.

Kirkby (1997:61), in her survey of women working in pubs, states “Certainly there is evidence that … working-class women in the colonies drank, although how much of this was done on licensed premises and how much in the street is unclear”. Elsewhere Kirkby (1997:60) maintains that the number of women drinking in pubs was increasing during the nineteenth century, in contradiction to Karskens. The evidence to support this comment is not presented, making it difficult to assess. Dingle (1980:240), in his survey of alcohol consumption in Australia, dismisses women as drinkers, believing they did not have an impact on the per capita consumption rate. He instead believes that women civilized the colonies with their presence. The normalisation of sex ratios led to a decline in alcohol consumption, a masculine activity, as the home began to compete with the pub for time and money (Dingle 1980:240). What is evident from this discussion is that the subject of women’s drinking habits during the nineteenth century requires further attention.

Regardless of how much was consumed, drinking at home allowed women to indulge without subjecting themselves to public scrutiny, unless alcoholism became impossible to conceal. Their responsibilities at home – the care of children and housework would have been another factor making it difficult for women to drink at the pub. It is, therefore, a strong likelihood that the women of Quebec Street, if they wanted to, were drinking at home. That Mary Wynes, at least on occasions, chose to drink at home could indicate she was somewhat mindful of her standing with her neighbours; and the same may be said for other residents. Harrison (1971:305) says of women drinking that there were many “tales of concealed intemperance above stairs”.

At the time of Mary Wynes’ suicide in 1882, temperance campaigning in South Australia, and in Port Adelaide in particular, was beginning to gain momentum under the leadership of Reverend Joseph Coles Kirby. Kirby had arrived in Port Adelaide in mid-1880 to take up the pastorate of the Port Adelaide Congregational Church and he continued his active work in the area of temperance (Potter 1999:409). A Band of Hope branch had been established in Port Adelaide in 1879 (Potter 1999:414) and the intemperance of sailors and labourers was a well-canvased subject in the Port. It was not until Kirby’s arrival, however, that support was galvanised, eventually leading to a reduction in the number of licenses and the introduction of six o’clock closing time across South Australia.

It is unclear, however, where support for temperance groups, such as the Band of Hope, came from – whether the middle-class, the working-class or a mixture of both. Research by Reckner and Brighton (1999) would suggest that the working-class resisted attempts to convert them into teetotallers. Alcohol was not the only attraction of drinking establishments. The often cramped conditions of home also encouraged men to spend time elsewhere.

While the efforts of the temperance movement did not materialise legally until the 1880s, by which time all three sites Port Adelaide were losing their residential nature, it is still an issue worth mentioning here. In light of the success the movement had in closing public houses and restricting trading hours, it is interesting to examine alcohol consumption before peoples’ drinking habits were changed.

If the higher frequency of bottles at Quebec Street represents the consumption of alcohol by women living in the cottages, then it would follow that those in the Farrow and McKay cottages were not drinking to the same extent. The possible aspirations of these two families may have influenced their consumption of alcohol. It has been suggested by several authors, including Harrison (1971:305), that the aspirational members of the working-class used the temperance movement in an attempt to elevate their status. For the Farrow family, at least, this would have been linked very closely with religious fervour. Johanna’s involvement with Kirby and the Congregational Church would have elevated her standing in the community. Kirby’s high opinion, however, would not have been granted to Johanna without her adherence to the ideals of the temperance movement.

Here the archaeology and the historical record have enabled a view of the lived experience of temperance for one family. The discrepancy between the documents relating to Johanna and the alcohol bottles found on the site, clearly signifies tension between husband and wife. While Johanna embraced the ideals of the movement, John obviously did not want to give up alcohol. It is not suggested that he was an alcoholic – there is no record of John’s drinking reaching a publicly unacceptable level. Kiek (1927:126), in fact, attributes Johanna’s salvation to him. The archaeological evidence, however, clearly points to his partiality of a drink. The tension caused by these divergent views towards alcohol probably did not play out as vocal fighting, and was possibly not even visible outside the home. What can be seen here is a more subtle difference of opinion coexisting within the home, maybe not always peacefully, but pointing towards the daily compromises of married life.

Without historical information on Mary McKay it is more difficult to determine why her family had the lowest percentage of alcohol bottles of the sites. There are several possible interpretations. The first is that the men of the McKay family consumed the majority of their alcohol in public houses, drinking infrequently at home. This may or may not have been further reduced by how much, if any, the women drank. The second is that the family, while not practicing total abstinence, drank in strict moderation. A further possible interpretation is that the family recycled its bottles with more
consistency. There could be many more explanations, or even a combination of those mentioned here. The McKays’ attitudes towards alcohol will be discussed further below.

A different attitude to alcohol is not only indicated by the number of bottles in the McKay and Farrow assemblages – a number of associated vessels are also relevant here. Table 1 indicates there were no wine glasses and very few tumblers found at Quebec Street, whereas these items were located at both the other sites (Figure 2). Alcohol was not just consumed; it was now regulated with the right equipment. By regulating alcohol, through the use of material culture, it could be viewed as respectable consumption. The wine glasses indicated the gentility and control placed over the alcohol.

The consumption of alcohol on the Quebec Street site was probably not solely for the purposes of satisfying thirst or a wish to become inebriated. Alcohol had long been considered as having medicinal value. One of the early barriers to temperance campaigns was the belief that alcohol cured all sorts of ills and gave energy during particularly stressful times (Freeman 1989;4; Harrison 1971:39, 41). Quebec Street had the lowest percentage of medicinal bottles of any of the assemblages, 3.92 per cent compared to the moderate 11.17 per cent of the Farrows’ and the 20.83 per cent of the McKays’ (Table 1 and Figure 2). Evidence from the Five Points suggests that patent medicine was increasing in popularity during the 1840s and 1850s, with greater availability, (Bonasera and Raymer 2001:61) and that the reliance on alcohol as a medical cure was diminishing. Still, a wide range of approaches to disease is evident in the Five Points District. The 18 deposits analysed by Bonasera and Raymer (2001:51) had a range of between 4.3 and 48.2 per cent medicine bottles. This includes soda and mineral water bottles. When these particular bottles are removed from the Five Points calculations the range widens to between 1.2 and 41.9 per cent, bringing them into the range of the Port Adelaide sites. The Wapping District excavation gives a percentage of 3.46 (Austral Archaeology 2002, calculated from appendix 6), very similar to Quebec Street. Denny’s analysis of medicinal bottles from Adelaide’s Rookery indicate that at least 35 per cent of the bottles recovered were medicinal, although it is unclear whether this calculation considers fragments or MVC (Denny 1994:4). At Casselden Place 2.49 per cent of bottles were medicinal (Godden Mackay Logan and LaTrobe University 2005, calculated from Volume 4ii, appendix C, table 4), while in The Rocks the figure reached 7.96 per cent (Crook, et al. 2006, calculated from Access Database). It appears that the Quebec Street resident’s use of medicine is roughly equal to that of other Australian working-class neighbourhoods, while the Farrow’s and McKay’s is somewhat higher. The residents from Quebec Street, it would seem, were either yet to be convinced that alcohol was no cure, or did not see the necessity of additional expenditure on a patent medicine when a bottle of beer had worked previously.

This was the age when germ theory was only just beginning to be accepted. When illness did occur the residents of the sites chose different methods of treatment. At Quebec Street the time-honoured tradition of alcohol was used, with the occasional foray into patent medicines. For the Farrows, perhaps, there was a mixture of responses depending on the medical condition, with a larger reliance on alcohol and a lesser reliance on patent medicine. The McKay’s, in contrast, seem to have embraced preparatory medicines and even visited the chemist.

Medicinal use (Figure 3), however, still cannot fully account for the difference between Quebec Street and the other two assemblages. A further clue to the nature of the assemblage may lie in the absence of particular kinds of artefacts from that assemblage. No glass aerated water bottles were included in the Quebec Street MVC; even when fragments are counted there are only 17. Ginger beer in stoneware bottles was more popular, comprising 2.74 per cent of the ceramic MVC. In contrast glass aerated water bottles comprised 4.17 per cent of the McKay MVC and 5.32 per cent of the Farrows’ assemblage (Table 1). Ginger beer from stoneware bottles was consumed infrequently on Jane Street comprising 2.34 per cent of the McKays MVC and 1.64 per cent of the Farrows.

Bonasera and Raymer (2001:61) have argued for the Five Points site that soda and mineral water were considered as medical alternatives. This may also have been the case in Port Adelaide, but Portonians also required an alternative to water. Port Adelaide received piped water in 1866, but the supply was unreliable and most families continued to depend on water carried from Adelaide or collected rain water. During excavations at Quebec Street and the Farrows cottage, barrel hoops were uncovered in the yards. These were interpreted as barrels to store water and possibly collect roof runoff. In the McKay cottage yard a concrete slab is thought to have been a base for the ship’s tank that was found in the opposite wall, evidence of attempts to collect water by all the families. Water was obviously a concern, it was expensive and only inadequate amounts could be obtained, even by the well-off families of Port Adelaide (Duncan 1933:27). The McKays and Farrows may have used aerated waters as a partial substitute, while the residents of Quebec Street again opted for alcohol, possibly in the form of beer. Beer was a common replacement, being cheap and, in London (probably also in Port Adelaide),
as contrary to respectability. Geismer (1993:68) uses this
to explain away frequent purchases at the chemist for a
number of medical bottles excavated.

There is another explanation for the larger proportions of
proprietary medicine bottles in the Farrow assemblage and
especially in the McKay’s. The base of the majority of such
medicines was alcohol, in one form or another, and many also
contained opiates. Rorbaugh (1979:12) indicates that as the
restrictions on women drinking became more severe some
turned to patent medicines to hide their alcohol consumption.
At Boott Mill in Lowell, Massachusetts Beaudry et al.
(1991:169) believe they have found archaeological evidence
of this, although the deception was directed to the mill owners
and may not have been solely along gender lines.

Unfortunately the authors did not provide figures and it has
not been possible to identify from the reports available the
number of medical bottles excavated.

In small communities it may have been easier for women
to explain away frequent purchases at the chemist for a
“headache” than to justify their trips to the public house. Such
a farce would indicate a preoccupation with respectability, a
wish to avoid the gossip of neighbours and a view of alcohol
as contrary to respectability. Geismer (1993:68) uses this
suggests that in Australia, beer was not used as a thirst-
quencher to the same extent as it was in Britain. While the
inhabitants of Britain consumed around 30 gallons per capita
in a year, the highest rate recorded by Dingle (1980:242) was
18 gallons in Victoria for the period 1871–1880. The
archaeological evidence suggests, however the residents of
Quebec Street may have continued to rely on beer. Aerated
water would also have provided the temperate members of the
two Jane Street families with an alternative to water, tea and
coffee. It is notable that no cordial bottles were included in
any of the MVCs, suggesting that this was not a popular
refreshment for Port Adelaide residents. Tea, Dingle (1980:
243) suggests, was the most commonly used alternative in
Australia. Per capita consumption of tea, measured in pounds,
was well above that of Britain’s during the nineteenth century.

There is another explanation for the lack of alcohol bottles in a privy in New York’s Greenwich Mews. There is limited support for such an explanation in Port Adelaide for two reasons. Firstly, on the whole, the medicinal bottles in the Farrow and McKay assemblages are of a small size, whereas quantity would be a consideration if purchasing
for the alcoholic content. Secondly, neither assemblage has a
predominant number of a particular brand, as might have been
the case when the consumer found their ideal balance of
alcohol and taste. Mrs Ann Lewis, in The Rocks, disposed of
eight bottles of the same stomach bitters into her privy, which
may have been consumed for the alcohol rather than the cure
of a stomach complaint (Lydon 1998:140). Mrs Lewis’
position in society was somewhat tenuous, as she ran a
boarding house to make a living. Such an occupation required
a delicate negotiation of her social position and being seen
drinking alcohol would have upset the fine balance between
virtuous business woman and immoral boarding housekeeper.
The residents of the Port Adelaide sites, however, were
probably not in such delicate situations. Denny (1994:42)
likewise concludes that the residents of the Rookery “did not
feel an obligation to uphold an appearance of decency by
concealing the volume of alcohol consumed”. As Bonasera
and Raymer (2001:51) so succinctly put it, “If a poor worker
possessing limited assets wished to conceal his or her alcohol
consumption, it does not seem logical that they would buy a
foul tasting medicine that cost more than either whiskey
or wine”.

CONCLUSIONS

The higher proportions of alcohol bottles at the Quebec Street
cottages relate to differing strategies employed to deal with
conditions in Port Adelaide. For the Jane Street families
medical trust was placed in new preparatory medicines, a
belief in science (however unscientific some of these
preparations were in reality) being the mark of a respectable,
educated person (Burke 1999:78). The people at Quebec
Street, however, did what their parents had done – have a
drink. Beer or other alcoholic beverages may also have made
up for the unreliable water supply in Port Adelaide. The Jane
Street families occasionally treated themselves to an aerated
water or ginger beer.

The part women played in adding to the deposits at Quebec Street could not be determined due to a lack of
historical information on female drinking habits in the
nineteenth century. Further research and comparisons
archaeologically may help to confirm the thesis forwarded that
women drinking at Quebec Street contributed to the number of
alcohol bottles. Archaeological and documentary evidence
from Jane Street suggests the Farrow and McKay women were
active in limiting the amount of alcohol consumed on the
premises – a possible indication of their desire for
respectability.

Beyond all the explanations discussed above remains the
confirmation that the residents of Quebec Street, both male and
female, do not appear to have considered temperance as an
important social display. By choosing to quench their thirst
with alcohol and using it as a medicine, the residents were,
intentionally or unintentionally, communicating their attitudes
towards alcohol. Those reading these signals would have
brought their own values to the purchase and consumption of
alcohol. For the middle-class observers of Mary Wynes’
inquest this was disapproval. Her family, friends and
neighbours may have had a more lenient view; they
themselves variously used alcohol medicinally and as a water
substitute, but probably first and foremost as a form of
relaxation and socialisation.

Figure 3: Medicine-style bottles from the Mackay assemblage.
Photo: Susan Briggs.
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Nineteenth-century buttons from the North Brisbane Burial Ground

GLENYS McGOWAN and JONATHAN PRANGNELL

From 2000–2002, a salvage excavation was conducted to record and remove 397 burials exposed by a stadium redevelopment in the centre of the city of Brisbane, Queensland. These burials formed part of the North Brisbane Burial Ground which received interments between 1843 and 1875. During the course of the excavation, 71 buttons were collected, consisting of 40 ceramic buttons, 17 metal buttons, 8 bone buttons, 1 shell button, 2 textile-covered buttons, 2 thread buttons, and 1 ivory button. The buttons were typed and analysed microscopically and compared to those of other sites. The threads used to attach these buttons were preserved in 16 samples, and fragments of a twill woven garment with button holes were preserved on two brass buttons. Given the very poor preservation of burial remains at the site, the complex taphonomic processes are also investigated and of the thirty four burials that contained buttons, six were assigned date ranges of interment based upon button morphology.

INTRODUCTION

The North Brisbane Burial Ground is situated 1.4km from the centre of the city of Brisbane, the capital of the state of Queensland, Australia. The burial ground opened in 1843, following the gazettal of Moreton Bay for free settlement, and was divided into separate cemeteries on the basis of religious denomination (McCulcrg 1975:105,106). Due to the topography, these denominational cemeteries occupied areas of higher ground and were separated from one another by steep gullies leading down to swampy ground at the base of the slopes. The burial ground was closed in 1875 in response to hygiene concerns from the local residents (McGowan 2008:19-22). It is estimated that 5000 of Brisbane’s earliest free settlers were buried there (Rains and Prangnell 2002:3), although any documents showing the location of individual burials, including the burial registers, have not survived.

After the burial ground’s closure, it lay neglected and overgrown for 33 years before being resumed by the Queensland government in 1911 (Queensland Parliamentary Debates 1911-1912:1242). The remaining headstones were removed, and part of the land was redeveloped as a recreational reserve for residents and named Lang Park (Queensland Parliamentary Papers 1914:97). Up until the 1960s, the very low-lying and swampy parts of the grounds became official landfill sites for the disposal of domestic and light industrial waste (Prangnell and Rains 2001). Queensland Rugby League took over the site in 1955, and built a succession of larger, more modern grandstands for spectators (McGowan 2008:7). The construction of a new sports stadium on the site in 2000–2002 disturbed interments from the original burial ground level and a salvage excavation was conducted to record and remove 397 burials from the affected areas of the Anglican, Roman Catholic, Presbyterian and Aboriginal cemeteries (McGowan and Prangnell 2009).

During the course of the salvage excavation, skeletal material was found to be in an extremely poor state of preservation. Bones were de-mineralised and compressed to the extent that often only a shadow of the skeleton remained, making osteometric determinations of age and sex impossible (McGowan and Prangnell 2009). Coffin wood, textiles, coffin furniture and fastenings had also badly deteriorated, and most of the coffins had failed under soil pressure (McGowan 2008:357-361). Metal coffin furniture consisted of iron nails, some screws, cast iron coffin handles, and decorative plates or strips made from thin sheets of pressed iron (McGowan 2008:289). All textile remains were fragmentary, and no complete sets of clothing or coffin linings were found. The soil at the burial level was wet or waterlogged with an average pH of 5.5 (McGowan and Prangnell 2006). In areas of the burial ground which were originally low-lying and which had received dumped rubbish and nightsoil, graves were covered with up to 7m of refuse (Prangnell and McGowan 2009). Parts of the site had also received contaminated soil fill, with levels of heavy metals and petrochemicals up to 2470 per cent above the Queensland Environmental Threshold (McGowan 2008:219). The iron phosphate mineral, vivianite, was found associated with human bones and the edges of grave pits in 25 burials (McGowan and Prangnell 2006). Extensive research into the taphonomic conditions at the North Brisbane Burial Ground determined that soil temperature, soil pH, fluctuating groundwater levels, high soil salt content, chemical attack from landfill leachate, ongoing microbial attack, continual disturbance of the site and excessive weight of soil overburden were the primary factors involved in the degradation of human remains and artefacts at the site (McGowan 2008:357-360). To date the aspects of the North Brisbane Burial Ground that have been published include DNA analysis (Haslam et al. 2003), wood identification (McGowan and Prangnell 2009), the occurrence of vivianite (McGowan and Prangnell 2006) and soil temperature calculations (Prangnell and McGowan 2009).

Thirty-four of the excavated burials yielded a total of 71 buttons representing 23 different types and sizes. The buttons are made from a range of materials including metal, ceramic, bone and shell. These buttons were analysed using high and low magnification microscopy, typed and their morphology compared to those from other published sources. The effects of taphonomic processes are also discussed in order to explain the apparent absence of some button types.

BUTTONS IN BURIALS

Because of the loss of records from Brisbane undertaking firms covering the period 1843–1875, little is known regarding burial practices in the first few decades of free settlement in Brisbane, and the role (if any) that buttons played in these practices. However, it is likely that choices relating to burials in Brisbane mirrored the dominant practices in England. To date, there have been no reported instances of buttons being used to decorate the interior or exterior of nineteenth century English coffins, nor those of the same period excavated from the United States or Canada. Therefore, buttons excavated from burials are more likely to indicate the use of clothing to dress the deceased: either a mass-produced shroud garment (Janaway 1993:96, 104-108), or an item from the person’s wardrobe.
Ready-to-wear clothing (and presumably also mass-produced shroud garments) was imported from England (eg Moreton Bay Courier 4 July 1846:1,3) into Brisbane Town, so it is possible many types of buttons entered the colony attached to these items in the period 1843–1875. From 1846 onwards, loose buttons were also advertised for sale in the local Brisbane newspaper at haberdasheries and general stores, and at auction (Moreton Bay Courier 20 June 1846:3; Brisbane Courier 4 September 1865:6). Little is known regarding the final retail or auction price of buttons in Brisbane, except for an advertisement in the Brisbane Courier in 1867 in which Buxton’s haberdashery offered a sale price of one penny per dozen for buttons, and this was reportedly a large reduction on former prices (Brisbane Courier 22 August 1867:1). For comparison, the Brisbane Courier newspaper cost four pence per issue in 1866.

Mother-of-pearl buttons seem to have had an enduring appeal in Brisbane, with “pearl” buttons available at least from 1850 until 1873, and possibly until the end of the century (eg Brisbane Courier 14 February 1873:1). Textile covered buttons were also widely available as loose purchases from 1856, and could be covered in a variety of cloths from satin and terry (Moreton Bay Courier 26 April 1856:3), to coloured silk (The Courier 23 April 1863:1), and linen and velvet (Brisbane Courier 8 June 1866:6). Similarly, buttons made from metal came in a variety of materials including brass, iron and steel, and metal plated (Moreton Bay Courier 26 April 1856:3; Brisbane Courier 13 July 1867:8). It is likely that the plated buttons were silver-plated brass buttons, produced primarily for liveries and uniforms (Cole 1892-45). Pure 18 carat gold sleeve buttons and shirt studs were imported directly from Sydney in 1858 (Moreton Bay Courier 27 November 1858:3) and gilt brass buttons were among haberdashery items auctioned in 1866 (Brisbane Courier 19 September 1866:6).

Three advertisements listing bone buttons appeared in the Brisbane Courier newspaper between 1864 and 1867. These were all auction sales in which the buttons were sold among lots of haberdashery and general goods (Brisbane Courier 23 July 1864:7; 8 March 1866:6; 12 January 1867:8). By contrast, ivory buttons were advertised only once between 1843 and 1875, by Samuel Davis & Co, importers of British and foreign general merchandise and wholesale jewelers (Brisbane Courier 14 February 1873:1). Other button types advertised for sale in single advertisements between 1843 and 1875 include ladies and gents “fancy stone buttons” and “fancy glass buttons” (Moreton Bay Courier 3/11/1860:1), jet buttons (Brisbane Courier 12 January 1867:8), crystal and “Japan” buttons (Brisbane Courier 28 June 1867:4), and sets of pebble buttons (Brisbane Courier 5 September 1873:4). The “Japan” buttons referred to were ceramic Satsuma buttons made from earthenware or faience and decorated with scenic subjects, flora and fauna (Peacock 2008:54).

Unfortunately, many Brisbane newspaper advertisements of the period do not specify the materials from which the buttons were made, listing only “coat”, “vest”, “waistcoat”, “dress”, “shirt” and “trouser” buttons for sale (eg Moreton Bay Courier 25 August 1849:3; Brisbane Courier 5 October 1867:8). Similarly, the term “fancy buttons” appeared repeatedly in advertisements from 1850 until after 1875, with no further indication as to their design or composition (eg Moreton Bay Courier 17 August 1850:1). It is therefore possible for a wide variety of buttons to have made their way into the archaeological record in interments made at the North Brisbane Burial Ground between 1843 and 1875.

In England, ready-made shroud garments sometimes had a row of two, three or four small buttons down the centre-front of the garment, as well as lines of pleating and ruffles (see Litten 1991, Figs 39 and 41). To date, no studies of these buttons excavated from archaeological contexts have been published, so their composition and morphology remain unclear. However, buttons interred as part of personal clothing worn by the deceased have been documented from excavations in the United Kingdom (Cox and Stock 1995; Janaway 1993), the United States (Bromberg et al. 2000; Deegan 1987; Favret 2006; Ford 2006; Strezewski 2003), and from Canada (Beattie and Savelle 1983; McKillop 1995). By contrast, there have been no published studies of buttons excavated from funerary contexts within Australia. Among the unpublished literature is a report on the excavation of 109 burials from the Cadia Cemetery, Cadia, New South Wales which received interments between 1864 and 1927 (Higginbotham 2002:91-95) described 17 children’s burials containing 13 porcelain and mother-of-pearl buttons, one bone button, two copper alloy buttons covered with textiles and one copper ring presumed to be the foundation for a thread or cloth-covered button. A further 31 adult burials at Cadia contained buttons, including small ceramic and mother-of-pearl buttons, textile covered copper alloy buttons, trousers buttons inscribed with the maker’s name or political slogan, and a fancy vest button with a porcelain insert decorated with a foliate pattern. Unfortunately, these buttons were not extensively described or illustrated as part of the report.

METHODS

Seventy-one historic buttons from the Anglican, Roman Catholic and Presbyterian cemeteries at the North Brisbane Burial Ground were examined in their excavated condition without washing in order to preserve trace evidence for future study. Low magnification light microscopy was conducted on Olympus SZ61 and Olympus XZS16 microscopes with incident light. High magnification light microscopy was undertaken using an Olympus BX60 microscope with light directed from above the samples. The buttons were viewed in dark field, bright field, crossed polarized light and plane polarized light. Digital images were taken using the QCapture Pro 6.0 program. Information recorded included the material from which the button was made, the colour of the button, the type of fixing (eg shank, sew-through), the number and diameter of sewing holes, the dimensions of the shank, the overall diameter of the button, the diameter of a central depression (if present), the maximum thickness of the button, the thickness of the button edge, particular decorations on the front and back faces of the button, and documentation of any textile remains associated with the button or holes. The presence of mineral growths of vivianite was also recorded. Because human bone material was so poorly preserved at North Brisbane, the presumed age of the deceased was assumed on the basis of coffin length, with coffins under 1250mm in length taken to be those of children, and those longer than this dimension adult. Unfortunately in some instances, burials were extensively damaged by construction equipment prior to the archaeological team being called in, and an accurate measurement of coffin length could not be made. In these cases, the presumed age of the deceased is given as “unknown”.

RESULTS

A total of 397 graves were recorded and removed as part of the salvage excavation at the North Brisbane Burial Ground site. Of these, 15 (3 per cent) were Aboriginal, 191 (48 per cent) were Anglican, 162 (42 per cent) were Roman Catholic, and 29 (7 per cent) were Presbyterian. In accordance with the wishes of the Traditional Owners, no samples were taken from...
Aboriginal burials. Thirty-four of the 397 excavated burials yielded buttons: 12 in the Anglican cemetery, 18 in the Roman Catholic cemetery and 4 in the Presbyterian cemetery. Of the 71 buttons studied, 35 (49 per cent) were recovered from the Anglican cemetery, 32 (45 per cent) from the Roman Catholic, and 4 (6 per cent) from the Presbyterian cemetery.

For ease of comparison with other Australian and overseas buttons excavated from nineteenth-century contexts, the North Brisbane Burial Ground buttons were classed into 23 types based upon composition and morphology, described in detail in Table 1. The typology consists of seven types of ceramic buttons, seven types of metal buttons, four types of bone

### Table 1: Button typology from the North Brisbane Burial Ground.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description (including Munsell Colour)</th>
<th>Illustration</th>
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<tbody>
<tr>
<td>1</td>
<td>Ceramic; glazed; white; four hole sew-through; plain (no decoration); bi-convex profile. Mean overall diameter 10.9mm, mean diameter of central depression 5.2mm, mean maximum thickness 2.7mm, mean thickness at edge 0.8mm, mean diameter of holes 1.1mm.</td>
<td><img src="Image1" alt="Illustration" /></td>
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<tr>
<td>2</td>
<td>Ceramic; glazed; white; four hole sew-through; plain (no decoration); bi-convex profile. Overall diameter 8.5mm, diameter of central depression 4.2mm, maximum thickness 1.9mm, thickness at edge 0.5mm, diameter of holes 1.2mm.</td>
<td><img src="Image2" alt="Illustration" /></td>
</tr>
<tr>
<td>3</td>
<td>Ceramic; glazed; white; four hole sew-through; plain (no decoration); bi-convex profile. Overall diameter 12.6mm, diameter of central depression 6.8mm, maximum thickness 3.0mm, thickness at edge 1.0mm, diameter of holes 1.0mm.</td>
<td><img src="Image3" alt="Illustration" /></td>
</tr>
<tr>
<td>4</td>
<td>Ceramic; glazed; white; four hole sew-through; plain (no decoration); bi-convex profile, steep angle up to central depression. Overall diameter 10.7mm, diameter of central depression 5.5mm, maximum thickness 3.5mm, thickness at edge 1.0mm, diameter of holes 1.2mm.</td>
<td><img src="Image4" alt="Illustration" /></td>
</tr>
<tr>
<td>5</td>
<td>Ceramic; glazed; white; four hole sew-through; pie crust decoration composed of impressed lines radiating from central depression, creating a wavy effect at the button's edge. Overall diameter 11.8mm, diameter of central depression 5.8mm, maximum thickness 2.5mm, thickness at edge 1.2mm, diameter of holes 1.2mm.</td>
<td><img src="Image5" alt="Illustration" /></td>
</tr>
<tr>
<td>6</td>
<td>Ceramic; glazed; white; four hole sew-through; ringed pie crust decoration, consisting of incised decoration of Type 5 with a plain ring around the outer margin of the button. Level of preservation: Excellent. Mean overall diameter 10.9mm, mean diameter of central depression 5.5mm, mean maximum thickness 2.9mm, mean thickness at edge 1.7mm, mean diameter of holes 1.0mm.</td>
<td><img src="Image6" alt="Illustration" /></td>
</tr>
<tr>
<td>7</td>
<td>Ceramic; glazed; white; four hole sew-through; spiral pie crust decoration, consisting of pie crust style incisions spiraling out from central depression. Overall diameter 11.0mm, diameter of central depression 4.5mm, maximum thickness 2.9mm, thickness at edge 1.0mm, diameter of holes 1.0mm.</td>
<td><img src="Image7" alt="Illustration" /></td>
</tr>
<tr>
<td>8</td>
<td>Metal; copper alloy; dark gray (7.5YR 4/1) with microscopic patches of copper corrosion minerals in dark blue (Plant colour 2.5B 3/4) and mid teal green (Plant colour 7.5G 6/6); four hole sew-through; ring around outer margin of button. Dimensions including corrosion layer: overall diameter 12.0mm, diameter of central depression 5.9mm, maximum thickness 2.4mm, thickness at edge 1.3mm, diameter of holes 1.0mm; diameter of decorative ring 10.5mm.</td>
<td><img src="Image8" alt="Illustration" /></td>
</tr>
<tr>
<td>9</td>
<td>Metal; iron alloy; very dark gray (10YR 3/1); four hole sew-through; plain (no decoration), back of button is flat. Hollow, made of front and back parts pressed together. Dimensions including corrosion layer: overall diameter 15.5, diameter of central depression 5.7mm, maximum thickness 3.3mm, thickness at edge 1.7mm, diameter of holes 1.2mm.</td>
<td><img src="Image9" alt="Illustration" /></td>
</tr>
<tr>
<td>10</td>
<td>Metal; copper alloy; very dark gray (2.5Y 3/1) with microscopic patches of light red copper (2.5YR 6/8) and green copper corrosion minerals (Plant colours 2.5G 8/2 and 5G 8/2); two hole sew-through; decorative ring around edge of button (on face only) and interlinked rings around the central two holes (present on face and back of button); no central depression. Hollow, made of front and back parts pressed together. Dimensions including corrosion layer: overall diameter 16.7mm, diameter of central area with holes 9.3mm, maximum thickness 3.0mm, thickness at edge 1.0mm, diameter of holes 2.1mm; diameter of decorative ring 14.3mm.</td>
<td><img src="Image10" alt="Illustration" /></td>
</tr>
<tr>
<td>11</td>
<td>Metal; copper alloy; dark grayish brown (10YR 4/2) with microscopic patches of green corrosion minerals (Plant colour 5G 8/2; 7.5G 7/6); four hole sew-through; pronounced bulb on back of button where central depression protrudes. Dimensions including corrosion layer: mean overall diameter 16.0mm, mean diameter of central depression 8.6mm, mean maximum thickness 4.4mm, mean thickness at edge 1.5mm, mean diameter of holes 1.3mm.</td>
<td><img src="Image11" alt="Illustration" /></td>
</tr>
<tr>
<td>12</td>
<td>Metal; copper alloy; very dark grayish brown (10YR 3/2), with microscopic patches of green corrosion minerals (Plant colour 7.5G 8/4); four hole sew-through; pronounced bulb on back of button where central depression protrudes. Dimensions including corrosion layer: overall diameter 13.9mm, diameter of central depression 7.7mm, maximum thickness 4.1mm, thickness at edge 1.4mm, diameter of holes 1.0mm.</td>
<td><img src="Image12" alt="Illustration" /></td>
</tr>
<tr>
<td>13</td>
<td>Metal; copper alloy, dark grayish brown (10YR 4/2) with microscopic patches of green corrosion minerals (Plant colour 7.5G 7/4); four hole sew-through; plain (no decoration), no central depression. Dimensions including corrosion layer: overall diameter 16.2mm, maximum thickness 2.1mm, thickness at edge 0.9mm, diameter of holes 1.1mm.</td>
<td><img src="Image13" alt="Illustration" /></td>
</tr>
<tr>
<td>Type</td>
<td>Description (including Munsell Colour)</td>
<td>Illustration</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>14</td>
<td>Metal; copper alloy; pale brown (10YR 6/3) to light brownish gray (10YR 6/2) with microscopic patches of green corrosion minerals (Plant colours 7.5BG 7/4 and 7.5G 5/4); shanked button; plain (no decoration); made in three parts with face bent around the edge of the back of the button, leaving a rim on the back edge of the button, shank soldered on; front face is flat. Dimensions including corrosion layer: mean overall diameter 19.6mm, mean thickness at edge 2.2mm, mean height of shank 6.0mm, mean width of shank 3.6mm, mean length of shank 6.6mm. Back of button illustrated.</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>15</td>
<td>Metal; copper alloy covered with textile; brown (7.5YR 5/2); un-known attachment method (no shank, loops, or sew-through holes); no central depression. Overall diameter 10.2mm, maximum thickness 2.9mm, thickness at edge 1.2mm. Textile cover obscures detail of the inner metal frame.</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>16</td>
<td>Abalone shell; iridescent green (Plant colour 7.5G 7/6) and purple (Plant colour 5RP 6/4); four hole sew-through; raised outer rim, large flat central depression, back of button is flat. Overall diameter 22.2mm, diameter of central depression 16.1mm, maximum thickness 2.8mm, thickness at edge 2.8mm, thickness of central depression 1.7mm, diameter of holes 2.2mm.</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>17</td>
<td>Bone; very pale brown (10YR 7/4); four hole sew-through; incised ring around central depression. Overall diameter 13.6mm, diameter of central depression 7.6mm, maximum thickness 2.5mm, thickness at edge 0.8mm, thickness of central depression 1.5mm, diameter of holes 1.7-2.6mm (irregular).</td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
<tr>
<td>18</td>
<td>Bone; brown (7.5YR 5/2); four hole sew-through; incised ring around central depression. Lathe turned-back of button has raised area around holes where turning tool was unable to reach. Overall diameter 17mm, diameter of central depression 10.7mm, maximum thickness 3.6mm, thickness at edge 1.5mm, diameter of holes 1.4mm.</td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
<tr>
<td>19</td>
<td>Bone; brown (7.5YR 5/2); four hole sew-through; incised ring around central depression. Lathe turned-face has vertical slit where button secured for turning, back has raised area around holes where turning tool was unable to reach. Mean overall diameter 18.3mm, mean diameter of central depression 11.4mm, mean maximum thickness 4.0mm, mean thickness at edge 2.0mm, diameter of holes 2.0mm.</td>
<td><img src="image6.png" alt="Image" /></td>
</tr>
<tr>
<td>20</td>
<td>Bone; light yellowish brown (10YR 6/4); four hole sew-through; back of button is flat. Overall diameter 18.4mm, diameter of central depression 8.5mm, maximum thickness 2.8mm, thickness at edge 1.1mm, thickness of central depression 2.0mm, diameter of holes 1.7mm.</td>
<td><img src="image7.png" alt="Image" /></td>
</tr>
<tr>
<td>21</td>
<td>Ivory; dark grayish brown (10YR 4/2); four hole sew-through; plain (no decoration), no central depression. Overall diameter 13.6mm, maximum thickness 2.9mm, thickness at edge 1.2mm, diameter of holes 1.0mm.</td>
<td><img src="image8.png" alt="Image" /></td>
</tr>
<tr>
<td>22</td>
<td>Metal; alloy not containing copper, flattened ring with central hole; black (7.5YR 2.5/1). Dimensions including corrosion layer: overall diameter of ring 11.2mm, diameter of central hole in ring 6.1mm, maximum thickness or ring 2.0mm, thickness at edge of ring 1.5mm.</td>
<td><img src="image9.png" alt="Image" /></td>
</tr>
<tr>
<td>23</td>
<td>Metal; copper alloy, flattened ring with central hole; very dark gray (10YR 3/1) with microscopic patches of green corrosion minerals (Plant colour 5G 8/2). Dimensions including corrosion layer: overall diameter of ring 13.2mm, diameter of central hole in ring 6.0, maximum thickness or ring 2.4mm, thickness at edge of ring 1.4mm.</td>
<td><img src="image10.png" alt="Image" /></td>
</tr>
</tbody>
</table>

The majority of burials containing buttons were those of adults, with buttons composed of ceramic, metal, bone, ivory and thread (Table 2). By contrast the three child burials contained only ceramic and thread buttons. The majority of ceramic buttons were excavated from the Roman Catholic cemetery, while most of the metal buttons were found within the Anglican cemetery. Bone buttons and covered buttons were only found in burials made in the Anglican cemetery, while thread buttons only occurred in Presbyterian burials.

The seven types of identified ceramic button were all glazed white and featured four central holes for sewing onto the garment. The majority of these button types (Types 1, 2, 3, and 4) were plain, without any significant decoration other than a central depression housing the sewing holes. Button Types 5, 6, and 7, however, were decorated with variations of the “pie crust” design described by Lindbergh (1999:51-2). Button Types 2 and 3 were essentially similar to Type 1, varying only in diameter, while Type 4 varied from Type 1 only in overall thickness. Two adult burials in the Roman Catholic cemetery (F197 and F274) were notable in that they combined one plain Type 1 button with a decorative Type 5 or
6 button. It is possible that in these cases the fancier button was placed in a more obvious position on the garment so that its decoration could be better appreciated, while the plain Type 1 was placed lower on the body or inside the garment.

Of the seven distinct types of metal buttons identified, all but one type (Type 9, an iron button) were composed of a copper-containing alloy, probably brass (Table 1). The method of attachment of these buttons varied from two hole sew-through (Type 10), to four hole sew-through (Types 8, 9, 11, 12, 13), and shanked (Type 14). The majority of metal buttons from North Brisbane were composed either of solid metal stamped into shape (Types 8, 11, 12 and 13), or two pieces pressed together with a hollow void in between (Types 9 and 10). However, Type 14 brass buttons were manufactured in three parts: the flat face, the smaller diameter back over which the face was folded, and a separate shank soldered onto the back. The most numerous metal buttons excavated were Type 11 buttons: large solid metal four hole sew-through buttons with a central depression and a pronounced bulb on the back face of the button where the central depression had been stamped through, described by Lindbergh (1999) as being “trouser” buttons. One example of this button was excavated from a burial in the Presbyterian cemetery (F170), while a set of five identical Type 11s were excavated from the burial of an adult in the Anglican cemetery (F48). Two of the shanked Type 14 buttons were of particular interest because the corrosion minerals on the back preserved fragments of the original garment to which the buttons were attached. This garment was made from a twill woven textile composed of a plant fibre warp (now totally degraded) and a wool weft. The weave pattern was identified as a 1/2 twill, where the warp threads pass over one, and under two weft threads. On one of these buttons, the woollen threads of the button-hole against which the button was resting during burial were also preserved on the rear face of the button (Figure 2). From the morphology of the buttons and the textile type, it is likely the original garment was a coat or jacket.

All of the bone buttons recovered from the North Brisbane Burial Ground were found in burials in the Anglican cemetery. Button Types 18 and 19 were excavated from the same adult burial (F13) and showed evidence of having been turned on a lathe. The front face of these buttons had a small vertical impression in the very centre where the turning spindle would have been pressed up against the bone material, while the back

<table>
<thead>
<tr>
<th>Button Type</th>
<th>Number Collected</th>
<th>Burial Number</th>
<th>Cemetery</th>
<th>Age</th>
<th>Number Per Burial</th>
<th>Preservation</th>
<th>Textile Remains</th>
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<tbody>
<tr>
<td>1</td>
<td>33</td>
<td>F51</td>
<td>Anglican</td>
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<tr>
<td>57</td>
<td>Anglican</td>
<td>Adult</td>
<td>3</td>
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<td>-</td>
<td></td>
<td></td>
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<tr>
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<td>-</td>
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<td></td>
</tr>
<tr>
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<td></td>
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<tr>
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<td>Cotton thread</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F197</td>
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<td>Excellent</td>
<td>Cotton thread</td>
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<td></td>
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<tr>
<td>F221</td>
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<td>Cotton thread</td>
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<tr>
<td>F232</td>
<td>Roman Catholic</td>
<td>Adult</td>
<td>3</td>
<td>Good to Excellent</td>
<td>Blue cotton thread</td>
<td></td>
<td></td>
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<tr>
<td>F257</td>
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<td>Fair</td>
<td>-</td>
<td></td>
<td></td>
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<tr>
<td>F263</td>
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<td>Excellent</td>
<td>-</td>
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<td></td>
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<tr>
<td>F264</td>
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<td>4</td>
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<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F265</td>
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<td>Excellent</td>
<td>-</td>
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<tr>
<td>F274</td>
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<td>Excellent</td>
<td>-</td>
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<tr>
<td>F311</td>
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<tr>
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<td>-</td>
<td></td>
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<tr>
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<td>-</td>
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<td>Excellent</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>F132</td>
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<td>-</td>
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<td>3</td>
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<td>4</td>
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</tr>
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<td>5</td>
<td>1</td>
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<td>1</td>
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<td>-</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>F259</td>
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<td>Child</td>
<td>1</td>
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<td>-</td>
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<tr>
<td>7</td>
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<td>F172</td>
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<td>1</td>
<td>Excellent</td>
<td>Silk thread</td>
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<tr>
<td>8</td>
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<td>1</td>
<td>Fair</td>
<td>-</td>
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<tr>
<td>9</td>
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<td>-</td>
</tr>
<tr>
<td>10</td>
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<td>Fair to Good</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
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<td>-</td>
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<tr>
<td>13</td>
<td>1</td>
<td>F13</td>
<td>Anglican</td>
<td>Adult</td>
<td>1</td>
<td>Fair</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>5</td>
<td>F13</td>
<td>Anglican</td>
<td>Adult</td>
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<td>Wool thread, twill weave textile, wool button hole</td>
</tr>
<tr>
<td>15</td>
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<td>Anglican</td>
<td>Adult</td>
<td>2</td>
<td>Fair</td>
<td>Twill weave textile covering</td>
</tr>
<tr>
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<td>17</td>
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<td>Anglican</td>
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<td>-</td>
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<td>21</td>
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<td>-</td>
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<tr>
<td>22</td>
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<td>F150</td>
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<td>Child</td>
<td>1</td>
<td>Fair</td>
<td>-</td>
</tr>
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<td>1</td>
<td>F169</td>
<td>Presbyterian</td>
<td>Adult</td>
<td>1</td>
<td>Poor</td>
<td>Wool fibres in centre of ring</td>
</tr>
</tbody>
</table>
face of the buttons preserved a raised area right at the centre where the turning tool could not reach, again due to the presence of the turning spindle (Figure 3). A pair of bone buttons with a flat back (Type 20) were excavated from an adult burial in the Anglican cemetery (F15), with one showing a greater degree of decomposition than the other. It is possible that this is due to the varying placement of the buttons in relation to different parts of the body during the decomposition process.

A twill woven textile was used to cover the two Type 15 buttons excavated from an adult burial in the Anglican cemetery (F295). Both the warp and weft of the textile were composed of wool threads arranged in a 2/2 twill pattern. The warp and weft were spun in the Z direction and the thread diameter varied from 160–180μm for the warp, to 200–220μm for the weft. The copper alloy base frame was visible on the back of these buttons, with microscopic patches of green corrosion minerals (Munsell 5BG 4/6) evenly distributed over the metal surface. The Anglican cemetery also produced the only shell button in the North Brisbane Burial Ground collection (Type 16). This large diameter button was coloured in shades of iridescent green and purple, a colour combination consistent with abalone or paua shell, rather than the pale iridescent cream, pink and green colours of mother-of-pearl.

One button, probably composed of ivory, was excavated from the burial of an adult in the Roman Catholic cemetery (F357). This button was heavily encrusted on the front and back faces with extensive growths of vivianite, making it difficult to conclusively identify the material from which it was made. However, while the button visually appeared to be composed of bone, the microstructure of the button and its fracture pattern were consistent with elephant ivory. Both of the thread buttons excavated from the Presbyterian section of the North Brisbane Burial Ground were also highly degraded, with just the metal ring framework evident, and none of the original embroidery thread visible to the naked eye. These were recovered from the burials of a child and an adult, and only the larger button from an adult burial (Type 23) retained microscopic traces of wool embroidery threads in the central void of the ring. Unfortunately, the threads were so fragmentary that the pattern of the embroidery could not be identified.

In the North Brisbane Burial Ground button collection, threads used to attach buttons to items of apparel were still extant on 16 buttons collected from 11 burials (Table 2). The threads were composed of wool, cotton and silk fibres. Cotton threads were preserved in the central sewing holes of five Type 1 buttons. In one of these cases (F232), the cotton thread was dyed blue. Cotton sewing thread was also identified in association with the Type 4 ceramic button and one Type 19 bone button, while one Type 17 button contained the remnants of a blue dyed cotton thread. Wool sewing threads were identified in association with the abalone shell button (Type 16) and the back of the textile covered buttons (Type 15). Corrosion products on the back faces of the shanked Type 14 buttons preserved a more heavy-duty wool sewing thread composed of two S-spun wool bundles twisted together to make a Z-spun two-ply thread. The only example of a silk sewing thread was found within the sewing holes of the single Type 7 ceramic button.

Vivianite mineral growths were detected on six buttons in the North Brisbane Burial Ground collection. Vivianite crystals were found within the central sewing holes of one Type 1 button (F121), the Type 4 and 7 buttons, and one of the Type 6 buttons (F259). More extensive patches of vivianite growth occurred among the textile fibres covering the Type 15 buttons, and heavy encrustations of vivianite were noted on both faces of the ivory button. No vivianite deposits occurred
in association with the copper alloy metal buttons. At the North Brisbane Burial Ground, 25 burials were found with vivianite deposits visible to the naked eye, associated with human bone material and the edges of grave pits (McGowan and Prangnell 2006). Two of these burials (F96 and F221) also contained buttons, but no microscopic vivianite crystals were found associated with these buttons. Instead, seven burials contained buttons with microscopic vivianite growth, and no other visual indications of the mineral’s presence, indicating that the distribution of groundwater high in iron and phosphate (the constituents of vivianite) was much more widespread at the site than had previously been supposed.

In summary, buttons excavated from the North Brisbane Burial Ground showed great variety in design, and were made of essentially six types of material: ceramic, metal, bone, shell, ivory and textiles. A small proportion of these buttons retained some evidence of the threads used to attach them to garments, and in one unique burial, the remains of the garment itself and one of its button holes were preserved in corrosion products on the back face of the buttons.

**DISCUSSION**

Buttons were excavated from 34 burials in the North Brisbane Burial Ground, and while the majority of burials containing buttons were located in the Roman Catholic cemetery, the actual number of buttons recovered was greatest from the Anglican cemetery. This was primarily due to the presence of sets of metal and bone buttons found in some Anglican burials. These sets suggest that the deceased was buried in personal apparel. In the Roman Catholic cemetery, sets of four or five Type 1 ceramic buttons are also likely to have been attached to a garment, perhaps a shirt or blouse with buttons down the centre-front. Similarly, buttons found in burials containing the remains of machine-knitted stockings, and woven dress fabrics are most likely to have been associated with personal attire. From early twentieth-century records, it is known that at least one person was interred at the North Brisbane Burial Ground in their own clothes rather than a ready-made shroud garment. The official government report of exhumations conducted during the 1913–1914 landscaping of the burial ground prior to its conversion into a park and sports facility reported finding the skeletonised remains of a man dressed in a well-preserved brown riding suit with waistcoat. This particular body had been interred for sixty years, dating the burial to the early 1850s (Queensland Parliamentary Papers 1914:96).

The greatest variety of ceramic button designs came from the Roman Catholic cemetery, but overall, the greatest diversity in button materials was found in Anglican burials, with buttons composed of ceramic, metal, bone, shell and textile-covered buttons identified. Having noted this diversity, however, it is important that a number of fancier button types mentioned in contemporary newspaper reports did not apparently find their way into the archaeological record in the North Brisbane burials. For example, gold, silver-plated, steel, stone, pebble, jet, glass, crystal and painted Satsuma ceramic buttons were sold in Brisbane in the period 1843–1874, but were not present at excavation. This phenomenon could be taken as an expression of the Victorian value of “thrift”, where the recycling of domestic materials was seen as a virtue (Lucas 2002), and valuable buttons could have been re-used and attached to other garments. Alternatively, it is possible that grieving relatives made a conscious choice to clothe the deceased in less expensive attire in an effort to decrease the overall cost of holding a respectable funeral that was consistent with social expectations. In the 1860s and 1870s, newspaper advertisements for undertaking services catered for this need by advertising that their company could provide “economy and respectability” in funerals (eg The Courier 14 November 1863:4; Brisbane Courier 30 November 1871:1).

It is notable that only a small proportion of burials containing buttons were those of children. This may perhaps reflect a preference for burying children in shrouds fastened with pins, or smock-type garments without buttons, rather than regular dress clothing. The disproportionate presence of buttons in adult versus children’s burials was also noted by McKillop (1995) at St Thomas Anglican Churchyard, Ontario, Canada. This burial ground received interments between 1821 and 1874, a time period for the most part contemporaneous with the North Brisbane Burial Ground, and from a similar British colonial setting. With very few specific undertaker’s records preserved from Brisbane covering the period of the North Brisbane Burial Ground’s operation, any age-based differences in burial practices remain largely unknown. An alternative explanation for this deficit may, however, lie in the particular taphonomic conditions of the North Brisbane Burial Ground site which would have made smaller sized buttons composed of vulnerable materials such as mother-of-pearl more prone to degradation.

All of the white glazed ceramic buttons (Types 1–7) excavated from the North Brisbane Burial Ground were “Prosser buttons”, also known as “small china” buttons (Sprague 2002). These were made by pressing a powdered clay and quartz in a cast-iron mould and giving an initial firing, followed by glazing or the application of transfer-printed designs and another firing (Sprague 2002). The

![Figure 3: Lathe turning marks on a Type 19 button. Face (a) shows central incision, back (b) shows raised area where turning tool could not reach, 6x magnification.](image-url)
manufacturing process was devised by Richard Prosser of Birmingham in 1840, and later improved in 1855 (Peacock 2008:54). Because they could be produced in large quantities and were relatively inexpensive, Prosser buttons had a wide distribution during the nineteenth and early twentieth century, until finally replaced by plastic alternatives in the interwar years (Peacock 2008:54). Ceramic buttons produced by the Prosser process are useful archaeologically since they provide a *terminus post quem* of 1840, although in some instances their value has gone unrecognized because they can be easily misidentified as glass buttons (Sprague 2002). Lindbergh (1999) states that the primary uses of ceramic buttons with a diameter of 10-12mm (like those from North Brisbane) were as closures for shirts and underwear. Although "Prosser" or "small china" buttons are not mentioned specifically in Brisbane newspaper advertisements, it is likely that these were so generic in design and so readily available that they fell simply into the class of “assorted buttons” or “shirt buttons”.

In Australia, Prosser buttons were among the 963 buttons excavated from Casselden Place, Melbourne, a site encompassing working-class dwellings and industrial buildings covering the period 1850–1950 (Porter and Ferrier 2006; Murray 2006), and were also excavated from late nineteenth century domestic dwellings at the CSR Pyrmont site, Sydney (Lindbergh 1999). At Cada Cemetery “small china” buttons were excavated from the burials of both adults and children (Higginbotham 2002:91-2). Archaeological excavations at the Omata Stockade, Taranaki, New Zealand (occupied 1860–1866) found that Prosser buttons were the most abundant among the 111 buttons collected (Prickett 1994:69-73). The majority of these buttons were plain, resembling the Type 1, 2, 3 and 4 buttons described from North Brisbane. However, Prickett’s Type 1E button is almost identical to the spiral pie crust Prosser button described from burial F172 at North Brisbane, giving a possible interment date in the 1860s (see Prickett 1994:71 Fig 2.48).

Small numbers of ceramic Prosser buttons have been excavated from the Foster burial site, Charlottesville, Virginia (interments between 1833 and 1906) (Ford 2006); from the burial of a soldier belonging to the Louisiana Tiger Rifles (d. 1861) (Deegan 1987); from the Quaker Burying Ground, Alexandria, Virginia (interments from 1784 to the 1890s) (Bromberg et al. 2000:472-481); and from four burials of patients in the grounds of the Eastern Kentucky Lunatic Asylum, Lexington (interred between 1839 and 1861) (Favret 2006). Favret’s Lexington excavation is of particular interest since the deceased were interred with either single Prosser buttons (burials 3 and 4), or with sets of two or three buttons (burials 6 and 11), a similar distribution to that seen at North Brisbane. Favret took this to indicate that individuals buried with Prosser buttons were not buried in shrouds, but wore regular street clothes, for example a button-up shirt. However, the same conclusion cannot be drawn regarding the North Brisbane Burials. From contemporary illustrations, it is known that some mass-produced shroud garments available in England (and presumably imported into Brisbane) were decorated in the centre-front with small buttons, possibly Prossers, so their presence at North Brisbane could equally represent a shroud garment as a button-up shirt or underwear.

During the nineteenth century, bone buttons were also among the most common types of utilitarian button (Favret 2006), with smaller sized buttons used as fastenings on underclothes, and larger diameter buttons used as closures for shirts and trousers (Lindbergh 1999). The method of manufacture was to turn the bone piece on a lathe (Strezewski 2003:12), and evidence of this turning process can be seen on some of the buttons excavated from the North Brisbane Burial Ground. In Australia, bone trouser and shirt buttons were used on convict uniforms in Tasmania (Casella 2000), New South Wales (Lindbergh 1999) and on Norfolk Island (Starr 2001). Bone buttons were also excavated from nineteenth-century domestic buildings at Casselden Place, Melbourne (Porter and Ferrier 2006) and the CSR Pyrmont site, Sydney (Lindbergh 1999). In the United States, bone buttons have been reported from excavated burials at the Foster burial site, Charlottesville (Ford 2006), the Quaker Burying Ground, Alexandria (Bromberg et al. 2000), the Eastern Kentucky Lunatic Asylum, Lexington (Favret 2006), and the Michigan City Old Graveyard, Indiana (interments between 1835 and 1864) (Strezewski 2003). While the morphology of the Type 18 and 20 bone buttons excavated from North Brisbane have not been reported elsewhere in the literature, one example virtually identical in dimensions to Type 17 from North Brisbane was excavated at the Warea Redoubt, Taranaki, New Zealand, occupied from 1865 to 1868 (Prickett 1994:118-119, Fig 3.31). Bone button Type 19 from North Brisbane also matches the description of a large number of turned bone buttons excavated from Fort Fisher, a Civil War fortification in North Carolina dating from 1837–1865 (South 1964, button type 20). Considering these similarities, and the published dates at which this style of decoration appears in New Zealand and the United States, it is possible that these buttons indicate burials made in Brisbane between 1843 and the late 1860s.

Bone production, particularly in places such as Birmingham, also allowed metal buttons to be readily available at little expense to the general population (White 1977). Buttons could either be cast by pouring hot metal into a mould, or stamped out in one or two pieces from sheet metal (Peacock 2008:12). All of the metal buttons from North Brisbane appear to have been made by the stamping method. At North Brisbane, metal buttons often occurred singly or in pairs, suggesting they functioned as closures on shirts or underwear. However, burial F48 is notable in that it contained six trouser buttons, indicating that the apparel used to dress the deceased included street trousers. A similar burial was reported by Cox and Stock (1995) from St Nicholas’s Church, Bathampton; that of a young man who died in 1829 and was buried wearing trousers with plain metal buttons down the outside seams. Trouser buttons appear to have been extremely common at nineteenth-century military and domestic sites, with large numbers excavated from the Omata Stockade, Taranaki, New Zealand (Prickett 1994:69-71), and from the CSR Pyrmont site in Sydney (Lindbergh 1999). Unfortunately, the lack of any text or decoration on the North Brisbane trouser buttons precludes the possibility of narrowing the date range for these buttons. However the unusual Type10 buttons excavated from burial F268 at North Brisbane were very similar in decoration to a brass button excavated from the Omata Stockade, Taranaki, suggesting a possible interment date in the 1860s.

Birmingham was also the home of shell or “pearl” button manufacturing, with factories sourcing white mother-of-pearl shell from producers in the Persian Gulf, Asia and the Pacific, and dark abalone shell from New Zealand and the Pacific (Cole 1892:46; White 1977). By 1866, the Birmingham shell button industry was consuming 22 tons of shells per week (White 1977). Pearl buttons were primarily used in the nineteenth century for fastening shirts and underwear (Strezewski 2003:15), and Lindbergh (1999) notes that they could often be used with other types of buttons on the same garment. Such an arrangement was noted in one burial excavated from Christ Church with All Saints, Spitalfields, London (1729 –1852), where the body was found dressed in a linen shirt with the front fastened using alternating mother-of-pearl and cartwheel (thread) buttons (Janaway 1993:112). While north Queensland had an active mother-of-pearl shell industry from the 1860s, all the collected shell was exported overseas rather than processed locally (Ganter 1994:22, 195).
Therefore, any shell buttons purchased in Brisbane and interred in the North Brisbane Burial Ground are likely to have been imported. It is interesting to note that despite the enduring popularity of mother-of-pearl buttons in Brisbane, and their ready availability, no mother-of-pearl buttons were interred in the North Brisbane Burial Ground. Because small mother-of-pearl buttons were among those found in the burials of adults and children at Cadia Cemetery, New South Wales and overseas at Christ Church with All Saints, Spitalfields (Janaway 1993:112), and at Michigan City Old Graveyard, Indiana (Strezewski 2003:15), it is likely that some of these buttons were also interred with the dead at North Brisbane, but have not survived.

The abalone shell button excavated from the North Brisbane Burial Ground is similar in design to shell buttons excavated from Fort Fisher, North Carolina (South 1964) and from the burial of a sailor from the Franklin Arctic Expedition of 1845–1848 (Beattie and Savelle 1983), although the North Brisbane button has a larger diameter. Therefore, this relatively simple design was available in Britain (and presumably Brisbane) at least in the 1840s and may well have persisted into the late 1860s, since the Fort Fisher site pre-dates the production of American-made shell buttons in the 1870s (White 1977). It may then be possible to date burial F361 in the North Brisbane Burial Ground to a time period between 1843 and 1865. The possibility exists, however, that such a large and attractive button could have been recycled a number of times in the years following its purchase, and been interred with its final owner sometime after 1865.

Ivory buttons were only explicitly advertised for sale in Brisbane from 1873, although it is possible that these were available in earlier years from jewellers and haberdashers and, along with other varieties of button, fell into the catch-all category of “fancy buttons”: ivory button production dates at least from the fourteenth century (Cole 1892:43), but ivory buttons were always a more expensive choice (Peacock 2008:58). In the nineteenth century, ivory buttons could be ornamented by carving or scrimshaw work, or inlaid with semi-precious stones (Peacock 2008:58). The primary source for nineteenth-century button ivory was eastern Africa, with the raw tusks being shipped via ports in Tanzania and Egypt (Beachey 1967), although other ivory sources existed. The lack of decoration on the ivory button recovered from North Brisbane suggests that it may have been among the cheaper types of ivory button available for sale in Brisbane. Alternatively, it is possible that the individual could have carved the button from another ivory object. Solid ivory items offered for sale in Brisbane at this time and earlier include chess pieces and draughts counters (Moreton Bay Courier 23 June 1855:3) and cutlery handles (Moreton Bay Courier 1 February 1851:3), any of which could have furnished the raw material for this small button. It is therefore impossible to provide a firm date range for this type of button.

Hand made cloth-covered buttons were first introduced to Britain in 1801, when they were known as “Florentine” buttons after the silk material used to cover them (Peacock 2008:32). Once the process was mechanised by Birmingham button makers in the 1830s, buttons covered in a greater variety of textiles became cheaper and more readily available, and took part of the market-share previously occupied by metal and gilt buttons (Peacock 2008:32,49). Cloth-covered buttons, could either be mass-produced at a rate of 90 gross per day, or made individually by tailors and dress-makers using small portable presses (Cole 1892:45). The popularity of these kinds of buttons lay in the fact that they could be made in any size and covered with the same material as a dress, jacket or other clothing, thus eliminating the inconvenience of having to match the button colour and style to the garment (Cole 1892:45). The most popular type of mass-produced cloth button in the nineteenth century was the linen button introduced in 1841, and these were primarily used on shirts (Peacock 2008:49). From contemporary Brisbane newspaper advertisements, it is known that silk, satin, terry, linen and velvet were used to cover sets of mass-produced buttons. However, the two cloth-covered buttons excavated from the North Brisbane Burial Ground (burial F295) were covered in a wool twill textile with a weave that was different to commonly available buttons, and it is probable that these were a one-off set produced by a tailor or dress maker to match an item of clothing, such as a bodice or shirt, rather than as a decorative element on a mass-produced shroud garment. The associated machine-knitted stocking fragments within this grave are also suggestive of a set of personal clothing. Because textile-covered buttons were made throughout the period the North Brisbane Burial Ground was in operation, it is not possible to arrive at a date of interment for this burial.

By contrast, the two thread button frames discovered at North Brisbane represent an early type of button that was largely superseded by the introduction of linen covered buttons in 1841. Thread button manufacture dates back to the seventeenth and eighteenth centuries in England, where small cottage industries fed large national distribution firms (White 1977). The centres for this industry were the English counties of Dorset and Staffordshire, and Scotland (Peacock 2008:50). Thread buttons were made by stitching wool, silk or cotton embroidery threads over discs or circular frames made from horn or metal. They could have a domed, doughnut or cart-wheel appearance (Peacock 2008:50, Fig 7). Thread buttons became less fashionable in the early part of the nineteenth century, and the industrialisation of button manufacture (particularly metal button making and cloth covered buttons) further contributed to the decline of thread button sales (Peacock 2008:50; White 1977). The early date of these buttons is exemplified by their appearance in four burials at Christ Church with All Saints, Spitalfields (interments between 1729 and 1852) (Janaway 1993:111, 117), and at the Te Puna Mission Station in the Bay of Islands, New Zealand, established in 1832 (Middleton 2008:186-7). It is highly likely that the thread buttons excavated from two burials in the Presbyterian section of the North Brisbane Burial Ground represent some of the earliest interments made in the cemetery, and most probably date between 1843 and the early 1850s.

CONCLUSION

The analysis of buttons excavated from the North Brisbane Burial Ground has allowed a greater understanding of Brisbane burial practices during the period 1843–1875 than was possible through the examination of contemporary documentary sources. For example, while fancy and expensive buttons were available in Brisbane from the 1840s, the deceased at North Brisbane were generally buried in garments decorated with relatively inexpensive mass-produced buttons. Exceptions to this are the abalone and ivory buttons excavated from adult burials in the Anglican and Roman Catholic cemeteries. The presence of buttons in burials has in the past been taken to indicate that the deceased was dressed in their own clothes rather than a shroud or shroud garment. However, the ready availability of small china buttons from the middle of the nineteenth century onward makes it possible that some were employed to decorate the front of shroud garments in the manner illustrated by Litten (1991), and thus a number of the Prosser buttons recovered at North Brisbane may have been associated with shroud garments. More indicative of personal apparel are the sets of metal and bone buttons, as well as the shell, ivory, cloth-covered and thread buttons. The great majority of
buttons were recovered from adult burials, suggesting a possible age-based difference in button use in Brisbane in the mid- to late-nineteenth century. However, this difference could equally be due to preservation bias brought about by the unique taphonomic conditions of the site.

Of the 34 excavated burials which yielded buttons, only six could be given relative date ranges of interment based upon button morphology. The thread buttons identified from Burials F150 and 169 in the Presbyterian cemetery give these burials a very early probable date of interment between 1843 and the 1850s. The Type 17 and 19 bone buttons excavated from the Anglican cemetery provide a date range of 1843 to the 1860s for burials F13 and F17, while the unique copper alloy Type 10 buttons from Roman Catholic burial F268 give a probable interment date in the 1860s. It is possible that the spiral pivot brooch button (Type 7) collected from the burial of an adult in the Presbyterian cemetery (F172) also dates to the period of the 1860s. The fancy shell and ivory buttons could have been recycled onto a number of garments over a period of years, or even decades, before burial at North Brisbane and so cannot provide any definitive interment date or time period other than the general span of the burial ground’s operation.

The buttons from the North Brisbane Burial Ground form the largest collection of buttons excavated from an Australian nineteenth-century cemetery site. Their analysis has aided in the understanding of the funerary practices of Brisbane’s earliest pioneers, as well as the taphonomic conditions operating at the North Brisbane site. Because this is also the first published study of its kind using Australian material, it provides a point of reference for future studies of buttons excavated from other Australian funerary contexts.

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Harvesting water on a Victorian colonial goldfield

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INTRODUCTION

Miners on Victoria’s colonial goldfields needed substantial quantities of water to wash gold from the earth. Variable rainfall and limited supplies in creeks and rivers, however, meant that miners often had to construct storage dams and lengthy races to bring water from where it was available to where it was needed. On the Creswick alluvial goldfield, located 18km north of Ballarat in central Victoria, the archaeological remains of these water management systems are generally well preserved, and reveal the ways in which miners came to terms with the possibilities and limits of the natural world. As part of an Australian Research Council-funded project, ‘Cultural Landscapes of Colonial Water Management in Victoria’s Central Highlands’, we have mapped over 160 kilometres of races which carried water into and from storage dams to the various claim areas. Some of these races no longer exist, however the vast majority of major channels are extant with some long sections substantially intact. GIS mapping is a vital component of this ongoing research, permitting the integration of diverse historical sources and archaeological remains, and the analysis of relationships between water networks.

Robert Brough Smyth, Secretary for Mines in Victoria from 1860 to 1876, calculated that 2434 miles (3916km) of water races were in operation in 1868, by which time the early alluvial rush was waning and many races had already been abandoned (Smyth 1980 [1869]:547). These races, dams and other elements of water infrastructure took months and often years to build, dug with pick and shovel through clay, gravel and rock. They demonstrate a commitment to local mining areas that defies the mobile, migratory reputation of the early gold rush populations (Goodman 1994; Lawrence 2000). Races are also important evidence for the commercialisation of water, where a natural resource came to be measured and traded as so many ‘sluice-heads’ to be leased and sold. In addition, the miners’ use of water was instrumental in the development of water law, where competing users in Victoria looked to government and the courts to arbitrate disputes over water access and entitlements. By the mid-1860s a system had evolved to regulate flows of water for mining purposes, creating a legal framework that the other colonies soon followed (Armstrong 1901:220; Davies and Lawrence in press).

In this paper we present the results of archaeological and historical research carried out on the Creswick goldfield, focusing on the remains of races and dams built during the shallow alluvial phase of mining in the 1850s and 1860s. We begin with a brief review of previous archaeological research into water management in Australia, and outline the history of the study area and our approach to the sources. We note the development of permits and licenses for water diversion, and then describe the operations of a number of prominent mining parties in the area, including the Humbug Hill Sluicing Company, Charles and Benjamin Eaton, James Robertson and the St. George’s Sluicing Company, and William and George Russell. Alongside the activities of these partnerships were groups of Chinese miners who preferred to lease water for their operations, while the Creswick local council built a town supply that gradually incorporated many of the water resources of the larger mining parties. As surface alluvial mining faded from the Creswick goldfield during the 1860s, the legacy of the miners included extensive networks of races and dams that were often integrated into complex systems of water management.

PREVIOUS RESEARCH

Water management has been an important focus of Australian archaeological research in both Indigenous and European contexts. Much of the archaeological focus on water in the colonial period has been on the exploitation of water as a source of industrial energy. Water mills, for example, were an important source of power in nineteenth-century Australia, with hundreds used for flour-milling and ore processing (Godwin 1983; Pearson 1998). Examples of hydraulic power (Bairstow 1986) and hydro-electricity (Gojak 1988) were also developed in New South Wales during the later nineteenth century. Water was also vital for agriculture. Detailed archaeological research in the Adelaide Hills has revealed that settlers in the area relied heavily on creeks and permanent springs for water, bringing traditional techniques from their homelands and adapting them to local conditions. Farmers used races, pipes, dams and cisterns, along with terracing and waterwheels, to grow irrigated crops in the fertile creek valleys (Smith 2006, 2007).

Market gardens and water systems were also developed by Chinese settlers, who became successful growers of European foods for a largely European market. At Yong Kit’s garden settlement on the Loddon River in central Victoria, archaeological survey revealed a complex system of terraces, vegetable, paths and household debris, dating from the late nineteenth and early twentieth century (Stanin 2004). Crops were planted in straight, parallel rows and furrows dug to the very edge of the property. There were also shallow rectangular wells placed along the furrows, indicating the use of manual watering techniques. There were, however, no internal fences or divisions to show individual ownership by separate
Several archaeological studies of mining have also identified races and storage dams associated with water management. Corones’ (1993) study of the Lisle-Denison goldfields in Tasmania, for example, documents the archaeological remains of water races and reservoirs associated with the various forms of alluvial mining employed in the area. Barry McGowan (1992, 2001) has reviewed the use of water and its environmental effects in the Shoalhaven goldfields of New South Wales, while the archaeology of water management has also been studied in many areas of New Zealand, especially in central Otago (eg McCraw 2009; Ritchie 1981; Stephenson et al. 2004).

Several themes run through much of this research on water management in colonial Australia. One is the issue of technology transfer, where capital, skills and equipment were transplanted from other countries to the Australian colonies and modified according to local economic, social and environmental conditions (Casella 2006; Jack and Cremin 1994). This was a vital element of the colonising process, and water management played an important role in creating and sustaining non-Aboriginal settlement. Archaeologists have also identified, however, the related problem of obsolescence, where new technologies replaced old and finance was redirected to more profitable enterprises, often creating historic cultural landscapes in the process. While water’s role in industry has been acknowledged, archaeologists have been less explicit about how environmental constraints also affected the use of water for industry and agriculture. The limits of climate, terrain and water could rarely be ignored and it is apparent that industry had to accommodate itself to the available water, either by selecting locations close to reliable sources, or by diverting water from miles away.

**STUDY AREA AND APPROACH**

Creswick lies about 18km north of Ballarat in central Victoria, on the northern side of the Great Dividing Range. The town lies at the boundary of two major landforms. To the north, basalt flows of recent geological age (6–1 mya) cover gold-bearing deep leads and quartz reefs at considerable depth, which were mined from the 1860s onward. The gentle hill country to the south is characterised by shallow rises and ridges cut by numerous creeks and gullies. The terrain is of Ordovician age (490–450 mya), characterised by deep sedimentary horizons of slate and sandstone. The gold-bearing matrix consists of iron sulphide cemented quartz boulders in a quartz silt or clay matrix, from which gold flakes and nuggets have eroded by alluvial pressure (Taylor 2000). This area was a primary focus of shallow alluvial mining in the 1850s and 1860s.

Watercourses on the Creswick goldfield generally rise in the hills south-east of the township, starting at around 600 m above sea level. Creswick Creek itself is fed by numerous tributary gullies, including Adekate (or Atticott) Creek, Ashwells Gully, Lincoln Gully and Slaty Creek, all of which were associated with extensive water race systems and sluicing. Long-term average rainfall in the area is around 720mm per annum, but this obscures substantial variability from year to year. Major droughts in the area were recorded in 1865–1866, 1876, 1881 and 1888, while flood years included 1863 and 1870 (Lawrence and Davies 2012:49).

The focus of our investigation here is a small area of forest regrowth (about 16km²) located several kilometres south-east of the Creswick township. The area, bound by Slaty Creek to the west and south, Creswick Creek to the north and the Melbourne road to the east, includes numerous examples of lengthy water races, storage dams and deep scarring from ground sluicing (Figure 1). Archaeological evidence for water management is well preserved, with relatively little disturbance following the shift from mining to forestry and small allotments later in the nineteenth century. Features date from the beginning of the gold rush in the early 1850s and remained in use, in some cases, until the 1930s and later. Controlled burning of the area in recent years also means that surface visibility is generally very good.

Gold was first discovered in the Creswick Creek area in September 1851 (Flett 1970:407–416). Miners focused on shallow auriferous leads around the site of the present town and adjoining ground to the north and east. In 1854, the mining population expanded dramatically when a series of shallow leads was opened to the west and south of town. These areas proved to be very profitable for ground sluicing, being covered by up to 10m of gold-bearing washdirt. Important areas included Humbug Hill, Cabbage Tree Flat, Mopoke, Creswick Creek, Lincoln Gully, Long Gully and Slaty Creek, where up to 4000 miners arrived to work these fields (Flett 1970:416). Working these claims by ground sluicing required substantial volumes of water, and small companies formed to build storage dams in the higher catchments and bring water along open races which wound through the hills and gullies. Most races in the 1850s and early 1860s were surveyed by the miners themselves using line of sight and water flow. They demonstrate an intimate knowledge of topography and highly skilled bush engineering. These networks of water management are the principal focus of our present research.

One of the main techniques of working the alluvial deposits involved directing a flow of water over a deep working face, which was typically 20 to 30 feet (6 to 10m) high, with miners standing at the base to rake and pick the loosened washdirt into a sluice channel. Stones or blocks placed in the sluice assisted the break-up of the washdirt, permitting the deposition of the heavier gold particles (Smyth 1980 [1869]:128). The sluice emptied into a tailrace that was constructed with a steeper fall to allow for the rapid flushing of water into the channel. This technique could, however, be very dangerous. Working faces sometimes fell in slabs, bringing down tons of earth, rock and clay onto the miners below. At Humbug Hill, for example, at least seven men were killed by earth falls during the 1860s and 1870s, including Richard Martin (1860), Fun Wagh (1861), Yung Lan (1863), Ah Hik (1866), Ah Luke (1877) and Fun Gwan (1879) (Chin and Scott 2010).

Puddling was also widespread on the Creswick field. Although puddlers could only process a fraction of the ground that could be worked by sluice parties, they required much less water than sluicing and could generally be used all year round. The local Mining Surveyor reported 159 of these machines at work in August 1859, and this number remained fairly constant until drought in the mid-1860s forced many puddlers out of business (Bannear 1996; Mining Surveyor 1859).

The shallow alluvial claims at Creswick began to be worked out by the 1860s, and many miners departed to goldfields elsewhere in Victoria or joined the rush to New Zealand. Drought in 1865 exacerbated the trend and by the 1870s it was mainly Chinese miners who persevered with sluicing shallow alluvial claims and working old ground. By this stage the main focus of mining in the Creswick Division had shifted to the deep leads and quartz reefs located north of...
town, and many of these yielded great wealth in gold. By the 1880s only a few hundred people remained in the forested ranges south of Creswick. Most eked out a living as miners or fossickers, wood-cutters, charcoal burners and small farmers. Many occupied a hut and an acre or two on a miner’s right, while several dozen Chinese men cultivated gardens at Creswick Creek, Slaty Creek and Mopoke (La Gerche 1885). The area was incorporated into the Ballarat-Creswick State Forest in 1872, and in the 1880s and 1890s local forester John La Gerche worked to reclaim the forest for trees, and removed much of the physical evidence of housing and gardens as occupants died or moved away (Taylor 1998:111-112). In 1910, a School of Forestry opened at Creswick, and the area became a training ground for generations of forest workers. Today most of the area remains public land, which is managed by Parks Victoria as part of the Creswick Regional Park.

Our research has focused on the integration of diverse sources of evidence relating to water management on the Creswick alluvial goldfield, with field survey to check and identify races, dams and other archaeological features. Historical sources include nineteenth-century geological maps (eg Krause 1880), historical survey maps, mining lease plans and parish plans, along with Council Minute Books and Mining Warden’s Registers, which provide important evidence for the development of dams and races by mining parties and the location of alluvial claims. Further details can be gleaned from newspapers including the Ballarat Star and the Creswick Advertiser. Many of the water races have also been mapped in considerable detail by orienteering groups, revealing the survival of these features over 150 years.

We have incorporated evidence of these water management features into MapInfo© GIS software to analyse a range of spatial relationships, including the position of races and dams in relation to hydrology, geology, mining claims, water licences and land ownership. GIS mapping also permits analysis of changes to race ownership and management through time, and the identification of physical links between water networks which created extensive water systems. Field surveys have also benefited from the use of an iPad©, which combines digital historical and modern map layers with MapInfo-generated spatial data. This greatly facilitates the ability to locate, verify and interpret relationships between features on the ground in this complex mining landscape.

PERMITS AND WATER LAW

The first permits to divert water for mining were simple verbal statements from goldfields commissioners, sometimes with a notice posted on nearby trees authorising the water permit (Report 1862-63:341). Although vaguely defined, such permits were often exchanged for thousands of pounds, in the belief that they gave good legal title to the available water (Report 1860-61:1-2). In 1857, however, laws began to catch up with the needs of the miners, when the Goldfields Amendment Act (21 Vict. 32) extended the provisions of the miner’s right to allow miners to build races and dams on Crown land on payment of a rent or royalty. Water-rights licenses were introduced in 1862, valid for up to 15 years, which recognised races and dams as a ‘chattel interest’
The amount of water miners could legally extract, however, varied considerably from place to place. While in New Zealand a 'Government sluice head' consisted of one cubic foot of water flowing per second (McCraw 2009:10), in Victoria local by-laws determined the amount that could be diverted. Volumes were measured by 'sluice-heads', which consisted of a wooden box of specified dimensions and incline inserted in the head of a race, through which water flowed at a certain pressure. Different dimensions and flow rates, however, gave rise to anomalies in the delivery of water. Up to 2.3 million gallons (10.5ML), for example, were available per sluice-head each day in the Ararat District, but only 211,500 gallons (0.96ML) at Ballarat (Figure 2). British engineer Richard Sankey, who inspected progress on the Coliban Scheme of water supply to Bendigo in 1871, concluded in exasperation that he was 'wholly at a loss to know what the term "sluice-head" may imply (Sankey 1871:107). Miners at Creswick also found the term to be very vague, with sluice heads ranging widely different between claims (Ballarat Star 11 August 1858:2). The cost of such water, if provided by a water merchant or company, also varied substantially from place to place (Smyth 1980 [1869]:406-7).

In spite of variations among local by-laws, legislation relating to water diversion for mining in Victoria was fairly well established and widely understood by the mid 1860s, and remained in place largely unchanged for the next few decades (Armstrong 1901:220-7). The Crown issued licenses for the private construction and maintenance of races and reservoirs for mining purposes, while retaining notional ownership of the water as a resource. A water-right remained analogous to an easement, with sluice heads ranging widely different between claims (Ballarat Star 11 August 1858:2). The cost of such water, if provided by a water merchant or company, also varied substantially from place to place (Smyth 1980 [1869]:406-7).

Water companies were among the first builders of water races at Creswick, and they developed mining and water interests on numerous creeks and gullies in the area. They were born in Dublin in 1815 and 1817 respectively, and both were apprenticed as blacksmiths. In 1835, however, William Russell was transported to Sydney as a convict after a conviction for burglary, while George came to Victoria via South Australia in 1855 with his wife and their six children (Clarke 1994:30). In later years, the brothers Benjamin Franklin and Charles Lafayette Eaton began their gold mining career in Australia on the Turon goldfield near Bathurst in New South Wales, after migrating from California around 1853 (Potts and Potts 1974:55). After early success their fortunes declined and the brothers took themselves off to Victoria in 1855. The Eaton soon became active participants on the Creswick alluvial goldfield, entering into partnerships with local miners John Roycraft and William and George Russell, and disputing with John Bragg and the Humbug Hill Sluicing Company. The Eaton brothers may have encountered James William Robertson during their early days on the Turon goldfield. Robertson was born in 1823, in New Brunswick in Canada, and worked in both farming and the timber industry as a young man. He arrived in Australia in the early 1850s, and for the next few years pursued opportunities on the Turon goldfield and around Melbourne, Hobart, Ballarat, Creswick and Bendigo. Later he moved to Otago in New Zealand, where he made a fortune in flour and sawmilling and became the first mayor of Queenstown (Scholefield 1940:246-7). Robertson spent the years 1855 to 1861 at Creswick, from where he wrote a series of letters to his family which reveal important details of the water races and sluicing operations he developed (Wynn 1979).

The first generation of water managers on the Creswick alluvial goldfield came from a wide range of places and backgrounds, and few had previous experience of mining and sluicing. In this section we describe the operations of several pioneers in the development of water resources at Creswick. These include George and William Russell, John Bragg and the Humbug Hill Sluicing Company, James Robertson and the St. George’s Sluicing Company, and Charles and Benjamin Eaton. Careful study of the historical evidence and the archaeological remains associated with these groups reveals important patterns in the development of dams and water races, as well as the disputes that emerged over water rights and privileges. As the early period of alluvial mining at Creswick faded in the 1860s and 1870s, the water networks created by these mining parties were taken up by the municipal council and integrated into the town water supply.

Figure 2: Variations in sluice-heads in Victoria’s seven mining districts (Smyth 1980 [1869]:405).
years the sons of both men continued the family’s involvement in sluicing and water management.

The Humbug Hill Sluicing Company began in 1856 under the management of Irish-American John Boodle Bragg. Partners in the multi-national group included Jacinto de Lima from the Azores islands, and Domingo Francisco, a Philippine sailor who had jumped ship in Sydney in 1853. Bragg himself was a naturalised American who had worked as a tanner in New Orleans before arriving in Melbourne in the early 1850s. The company soon became one of the most prominent water parties in the Creswick area, and notwithstanding Bragg’s death in 1865, at the age of 42, it remained a going concern for more than 20 years.

One of the first steps in developing an alluvial mining claim was to secure a supply of water, in both legal and practical terms. Numbered Water Privileges or Rights had begun to be issued in 1857 under the Goldfields Amendment Act (21 Vict. 32), although disputes emerged over priority of access and the ongoing validity of earlier verbal permits. Water-Rights Licenses were issued from 1862 in a single running sequence for the entire colony, and some of the first licenses were issued to miners at Creswick. These rapid changes in law and regulation meant that mining parties had to be ready to defend their water interests, both on the ground and in the courts. The resulting tangle of water rights and privileges was the source of conflict and dispute on the Creswick goldfield for years to come.

William Russell purchased a share in the first water permit or privilege on Back (Creswick) Creek from Davis and Co in 1854, and in the following years he and his brother worked a claim downstream from the Eaton brothers. James Robertson, in partnership with William Mitchell, held the second privilege on Creswick Creek, which was sold to the Eaton brothers in 1857. John Bragg obtained water privilege No. 3 for Adekate Creek, a tributary of Creswick Creek, on behalf of the Humbug Hill Sluicing Company in 1856. These mining groups were to spend the next few years in and out of court arguing over which had proper legal access to the available water (eg Ballarat Star 7 September 1858, 16 September 1858).

Conflict over water could also erupt within parties. In 1860, the eight partners of the Humbug Hill Sluicing Company came to blows over plans to extend the group’s operations. Construction of a race from Slaty Creek westward to the Bald Hills was well advanced by April 1860, but the members argued about whether this was the best approach. After a dispute over water supplies ended in a fist fight, the case was argued in the Creswick Court of Mines. Bragg and three supporters agreed to buy out the interests of the other four partners for £480 and continued extending the race (Creswick Advertiser 10 August 1860:4).

Creeks and gullies around Creswick generally provided limited and often unreliable flows of water. This meant that construction of storage dams was often necessary to provide a consistent supply to mining claims. The Humbug Company constructed a large dam on Adekate Creek, which could hold 15 to 20 million gallons (68 to 91ML) of water (Creswick Advertiser 3 June 1862:2). The dam wall is well preserved, although the reservoir has silted up and today holds little water. The wall is made from clay and extends for 110m in length. It has a gently sloping profile of 32 degrees, unlike other dams in the study area which were often built at a steep angle in narrow gullies. The wall stands around 4.7m in height, and contains approximately 3650m³ of fill.

The Russell brothers expanded their mining enterprise in 1861 by building Russell’s Dam in Ashwells Gully, another tributary of Creswick Creek. A race from the dam brought water 7km westward to the family’s alluvial mining claims at Humbug Hill, where they had another dam for sluicing. Russell’s Dam had a wall 18 feet (5.5m) high, covered five acres (2.02ha) and had a capacity of 11 million gallons (50ML) (Creswick Advertiser 2 December 1864:3). As well as sluicing their own claims, the brothers were willing to sell their excess water to other miners in the area. In the 1930s the dam was upgraded to a larger reservoir and today it still forms part of the town supply.

Charles and Benjamin Eaton developed their claim on Creswick Creek in 1857, with the purchase of a small reservoir known as Yankee Dam and an associated water race for £500 (Ballarat Star 14 November 1857:2). In 1862, the Eatons began to dismantle Yankee dam in order to wash for gold in the bed of the creek (Argus 8 April 1863:6). At the same time they began construction of a new dam further upstream with a much larger capacity. The remains of Eaton’s dam are among the most striking and best preserved archaeological features on the Creswick goldfields. The dam wall is unusual in the district for having been built with a substantial stone facing and a clay embankment on the upstream (water) side, when most other mining dams in the area were simple mounds of clay quarried from the adjacent creek banks. The dam wall is approximately 70m long, about 8 m wide at the base and generally 4–5m in height (Figure 3). The top of the dam wall is 1.5m wide and was originally secured with a frame of heavy timbers (Ballarat Star 2 July 1862:4). The lowest courses of stone protrude outward slightly from the base, while above these the masonry consists of large schist slabs laid horizontally with a small rock infill. The central section of the wall features a steep sloping buttress on the downstream side about 4m in height.

In 1863, the dam was still under construction when it was damaged by floods, but when completed the following year it held up to 15 million gallons, or 68ML (Ballarat Star 19 October 1863:2; Dicker 1864:180). In 1869, the dam was flooded again, while the smaller Yankee dam was destroyed entirely. By the late nineteenth century Eatons dam was still a source of mining water but it had also become a popular place for picnics, bird watching, shooting parties and fishing (Graham 1987:124; Lindsay 1965:24). In 1933, however, heavy rain flooded the creek again and partially destroyed the dam wall (Creswick Advertiser 5 December 1933).

Water was conveyed from storage dams to sluicing claims by simple open cut channels or races. More than 100km of races are preserved on the Creswick alluvial goldfield, including substantial sections associated with the mining parties described here. Most races were excavated on a slight gradient across a gentle slope, with a simple u-shaped profile.

Figure 3: North section of Eatons Dam, breached by flooding in 1933 (Davies 2011).
They range from narrow 20cm trenches to more substantial races up to 2m wide. Many of the races change dimensions over their length as a result of terrain, but also to regulate flow. Silts from the flowing water helped seal the channel and reduce leakage. Junctions, diversions, intakes and outlets to and from water races have also been observed on the Creswick goldfield races, indicating the complex connections made to link water networks into larger water systems.

James Robertson spent several years developing a substantial race network to bring water from the Bullarook forest south-east of Creswick to the headwaters of Slaty Creek and from there to Humbug Hill. In 1857, the race was costing £50 per mile to build, with 40 men at work. At the terminus of the race his men had built an 800-foot (244m) wooden flume to span a saddle between two low spurs, bringing water across to Humbug Hill for sluicing. The upper section of the race was completed in the following year, by which time it stretched 14 miles (22km) to the south-east. This section had ‘... been cut mostly by chinamen they are satisfied with 6 or 7 shillings per day and very steady men to work’ (Wynn 1979:264-5).

The race started at 610m above sea level, and was high enough to divert southward over the Dividing Range to Ballarat. The upper section of the race is not well understood, but the lower section, from the hillside adjacent to Russell’s Reservoir and along to Humbug Hill, is well preserved. It extended for five miles (8km) and may have drawn water from a small reservoir on the upper part of Slaty Creek, passing through the head of Lincoln Gully on the way to Humbug Hill (Dicker 1864:180). No sign of the wooden flume, however, has been identified.

By 1861, Robertson’s interest in gold and waterworks had begun to fade, and he sold his interests in water races to associates and soon after left for New Zealand (Schloefield 1940:246). The race from Slaty Creek that Robertson had developed now belonged to the St. George’s Sluicing Company, whose partners focused much of their work on Humbug Hill. In 1862, they replaced the wooden flume to Humbug Hill with 560 yards (512m) of 6-inch bitumenized paper pipes (Creswick Advertiser 16 September 1862:2). In spite of leaks in the pipe, the company still yielded a dividend of £1 per man per week (Creswick Advertiser 24 October 1862:2).

The Eaton brothers built a water race which extended two miles (169 chains, or 3.4km) downstream from their large dam along the south side of Creswick Creek to Portuguese Flat via Lincoln Gully. Much of the area has been extremely disturbed by surface working over the years, which has destroyed some sections of the race. The race was held as Water-Rights License No. 2, the second issued in Victoria, and appears to have been leased jointly by Benjamin Eaton and John Roycraft. The pair applied successfully for another license (No. 30) to the race and reservoir in 1865 (Government Gazette 16 April 1866:818-819). In 1879, Roycraft obtained another 15-year license (No. 414), this time without the Eatons’ involvement. The license specified a total quantity of water to be diverted of 2 million gallons per day (Secretary of Mines 1884:54). Roycraft continued renewing the license until it expired in 1924, by which time the race appears to have been in operation for almost 70 years.

The race built by the Humbug Hill Sluicing Company from Bragg’s Dam to Humbug Hill remains in an excellent state of preservation, despite disturbance in several small sections by road construction and logging (Figure 4). In addition, construction of Cosgrove Reservoir in 1977 inundated a one-kilometre section of the race below Bragg’s Dam. The race is generally about one metre wide and up to 1.2m deep, curving around Ashwell’s Gully and Lincoln Gully en route to Humbug Hill. Extensions of the race westward to the White Hills, and beyond to Long Point and the Bald Hills, are more disturbed and difficult to identify.

In 1859, the district Mining Surveyor, James Stephen-son, reported the activities of the Humbug Hill Sluicing Company:

The Ground was washed from the surface to the bottom – a depth of 30 feet, the lower 10 of which were a soft clayey red reef, and had to be thrown up into the sluice streams. The mode of working adopted was first to cut a face on the ground, and then to turn on the water along its base. Thus the water assisted in cutting down the ground, and frequently blocks of from 20–50 tons were so taken down. The shifts were 6 hours on and 12 hours off, and the work was kept going night and day.

In this way the party moved 8½ cubic yards (6.5m³) per man per day, using 300 gallons (1364 l) of water per minute, with a gold yield of 245 ounces (Mining Surveyor 1859:8). The scars of the sluicing work carried out by the Humbug Company and various other groups remain highly visible on the southern and western slopes of Humbug Hill today, and...
indicate the scale of landscape change brought about by the manipulation of water by miners (Figure 5).

The Humbug Hill Sluicing Company was also responsible for a remarkable piece of water engineering, when the group built half a mile of elevated pipe in 1862. For some time the main barrier to completing the group’s water system was Slaty Creek, where the broad creek flats were more than 20m below the group’s lowest operation on Humbug Hill. Eight hundred yards (730m) of piping were needed to convey the water across by gravity at sufficient pressure. The company contracted with the Patent Bitumenized Pipe Company of Melbourne and Bendigo to lay eight-inch pipes across Slaty Creek in an inverted siphon carried on braces or trestles that began 114 feet (34 metres) above the height of the creek, and discharged into an open race on the other side. The pipes, made from paper sealed with bitumen, were cheaper and much lighter than iron pipes, and were used on the goldfields for fluming, draining and pumping. Manufacture involved passing a roll of paper through a vat of molten bitumen, and then coiling the paper tightly around a mandrel to form a tube (Argus 27 Aug. 1860:5). The walls of the pipe were 22mm thick. Pipes used by the Humbug Company featured flanged joints and a T-piece at the lowest point for blowing out any accumulated sediment. They were supported in iron-braced wooden boxes, and relied on gravity, rather than steam engines, for water pressure. The entire outlay for the company amounted to £3000 (Creswick Advertiser 3 June 1862:2; 12 September 1862:2).

Water was laid through the pipes and across the creek for the first time on Wednesday, 10 September 1862. The event caused great excitement, with the Creswick Advertiser reporting that:

‘The operation began at Humbug Hill at 4 p.m., and 35 minutes afterwards the water made its appearance on the White Hills, and intelligence which was transmitted through the firing of a gun and received with cheers at the starting point. A great many strangers were present on this interesting occasion and the whole company enjoyed themselves heartily to celebrate the event’ (Creswick Advertiser 12 September, 1862:2).

With this connection made, the Humbug Hill Sluicing Company had succeeded in delivering water from its reservoir on Adekate Creek all the way westward to Long Point and the Bald Hills, a distance of approximately 14 miles (22.5km). In the following days, however, there were reports that some of the pipes had burst under the pressure of water, and repairs with thicker pipes were needed in some sections (Creswick Advertiser 7 October 1862:2). In spite of these efforts, the ‘paper and pitch’ pipes do not appear to have been very successful, and by 1864 the company had replaced them with conventional iron pipes (Dicker 1864:180). The route of the pipe is still clear today as a long straight clearing through the forest, while fragments of the bitumen pipe are preserved in a vehicle track. This feature was identified with the aid of real time positioning over geo-referenced historical maps during field survey.

At this time, the Creswick Council was finalising construction of a domestic water supply scheme, conveying water from a reservoir 7 miles (11.3km) south-east of the town. In 1864, the Council also began to draw on water supplied by the Humbug Hill Sluicing Company’s race and dam on Adekate Creek. The Council used the extra water to fill a small service reservoir at Lincoln Gully, using a sluice gate and brick-lined channel to divert water from Bragg’s race (Figure 6). This small reservoir, of about 5ML in volume, was built on the side of a hill and is well preserved today, and appears to have been constructed to take advantage of the reliable flow from the Humbug Hill Company.

The Council was also eager to acquire rights to the upper section of the race built by James Robertson and held by the St. George’s Sluicing Company, as a way of augmenting municipal supplies. In 1864, the St. George’s Company applied for a new 15-year license to the lower five miles (8km) of race to Humbug Hill, which delivered 800,000 gallons (3.6ML) of water per day (Creswick Advertiser 2...
December 1864:3). By 1873, however, the company was being run by a party of Chinese miners, who complained of interference by European competitors. In 1879, the Council compulsorily acquired the lower section of the St. George’s race, and in the following year leased the water right to Chinese miner Ha Son for three years (VPRS 3730, 19 April 1880).

In 1873, the Council also acquired Russell’s Dam, and a narrow diversion channel was excavated down a spur to link Russell’s race to the Council service reservoir built on the slope above Lincoln Gully. By this period, sluicing claims in the Creswick hills were gradually being abandoned, and the Council sought to consolidate its water resources by acquiring the water rights of mining parties. Surplus water from these sources was sold at times to groups of Chinese miners (VPRS 3730, 13 December 1880).

CONCLUSION

There were many more miles of water races constructed on the Creswick goldfields during this period. Those presented here, however, are important for the insight they provide into the processes of water management during the alluvial mining era. GIS has enabled historical maps, documentary research, and detailed on-ground mapping from a variety of sources to be integrated in a way that reveals more completely the extent of what the miners achieved within a few short years. Gold miners were pioneers in the capture and manipulation of water sources, demonstrating the reliability of local supplies and the measures needed to manage this most vital of natural resources. While the technology used was simple, it represents an enormous investment in time and labour before mining could even begin. The extant remains of races, pipes and dams, and the even larger extent of former races seen in the GIS mapping, reveal the scale of water diversions and the very substantial effort needed to direct water to mining claims, as well as the integration of water networks into wide-ranging systems of water management.

Miners co-operated to use water when it was in their interests to do so, but otherwise jealously guarded their water privileges. Newspapers of the time are filled with the legal battles of stolen water, cut races, over-sized sluice boxes, ‘abandoned’ races, sludge flows and other disputes. Some miners became water merchants, developing and trading the water resources they controlled, and making substantial profits in the process. Chinese parties also became water traders, asserting their rights to full water entitlements and often selling water at high prices.

The races and dams built by the miners represent a rapid coming-to-terms with environmental constraints. Washing gold from the earth typically demanded substantial volumes of water, which had to be diverted to claims at a fixed location. While Creswick lies in a zone of good, if variable rainfall, there are no major rivers nearby and creek and gully flows are usually seasonal and erratic. Dams and ditches were a simple but labour-intensive response to diverting water from where it was available to where it was needed. The manipulation of water supplies by the miners created an extensive cultural network of water management that overlaid and modified flows in the natural environment.

As the early alluvial rush declined in the 1860s and 1870s, the water networks created by the miners were reused for domestic supply. Local councillors, many with close connections to the mining industry, sought to acquire for public benefit both the legal rights and the physical infrastructure of races, dams, pipes and other elements to augment town supplies. By the 1880s the Creswick Council had purchased water rights from the Humbug Hill Sluicing Company, St George’s Sluicing Company and the Russell family, using these to increase domestic supply. As water systems expanded in the following years, dams and races originally built by the miners were upgraded or abandoned, creating a history of water management etched in the landscape today.

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Gentility in the dining and tea service practices of early colonial Melbourne’s ‘established middle class’

SARAH HAYES

Social mobility led to rapid changes in the class structure of early colonial Melbourne as the settlement increasingly came to incorporate many people from different backgrounds. In order to examine the influence of this on Melbourne society through historical archaeology it is useful to conceptualise immigrants to Melbourne as comprising different groups and examine whether these groups have distinctive material cultural patterns. This paper will examine the potential of this approach by focusing on the dining and tea service assemblage of one family who belonged to one of the earliest groups in the colony. By doing so, it will show that indicators of gentility in the assemblage such as matching sets, variety of vessel forms, consistency in goods for both public and private use, and keeping up with fashion can be used to interpret how this group was using gentility to define and maintain its class position.

INTRODUCTION

In early colonial Melbourne, society was subject to rapid change as a result of great social mobility. As the settlement progressed towards its status as a bustling city by the 1880s, it increasingly incorporated many people from various class backgrounds with different aspirations. In order to examine the distinctive class structure that resulted through historical archaeology, it is useful to conceptualise immigrants to Melbourne as comprising different groups. It is anticipated that these different groups will have distinctive material cultural patterns and that this can be used to interpret class structure and negotiation in the colony, particularly the formation of the large and diverse middle class. It is beyond the scope of this paper to explore the composition of Melbourne’s class structure as a whole. The focus will instead be on one of the earliest groups of settlers in Melbourne with a view to further research. This group, the ‘established middle class’, were from wealthy British middle-class backgrounds, arrived in the earliest years of the colony, were successful in the pursuit of wealth and frequently held vast pastoral properties. Their class background distinguished them from other groups including the newly rich who arrived from elsewhere in Australia, those of working-class backgrounds who successfully sought entry to the middle class in the colony, and those of working-class backgrounds who did not change class position, among others. The Martin family, who lived at Viewbank homestead from 1844 to 1874, were typical of the ‘established middle class’ and will provide a useful case study for this paper.

This paper provides an opportunity to test the idea that different groups of immigrants in early colonial Melbourne have distinctive material culture patterns, and to explore how this can be viewed in a ceramic dining and tea service assemblage. It also proposes links between material culture and gentility upon which interpretations of class and social mobility in early colonial Melbourne can be based, while acknowledging that more comprehensive interpretations require further comparative studies. Further, it provides a detailed analysis of middle-class material culture that can be used to contextualise previous historical archaeological research on Melbourne’s working class and future comparative research on the diverse middle class.

After providing historical and theoretical context, the paper goes on to discuss the ceramic dining and tea service assemblage of the Martin family in order to characterise the assemblage and examine how gentility can be viewed in an assemblage. The discussion then addresses how gentility, as viewed through material culture, can be used to interpret how the ‘established middle class’ were negotiating and maintaining their class position in the colony.

EARLY COLONIAL MELBOURNE

By the 1830s, opportunities for gaining good land in the existing Australian colonies of New South Wales and Tasmania were diminishing. However, from 1835 a fresh opportunity for gaining access to land was becoming available in Port Phillip (later Victoria). Squatters began making the voyage across Bass Strait from Tasmania and the long and hazardous trip overland from New South Wales, often very shortly after arriving in Australia (Broome 1984:20-21). From 1851, this land rush was outstripped by the gold rush and a substantial influx of migrants arrived in Port Phillip. The population of the colony grew from 29,000 in 1850 to 125,000 ten years later (Davison 1978:6). This brought dramatic changes to the colony and ultimately established Melbourne as a bustling, viable city.

In early colonial Melbourne, these vast numbers of immigrants were negotiating their position in the new colony. From the time of the earliest settlers until after the gold rush, the influx of people had to navigate their way through changing social structures in order to succeed and establish their position in the new colony. Class in Australia was not a fixed structure, but was flexible and did not necessarily adhere to the norms of British society, with which the majority of immigrants were familiar (Russell 2010:114, 126). Social mobility was possible in the colonies, and indeed was one of the drawcards for people immigrating to Australia (Fitzgerald 1987). The impact of this on class structure has been much debated by historians (Connell and Irving 1980; Davison 1978; Hirst 1988; Neale 1972; Russell 2010; Thompson 1994; Young 2003) and is an important question for historical archaeology.

CLASS, MATERIAL CULTURE AND GENTILITY IN HISTORICAL ARCHAEOLOGY

To date, historical archaeologies examining class have predominantly viewed class as a graduated scale through which people and their lifestyles can be described, rather than...
as a relation or formation that can be used to explain society (Lawrence and Davies 2011:252-253; Wurst 2006:191, 197; Wurst and Fitts 1999:1). The use of class as a concept in order to explain such issues as social formation and social change has great potential in explaining society, but has received far less attention. Class is a key concept in the social sciences for good reason: it attempts to explain social change and stability as experienced by people in everyday life in the past and is central in historical archaeology (Paynter 1999:184-185). It is particularly pertinent to the study of the colonial world where ideologies and social structures were being adapted to new environments, and is vital to understanding social relations in the past and ultimately society today.

The interest in class as a theme in historical archaeology has been growing since the 1990s. Internationally, a number of studies have addressed class from the vantage point of capitalism (eg Johnson 1996; Leone 1999; Leone and Potter 1999; Mrozowski 2006; Paynter 1988), ideology (eg Burke 1999; Leone 2005), domination and resistance (eg Beaudry et al. 1991; Miller et al. 1995), power (eg Lucas 2006), manners (eg Goodwin 1999), improvement (eg Hardesty 1994; Wall 1994; Rotman 2005; 2009), identity (eg Reckner and Brighton 1999; Griffin and Casella 2010; Brighton 2011) or working-class living conditions and slums (eg Mrozowski et al. 1996; Yamin 1998; Mayne and Murray 2001). However, in these studies class often takes a secondary position to the theme being discussed (Wurst and Fitts 1999:1-2), and few focus explicitly on class relations.

In Australian historical archaeology, studies of class are invariably driven by discussions of respectability and gentility. The majority focus on the working-class and view respectability as a unique and defining characteristic of that group (eg Lydon 1993; Karskens 1999; Lawrence 2000; Lampard 2004). Other studies have focused on gentility as operating separately from class as a tool for social mobility (eg Mayne and Murray 2001a; Crook et al. 2005), or as a social strategy for negotiating gender, class and social power (Quirk 2002).

The assumption that class manifests in material culture is a basic premise of historical archaeological discourse (De Cunzo and Herman 1996; Leone 1999; Mayne and Murray 2001b; Mrozowski 2006) and of this study. This idea is grounded in the structuralist search for meaning embedded in material culture and in the anthropological search for social meaning in material culture (Deetz 1977; Glassie 1975; 1982) and agency theory (Bourdieu 1977; 1984; Giddens 1984). When the focus is on identity or individual consumer choice, such manifestations can be complex to decipher and distinguish from other factors such as gender, ethnicity and socio-economic status (Casella and Croucher 2010:2-3; Rotman 2009:1; Shackel 2010:58-60; Wurst and McGuire 1999). However, a number of studies have successfully shown the valuable ways in which material culture can be interpreted in order to understand the distinctions between groups of people.

In particular, such studies are those that draw on French cultural theorist Bourdieu’s (1977; 1984) theory of practice (eg Lawrence 1998:8; Mayne and Lawrence 1998; Prattzellis and Prattzellis 2001; Rotman 2009; Russell 2003; Shackel 2000:233; Wall 1992; Young 2004). Bourdieu’s idea that goods actively pass on and structure culture has an obvious appeal and application in interpreting artefacts. Bourdieu suggests that a pivotal determining factor in an individual’s judgement of their class is cultural capital which can be defined as ‘a form of values associated with culturally authorised tastes, consumption patterns, attributes, skills and awards’ (Webb et al. 2002:x). Class distinction is thus ‘most marked in the ordinary choices of everyday existence, such as furniture, clothing or cooking …’ (Bourdieu 1984:77). Bourdieu (1977) argues that habitus is the deliberate and subconscious understanding of the behaviours and practices appropriate to one’s place in society. It is not imposed, but is continually changing depending on the values and opinions of self and others. With the idea of cultural capital, Bourdieu’s theory of habitus is a useful tool for archaeologists seeking to understand the material cultural pattern of a particular group. These ideas of practice and interaction allow interpretations to be made on how people negotiated, changed and maintained their position in society (Casella and Croucher 2010:2).

A number of researchers have usefully linked gentility with Bourdieu’s concept of cultural capital (Prattzellis and Prattzellis 2001:647; Russell 2003:168; Young 2004). Gentility was a popular concept in the nineteenth century which emerged as a result of the industrial revolution, expansion of the middle classes, growth of evangelical churches and espousal of ideas of dignity, restraint and strict moral standards espoused by Queen Victoria and Prince Albert (Howe 1975:515; Mitchell 2009:11, 256). The associated ideals included refinement, good taste, manners, morality, religious observance, avoidance of idleness, constructive leisure and domesticity (Marsden 1998:2; Mitchell 2009:261-266; Russell 1994:60). Young (2003:4-5) has argued that it became a vitally important social construction in the nineteenth century; a system of values and behaviour closely tied to, and in many ways defining, the middle class in the nineteenth century in both Britain and its colonies. The nature of gentility is such that it leaves its mark in the archaeological record. Despite the fact that the actual practice of genteel behaviour is not represented in the archaeological record, it is influenced by the beliefs and values associated with gentility. As such, the material culture can reveal something of the customs, manners and behaviours associated with gentility (Ames 1978; Goodwin 1999).

GENTILITY AND THE ‘ESTABLISHED MIDDLE CLASS’: A FRAMEWORK FOR THE STUDY

Approaching questions of class and social mobility using historical archaeology raises certain challenges. In archaeology, the starting point is often a single household, or group of households (Bairstow 1991; Murray and Crook 2005:90-91) which dictates that interpretations about society are drawn from interpretations of individual lives (Lawrence 1998:8). The scope of this paper dictates a focus on one household (Viewbank homestead) and one historical family (the Martins) as being representative of the ‘established middle class’. While individual stories do not add up to represent the sum of colonial history, they can help us to understand it better (Russell 2010:14). In turn, when combined with the material record, such stories can help to explore the changing nature of class in society (Mrozowski 2006:1).

The interpretations made in this paper are based on material cultural evidence woven together with historical records, neither source being comprehensive or infallible. It is important to acknowledge that these interpretations are qualitative and contingent. Material culture can be interpreted in many different ways and there is no single obtainable truth or proper meaning that can be confirmed beyond doubt through archaeology (Brighton 2011:45; Mullins 1999:30; Orser 1996:117). However, archaeology offers a distinctive perspective and while it may not provide definitive answers it can contribute to knowledge on historical questions.

In order to make interpretations in this paper, class will be treated as an arbitrary category that can be usefully applied to make sense of society in the past. The emphasis will be on the
examination of the distinctiveness of the lifestyles of people using the idea of class (see Bourdieu 1977; Foucault 1973; Giddens 1973). Bourdieu’s (1977; 1984) concept of cultural capital will be treated as a metaphor imposed by the researcher (Skeggs 1997:10), useful for identifying the roles particular groups played in class formation. Class, as it is used here, refers back to the traditional nineteenth-century British class model and the definitions are based primarily on profession. Middle class describes business and professional men with no ruling or establishment background who could be the sole income earner for the family and often employing servants, while working class describes those men employed in manual work often with other members of the household (women and children) also employed (Davidoff and Hall 2002:20; Flanders 2003:93; Hayes 2008:24-25; Lawrence and Davies 2011:272; Young 2003:54-55). This model is a useful tool for researchers in querying past social structures when treated as inherently arbitrary and artificial; not a real construction of the past. Class then, can be used as a concept through which differences and social formations can be examined.

Drawing on the theory of gentility as cultural capital discussed above, it is argued here that distinctive lifestyles depending on the class backgrounds of different groups of immigrants to Melbourne would be reflected in their material culture. When considering gentility as an analytical tool for research, it is useful to view it as operating separately to class, as a cultural capital that could be adopted, appropriated or adapted by different groups in different ways for different purposes. While gentility may have sometimes served as a tool in social mobility, it may not have done so in other cases (Casella 2005:167-168; Karskens 2001:77; Praetzellis and Praetzellis 2001:647). For example, it has been argued that respectability was a separate defining value of the working class not operating for emulation or social mobility (Karskens 2001:77). It is beyond the scope of this paper to examine the relationship between gentility and respectability, however, the framework presented here would allow for such an investigation in future research.

When viewed as cultural capital, expressions of gentility in the material culture of different groups can be interpreted in relation to class structures and social mobility in early colonial Melbourne. Conceptually, immigrants to Melbourne are divided into artificial groups in order to identify the role of each of the groups in formulating class structure in the colony. The groups are determined by similarities in their British class backgrounds, generation time of arrival in the colony and lifestyle once in the colony, rather than adhering to points on an Australian middle class/workng class hierarchy.

The group that is the focus of this paper is the ‘established middle class’, defined as early settlers and colonists of British middle-class backgrounds who brought their gentility and privilege with them to the new colony. This group includes middle-class men, particularly those who were not in line for an inheritance, or were driven by the boredom of Victorian Britain and often their stifling families to seek adventure and their own independent livelihoods in the colonies (Broome 1984:23; McCrae 1978). Many of the first wave of arrivals in this group included doctors, lawyers, clergy or ex-military men from ‘good’ families. Most of these immigrants were English or Scottish, with smaller numbers of Irish. Many of these men established significant wealth through business or vast pastoral properties, which brought corresponding economic and political power. Women of middle-class backgrounds emigrated to the colonies with their families or husbands, or as single women in a bid to improve their prospects for marriage or employment (Hammerton 1979: 11-12). Many of the families in this group became dynasties that endured throughout the century (Broome 1984:23, 39). The ‘established middle class’ had a firm position of authority in the colony, but were challenged to define their position by other groups of immigrants from working-class backgrounds who were seeking entry to the middle class (Russell 1994:15; 2010:113; Young 2010:136).

**VIEWBANK HOMESTEAD**

The Martin family is typical of the group of immigrants that formed Melbourne’s ‘established middle class’ and represents this group for the purposes of this discussion. Dr Robert Martin and Lucy Gear married in England and initially lived in London where they had the first three of their five children. The family arrived in Sydney, and travelled overland to Melbourne in 1839 (letter from Charles Wedge, 10 September 1853 in Bride 1969:87). Though the Scottish born Dr Martin was trained as a physician, once in Australia he became a successful and wealthy pastoralist with a number of large pastoral properties across Victoria (Billis and Kenyon 1932:95, 145, 227; Kerr 1841; PROV, VPRS 7591/P2, Unit 17, File 12-586, 11 February 1875). Dr Martin was influential in the new colony of Victoria: he was a member of the Melbourne Club from 1840 (De Serville 1880:193) and held a number of high profile public positions. At the time of Dr Martin’s death in 1874, his total estate was valued at £43,073.6.3 (PROV, VPRS 7591/P2, Unit 17, File 12-586, 15 July 1874). Mrs Lucy Martin was English and from a similar middle-class background to Dr Martin. Her parents were Robert Gear Esq. of Sussex and Lucy de Guzman who claimed to be a distant relative of Emperor Napoleon III of France (De Serville 1980:205; Genealogical Society of Victoria 1970:105). Viewbank homestead, on the outer fringes of Melbourne (Figure 1), was the town residence of the Martin family from 1844 to 1874.

Viewbank homestead was a spacious twelve-room house on 195 acres of land with vistas over the Yarra River (PROV, VPRS 7591/P2, Unit 87, File 26-805, 11 January 1884) and was also home and workplace to a large contingent of servants. After Dr Martin’s death, the family moved away from Viewbank. After a few short years of tenancy the house became run-down and was demolished in the 1920s (Peters 1996:12).

The excavation of Viewbank homestead was conducted by Heritage Victoria between 1996 and 1999 and focused on the
homestead, rubbish tip and associated structures (McKenzie 1996; 1997). Of particular interest for this paper is the rubbish tip located 100 metres east of the house (Figure 2). A significant proportion, though not the entire rubbish tip, was excavated and yielded 20,266 artefact fragments. The tip was interpreted by the excavation director as being associated with the Martin family and almost certainly used solely by them (McKenzie 2005 pers. comm.). Artefact dates support this hypothesis with the majority (99.92 per cent) of the dateable artefacts recovered from the tip having date ranges that overlap with the Martin’s occupation of the site. Only two artefacts pre-dated 1844 and two post-dated 1874.

The deposits in the tip were fairly homogeneous, with conjoining ceramics noted through all levels. Given the uniformity of the deposit, it is possible that the tip represents a rapid deposition of household refuse as part of a major cleaning or site abandonment event (McCarthy and Ward 2000:113). Large numbers of complete vessels can be expected in ‘clean-out’ deposits (Crook and Murray 2004:51). Over half of the ceramic tableware and teaware vessels found in the tip were part of matching sets, and many were near complete. The evidence for a clear out event at site abandonment is inconclusive; and the tip may also have been the result of a gradual accumulation of rubbish over a period of time. Food scraps and disposable containers are likely to be the result of week-to-week refuse disposal (Crook and Murray 2004:51). The presence of a large number of condiment bottles, beverage bottles and food-related faunal material in the Viewbank tip supports this pattern of disposal. It is therefore likely that the Viewbank tip was used for some week-to-week rubbish disposal while the Martin family occupied the site and also used in a site abandonment disposal.

Figure 2: Plan of Viewbank homestead showing the location of the tip (adapted from a plan prepared by Heritage Victoria).

It is important to note that the artefacts recovered from the tip do not represent the entirety of what the Martin family owned and used for dining and tea service. Rather, the artefacts represent things that were broken, no longer needed or out of fashion, and subsequently discarded. Generally, expensive goods that retain their value would not be discarded (Spencer-Wood 1987:14). Best sets and silverware are unlikely to make it into the archaeological record: they would have been kept or sold second hand. Yet the artefacts do constitute a sample of what the Martin family used and discarded and what is present can be interpreted.

Artefacts were catalogued in two phases: accession and type series, thereby streamlining cataloguing and allowing for the separation of fundamental and interpretative attributes (Brooks 2005:16-18; Hayes 2007:90). Artefacts were grouped into types with matching material, form, processing, decoration and maker’s mark or as many of these attributes as could be identified. Functional classification was included in the type series catalogue to facilitate analysis; however, it is acknowledged that the intended function of an object is not necessarily the actual function for which it was used and that one object may have different functions over time (Brooks 2005:18). In addition, identifications of form and function are interpretive and subjective.

In interpreting the assemblage, links are made between the artefacts, the reasons they were originally purchased and the ways they were used. While these links are based on likely associations and historical research, they cannot pretend to be foolproof or entirely accurate – they remain speculative. However, the objective here is not to accurately reconstruct the past, but rather examine the role of gentility in the purchase and use of goods to enable interpretations. Despite the fact that the actual practice of genteel behaviour is not represented in the archaeological record, the artefacts can be queried for evidence of gentility (eg Ames 1978; Goodwin 1999). Expected indicators of gentility in a dining and tea service assemblage include matching sets, a variety of sets for different purposes, purpose specific vessels, consistency across dining and tea service and fashionable patterns.

**METHODS**

While there are many possible artefact types that would allow for characterising the material culture of the ‘established middle class’ from architecture to complete assemblages, this paper focuses on ceramic dining and tea service artefacts. There are three major advantages to ceramics: they last well in the archaeological record, there has been much previous research done in historical archaeology on this artefact type, and they were one of the most predominant arenas for expressions of gentility in the nineteenth century.

Food and tea service provided an opportunity for the display of both wealth and the subtle range of behaviours associated with gentility (Fitts 1999; Young 2003:182). Each type of meal and each course within it required the table to be set in a genteel manner using the appropriate tableware. A well set table for genteel dining was orderly, aesthetic and fashionable and was one of the most significant platforms for displays of gentility. This section will examine the composition and genteel nature of the dining and tea assemblages excavated from Viewbank homestead. The assemblage recovered from the tip comprised a minimum number of 157 ceramic artefacts related to dining and 130 related to tea service. This section will focus on four key indicators of gentility in an assemblage: matching sets, variety of vessel forms, consistency in goods for both public and private use, and keeping up with fashions.

Perhaps the most important aspect of genteel dining was the use of matching sets to present an orderly meal (Fitts 1999; Wall 1994:147-158; Young 2003:182). Of the ceramic tableware vessels recovered from the tip, 38.6 per cent were part of a matching set and at least eleven individual sets of...
tableware were represented (Table 1). Nine of the sets included both consuming and serving vessels, while the white granite ‘Berlin Swirl’ set was the only matching set with both table and teaware vessels. A further 23.4 per cent of the tableware vessels were possibly part of three complementary sets (Table 2). These vessels had decorations which were similar but not identical. Such vessels were likely to have been purchased on an ad hoc basis and may or may not have subsequently been used together as a set (Lawrence et al. 2009:75). There were also matching sets in the teaware, with 31.7 per cent of the teaware being part of at least nine matching sets (Table 3). An additional 41.3 per cent of the teaware vessels were possibly used in five complementary sets (Table 4).

Having the appropriate set for each type of meal was an important part of genteel dining. A middle-class family would have sets for everyday use, separate sets for breakfast, lunch and dinner, and best sets (Fitts 1999:52; Young 2003:182). Wealthy households would also have cheaper ceramics for use by servants (Spencer-Wood 1987:16). The use of different sets distinguished the level of importance of each meal, for example to contrast a Sunday dinner from a week day dinner (Wall 1994:146). While it is impossible to determine the exact type of meal a set was used for from the archaeological record, it is possible to speculate on the use of each set in the assemblage in order to facilitate interpretation. To do so, it is useful to draw on historical accounts of what meals entailed.

In British culture, there were three major types of dinners: weeknight dinners, Sunday dinners and dinner parties (Mitchell 2009:126). On weeknights, adult members of the family generally dined alone in the dining room, children in the nursery and servants in the kitchen. Children and servants generally received simple meat and potato meals (Flanders 2003:225), while the adult family members’ meals being more substantial and varied. The quantity and variety of matching sets recovered from Viewbank suggest that the Martins were indeed using different sets for different meals and possibly supplying servants with a separate set or sets.

A set such as the blue transfer print ‘Queen’s’ pattern (Figure 3) or the Mason’s Chinese pattern may have been used for the formal weekday dinners of the adult members of the family held in the dining room. Sunday dinners were comparatively more elaborate affairs and dinner parties more so again with the needs of all guests being accommodated by the service of numerous dishes (Flanders 2003:236). The larger and relatively more expensively decorated ‘Summer Flowers’ set was likely one of the Martins’ best sets and may have been used for Sunday dinners or when receiving guests.

### Table 1: Matching sets of ceramic tableware.

<table>
<thead>
<tr>
<th>Set Name</th>
<th>Type of Set</th>
<th>Type of Decoration</th>
<th>Form</th>
<th>Total Vessels (MNI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bagdad</td>
<td>Consuming</td>
<td>Flow (transfer-printed blue)</td>
<td>9-inch plates (3)</td>
<td>3</td>
</tr>
<tr>
<td>Clematis</td>
<td>Consuming</td>
<td>Flow (transfer-printed blue)</td>
<td>8-inch plates (2)</td>
<td>2</td>
</tr>
<tr>
<td>Floral</td>
<td>Consuming</td>
<td>Flow (transfer-printed blue)</td>
<td>8-inch plates (2)</td>
<td>2</td>
</tr>
<tr>
<td>Queen’s</td>
<td>Serving and Consuming</td>
<td>Flow (transfer-printed blue)</td>
<td>side plate (1), plates (3), platters (2), ladle, serving dish, tureen, ui hollow</td>
<td>10</td>
</tr>
<tr>
<td>Berlin Swirl</td>
<td>Serving and Consuming</td>
<td>Moulded (white granite)</td>
<td>10-inch plates (2), platters (4), ui flat</td>
<td>7</td>
</tr>
<tr>
<td>Girard Shape</td>
<td>Serving and Consuming</td>
<td>Moulded (white granite)</td>
<td>plates (5), serving dish, soup plate</td>
<td>7</td>
</tr>
<tr>
<td>Banded</td>
<td>Serving</td>
<td>Moulded (white granite)</td>
<td>serving dish, platter</td>
<td>2</td>
</tr>
<tr>
<td>Asiatic Pheasants</td>
<td>Serving and Consuming</td>
<td>Moulded/transfer-printed (blue)</td>
<td>10-inch plate, platter, bowl</td>
<td>3</td>
</tr>
<tr>
<td>Masons Chinese</td>
<td>Consuming</td>
<td>Moulded/transfer-printed (blue)</td>
<td>10-inch plates (2), 9-inch plate</td>
<td>3</td>
</tr>
<tr>
<td>Summer Flowers</td>
<td>Serving and Consuming</td>
<td>Transfer-printed (black)/enamelled</td>
<td>10-inch plates (4), 9-inch plate, 7-inch plates (3), soup plate (2), plate, tureens (2), platter, ui hollow vessels (2)</td>
<td>16</td>
</tr>
<tr>
<td>Rhine</td>
<td>Serving and Consuming</td>
<td>Transfer-printed (grey)</td>
<td>10-inch plate, 8-inch plate, soup plate, platter, ui hollow vessel, ui vessel</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>61</strong></td>
</tr>
</tbody>
</table>

### Table 2: Complementary sets of ceramic tableware.

<table>
<thead>
<tr>
<th>Set Name</th>
<th>Type of Set</th>
<th>Type of Decoration</th>
<th>Form</th>
<th>Total Vessels (MNI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banded</td>
<td>Serving and Consuming</td>
<td>Gilded (whiteware)</td>
<td>drainer, plate, ui vessel</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gilded (bone china)</td>
<td>9-inch plates (2), plates (2), ui flat vessel (2)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gilded (porcelain)</td>
<td>10-inch plate, 9-inch plate, 8-inch plates (2), ui flat vessels (2)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moulded/gilded (whiteware)</td>
<td>plates (2), 10-inch plates (3), 9-inch plate, soup tureen</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moulded/gilded (bone china)</td>
<td>plate</td>
<td>1</td>
</tr>
<tr>
<td>Willow</td>
<td>Serving and Consuming</td>
<td>Transfer-printed (blue)</td>
<td>9-inch plates (3), 8-inch plate, platter, serving dish, ui flat vessel</td>
<td>7</td>
</tr>
<tr>
<td>Undecorated</td>
<td>Serving and Consuming</td>
<td>(whiteware) (two variations)</td>
<td>plates (2), 9-inch plate, bowl, serving dishes (2)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(bone china)</td>
<td>8-inch plate</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>37</strong></td>
</tr>
</tbody>
</table>
It is possible that other expensive sets were taken by Mrs Martin when she left Viewbank or given to the Martin children and are not present in the archaeological record.

Breakfast and lunch were less formal affairs but still required their own tablewares. In the Victorian era, breakfast was served early and usually included one hot meat dish and toast with tea (Flanders 2003:225). The ‘Bagdad’ [sic] (Figure 5) and ‘Clematis’ sets of plates may have been for breakfasts. Men would have lunch at the club or at work, while women and children would have a light cooked lunch at home often utilising leftovers (Flanders 2003:225; Mitchell 2009:126). The less expensive sets such as the ‘Asiatic Pheasants’ and ‘Rhine’ sets may have been used to serve lunches.

The possible complementary sets such as the Willow and gilt banded vessels may have been purchased for servants’ use. In addition, quality ceramics may have been handed on to servants if damaged or no longer wanted (Connah 2007:259), but this can be difficult to determine from the archaeological record (Brooks 2007:195). Other sets may have been multipurpose. In her study of hierarchy at Government House in Sydney, Casey (2005:104) found evidence that simply decorated banded, moulded or plain vessels in tea and tableware forms were used as multipurpose sets not designated to lunch or dinner.

### Table 3: Matching sets of ceramic teaware.

<table>
<thead>
<tr>
<th>Set Name</th>
<th>Set Type</th>
<th>Type of Decoration</th>
<th>Form</th>
<th>Total Vessels (MNI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berlin Swirl</td>
<td>Consuming</td>
<td>Moulded</td>
<td>saucers (3), teacups (6)</td>
<td>9</td>
</tr>
<tr>
<td>Marble</td>
<td>Consuming</td>
<td>Flow (transfer-printed blue)</td>
<td>saucers (2), teacup</td>
<td>3</td>
</tr>
<tr>
<td>Marble</td>
<td>Consuming</td>
<td>Flow (transfer-printed purple)</td>
<td>saucers (3), teacups (2)</td>
<td>5</td>
</tr>
<tr>
<td>Banded</td>
<td>Serving and Consuming</td>
<td>Gilded/enamelled (blue)</td>
<td>teacup, jug, ui flat vessels (3), ui hollow vessel</td>
<td>6</td>
</tr>
<tr>
<td>Geometric</td>
<td>Serving and Consuming</td>
<td>Transfer-printed (purple)</td>
<td>saucer, jug, serving dish, ui vessel, ui flat vessel</td>
<td>5</td>
</tr>
<tr>
<td>Sprigged</td>
<td>Consuming</td>
<td>Moulded (relief)</td>
<td>saucers (2), teacups (2)</td>
<td>4</td>
</tr>
<tr>
<td>Unidentified Floral</td>
<td>Consuming</td>
<td>Flow (transfer-printed blue)/enamelled</td>
<td>saucers (2), teacup</td>
<td>3</td>
</tr>
<tr>
<td>Unidentified Transfer Print</td>
<td>Consuming</td>
<td>Transfer-printed (purple)</td>
<td>saucers (2), teacup</td>
<td>3</td>
</tr>
<tr>
<td>Florentine</td>
<td>Consuming</td>
<td>Flow (transfer-printed blue)</td>
<td>saucers (2)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total 40</td>
</tr>
</tbody>
</table>

### Table 4: Complementary sets of ceramic teaware.

<table>
<thead>
<tr>
<th>Set Name</th>
<th>Type of Decoration</th>
<th>Form</th>
<th>Total Vessels (MNI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banded</td>
<td>Gilded (bone china) (three variations)</td>
<td>teacups (14)</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Gilded (porcelain)</td>
<td>saucer, teacups (2)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Gilded/Moulded (bone china) (three variations)</td>
<td>saucers (5), teacups (6)</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Gilded/Moulded (porcelain)</td>
<td>saucer</td>
<td>1</td>
</tr>
<tr>
<td>Tea leaf</td>
<td>Gilded (bone china) (three variations)</td>
<td>saucer, teacups (6), ui vessels (6)</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Gilded (panelled)</td>
<td>saucers (2)</td>
<td>2</td>
</tr>
<tr>
<td>Undecorated</td>
<td>(white granite)</td>
<td>saucer, teacups (3)</td>
<td>4</td>
</tr>
<tr>
<td>Marble</td>
<td>Flow (transfer-printed blue)</td>
<td>saucer, teacup</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Flow (transfer-printed black)</td>
<td>saucer</td>
<td>1</td>
</tr>
<tr>
<td>Sprigged</td>
<td>Moulded (relief)/Panelled</td>
<td>teacup</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total 52</td>
</tr>
</tbody>
</table>

Figure 3: ‘Queen’s’ pattern ladle (TS 750).

Figure 4: ‘Summer Flowers’ pattern plate (TS 421).
The number of tea sets also suggests their use for different purposes: when guests called, between meals and by servants. The sprigged and geometric transfer-printed sets may have been used for taking tea between meals. The gilt banded and tea leaf teawares had variations and were recorded as complementary sets, but may in fact represent either a series of larger sets or individually purchased vessels in these popular patterns. As with the tableware, the cheaper sets such as the ‘Marble’ pattern (Figure 6) and any complementary sets were likely to have been used by the servants.

Tea was also an important part of the ritual of paying calls: a female domain which was essential to the establishment and maintenance of networks in society. Imported from Britain, the system and etiquette of calls were rigid in Melbourne and important for the ‘established middle class’ including the Martins (Russell 1994:50). Calls were made out of courtesy to new acquaintances or in thanks for hospitality, congratulations upon a birth or marriage, or condolence upon the death of a family member. Tea would be served and calls would last from fifteen to thirty minutes (Mitchell 2009:151). The best matching sets of teaware, possibly the flow and enamelled floral set or the ‘Florentine’ set, would have been used at Viewbank when receiving calls, and possibly a silver tea service.

The relative absence of tea service vessels such as teapots and creamers in the assemblage may be explained by the use a silver tea service which would not be found in the archaeological record. As silver has an intrinsic value in spite of changing fashions it is likely that any silverware would have been retained by Mrs Martin or handed down to one of her children.

The Viewbank assemblage shows that genteel dining and tea service were part of everyday life, not just when receiving guests. Genteel performance and display were likely part of the rationale behind the acquisition of the goods; however, the genteel nature of the goods clearly extended beyond goods that would form public display. The Viewbank assemblage suggests that breakfasts, lunches and servants meals in the Martin household all bore the hallmark of gentility, but with a less elaborate air than when guests were in attendance.

The Viewbank dining and tea service assemblage is consistent with the use of a variety of different matching sets for different meals and occasions, but within sets genteel dining also required a wide range of vessels forms, many with specific uses (Fitts 1999:54; Lawrence et al. 2009:74; Shackel 1993:30-42). Different sized plates along with specialised serving vessels such as soup tureens and sauce boats can be associated with more elaborate table etiquette (Yentsch 1991:221). A standard dinner service could include 80 to 140 vessels and include a range of plate sizes, sauce tureens, soup tureens, platters, serving dishes, butter dishes, pitchers and gravy boats (Fitts 1999:182; Young 2003). A large variety of forms were recovered from the Viewbank tip.

Of the eleven matching tableware sets, eight had more than one vessel form and of the three possible complementary sets all had multiple vessel forms. The 10-inch or table plate was the most common in the Viewbank assemblage, closely followed by the 9-inch supper plate and 8-inch twiffler. A smaller number of soup plates and 7-inch muffin plates were also represented. The larger plates would have been used for main courses while the smaller plates may have been used as side or dessert plates, or possibly breakfast or afternoon tea service. Single-function vessels included soup tureens, sauce tureens, ladles, drainers, serving dishes, platters and egg cups (Figure 7). Six vessel forms were identified in the tea service assemblage: teacup, saucer, mug, teapot, jug and serving dish (Figure 8). Overall, this represents a wide variety of vessel forms, many of which were purpose specific.

Good taste and therefore fashion were important aspects of gentility and there is evidence in the Viewbank dining and tea service assemblages that the Martins were keeping up with
fashions. Archaeological evidence suggests that Australians preferred colourful table settings, particularly transfer-prints, in accordance with British and British colonial tastes (Brooks 2010; Lawrence 2003:25, 26) and this is reflected in the Viewbank assemblage. Of the dining assemblage, 58 per cent of the vessels with identifiable decorations were colourful including transfer-prints and flow transfer in blue, black, green, grey, purple and with additional colourful enamelled or gilt decoration. A further 26 per cent of the assemblage had gilt decoration and 23 per cent were plain, moulded and white granite vessels. A similar pattern was represented in the tea service vessels with 53 per cent having colourful decorations including transfer-prints, hand-painted vessels, flow transfers and multiple decorations. There was a higher percentage of gilt decorated vessels at 38 per cent, and a slightly lower number of plain and moulded vessels at 18 per cent. With regard to fashionable patterns, the ‘Summer Flowers’ set and other vessels with enamelled decoration were the height of Victorian fashion: busy and dark toned. A number of popular patterns such as Chinese scenes, classical scenes, ‘Rhine’, ‘Asiatic Pheasants’ and ‘Willow’ were also represented. Further, plain or simply decorated white granite was a relatively more expensive and highly fashionable ceramic type in the United States from the 1850s (Ewins 1997:46-47; Majewski and O’Brien 1987:120-124; Miller 1991:6). Its popularity was largely the result of its association with the sanctity of churches and contrast to capitalist markets (Wall 1992:72). However, it is not clear whether this association carried across to Australia. Many Staffordshire potteries made ceramics specifically for the United States market, and when the American Civil War commenced in 1861, had to find alternative markets for these wares (Brooks 2005:58-59). The white granite vessels in the Viewbank assemblage date tightly to the start of the Civil War. It is unclear whether white granite was marketed as the latest fashion in Australia or sold off cheaply after the United States market restricted. Without a comprehensive study for Australian preferences similar to those done by Sanford (2000) or Majewski and Schiffer (2001) for the United States market, it is difficult to determine the changing fashion in patterns and wares over time (Brooks 2005:34).

Evidence of keeping up with fashion is however present in the dates of the tableware recovered from Viewbank, which indicate that they were updated regularly. Two sets may have been brought to Australia by the family or purchased in their early years in Victoria: the ‘Summer Flowers’ set which was manufactured between 1830 and 1859 and the Chinese transfer-printed Masons plates which were made in Staffordshire between 1820 and 1854. These two, slightly older sets, may have been discarded when the Martins left Viewbank rather than passed on to the Martin children. These were updated with ‘Bagdad’ pattern plates made between 1851 and 1862 and white granite vessels purchased in the early 1860s. A debt to John Stanway for crockery in 1874 indicates that they were still purchasing ceramics in their last years at Viewbank (PROV, VPRS 7591/P2, Unit 17, File 12-586, 11 February 1875). Perhaps one of their final purchases was a ‘Rhine’ plate which dated to after 1869. Only one maker was identified on the ceramic teawares, Liddle, Elliot and Son who manufactured ceramics between 1862 and 1871, so patterns of purchasing could not be determined in the same way as for the tableware. However, the decorative techniques and purchasing patterns for the ceramic tableware indicate the Martins’ interest in keeping up with fashion.

A variety of matching sets with a range of vessel forms in good taste were necessary to meet the specific genteel requirements of each meal. It would appear that breakfast, lunch, afternoon tea and dinner were each catered for with the appropriate tableware at Viewbank. In the following section, observations on the nature of the dining and tea service assemblages will be made in order to interpret how the Martin family were using gentility to define their position in society.

DISCUSSION: GENTILITY AS INHERENT AND DISTANCING

As society in early colonial Melbourne came to incorporate more and more people over the nineteenth century, it became increasingly difficult to tell people apart and material culture became an important element in determining position (Cohen 2006:xi). The middle class became a large and diverse group incorporating many different people with different class backgrounds and lifestyles. Young argues that ‘the range of internal variations set up hurdles of snobbery that generated a tension within the middle class in asserting and maintaining genteel status’(2010:136). For the ‘established middle class’ to maintain their position under the threat of social mobility, the cultural capital of gentility was a vital tool.

The four key indicators of gentility in the dining and tea service assemblages at Viewbank discussed above can be interpreted as characteristic of the assemblages of the ‘established middle class’. In turn, this material cultural pattern can be interpreted as the result of the inherent nature of gentility for the ‘established middle class’ and the distancing function that this served for this group. As such, the ‘established middle class’ could display that they knew the protocols of dining seemingly without effort thereby delineating themselves from other groups in Melbourne society.

For the ‘established middle class’ maintaining their rightful position meant that gentility had to appear to be inherent, that is to come naturally and seemingly without effort (Russell 1994:60). The dining and tea service assemblage recovered from Viewbank indicates that the Martin’s had the required equipment in the correct up to date fashions for this to be achieved. The Viewbank assemblage has a level of consistency with large numbers of matching sets and a wide variety of vessel forms across both dinner and tea services. This is not to say that there were not some cheaper goods, but rather that cheaper goods were purchased for a particular reason (ie for servants’ use). Good taste and refinement was present across the assemblage not just for serving guests but also for private breakfasts, children’s and servants’ meals. With gentility pervading all aspects of their dining and tea taking practice, the Martins can be seen as truly genteel and holding a superior position within society. Gentility was manifest as inherent for the ‘established middle class’. In turn, this material cultural pattern can be interpreted as characteristic of the assemblages of the ‘established middle class’ and the distancing function that this served for this group. As such, the ‘established middle class’ could display that they knew the protocols of dining seemingly without effort thereby delineating themselves from other groups in Melbourne society.

The material culture from Viewbank homestead also suggests that the inherent nature of gentility for the ‘established middle class’ can be seen as taking on a distanc-
ing aspect. Only the truly genteel could display the full repertoire of correct goods and behaviours. This allowed the ‘established middle-class’ to be distinguished from socially mobile people of different class backgrounds. The Martin family, and others equal to their rank, could therefore claim a firm class position at the top of colonial society. For the ‘established middle class’ maintaining this position meant the display of gentility was all the more important, and it can be argued that maintaining delineation from those of lower class backgrounds became an activity with which this group had to become fully engaged (Russell 1994:14-15).

CONCLUSION

In setting out to test the idea that different groups of immigrants to early colonial Melbourne would have distinctive material cultural patterns, this paper has presented a detailed analysis of the dining and tea service assemblage of the ‘established middle-class’ Martin family. The evidence from the Viewbank assemblage suggests four unique characteristics of an ‘established middle class’ assemblage: large numbers of matching sets, a variety of vessel forms including purpose specific vessels, consistency in goods for both public and private use, and attempts to keep up with fashions.

Drawing on these findings, the paper has also proposed how gentility can be used in historical archaeology to make links between material culture and class. By doing so, it was possible to use the archaeological record to make interpretations on the unique way in which this group engaged with gentility as the cultural capital through which they could define and maintain their position in the face of social mobility. The characteristics of the Viewbank dining and tea service assemblage can be interpreted as the manifestation of the inherent nature of gentility for the ‘established middle class’ and also the distancing function it served to delineate this group from those seeking entry to their ranks.

This study suggests that by conceptualising Melbourne society as comprising distinct groups it will be possible to see distinctive material cultural patterns that are characteristic of each group. The concept of class can then be used to examine the distinctive lifestyles and differences between these groups. Such archaeological evidence has potential in interpreting the different positions, and ultimately class negotiations, of different groups of people in early colonial Melbourne thereby adding to the body of knowledge on class in this period. While it appears that gentility functioned in a unique way for the ‘established middle class’, this cannot be fully explained without comparison to assemblages from other groups within early colonial Melbourne in future research. Such comparative studies also have the potential to further examine the relationship between the concepts of respectability and gentility in explaining class and social mobility.

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Forging ahead at Hervey’s Range in the hinterland of Townsville, North Queensland

MARIANNE CLARKSON

One of the acknowledged gaps in historical archaeological research themes is that of early Australian secondary industries, such as blacksmith shops, making any comparison to conclusions drawn from research elsewhere in the world very difficult. The classic diagnostic criteria for a stand-alone blacksmith shop was described by Light (1984) following his work at several Canadian fur trade era sites, with Hyett (2002) suggesting some reasons, such as climate, availability of local materials and transportation difficulties, as to why his findings at an early Australian blacksmith did not adhere to these strict descriptions. Recent excavation work on a heritage listed site in the Townsville hinterland has revealed a possible smith dating to the mid-1860s that also deviates from Light’s criteria, hinting that other factors, such as the customer base, distance from a main town and the experience of the smithy himself, may be important for the shop's design and layout. Further research in this area could help to define a more specific set of diagnostic criteria for early Australian blacksmiths.

INTRODUCTION

The ‘Range Hotel, Burial Ground and Camping Reserve’ (Place ID 700003) was the third place to be registered as an archaeological place on the Queensland Heritage Register (Environmental Protection Agency 2009). The area is located about 36km southwest of Townsville and is part of an old camping ground, gazetted in 1872 to provide additional accommodation options for travellers (Thompson 1872:810). The large historic site contains the (as yet to be precisely located) remnants of the Range Hotel (1866–1884), a small cemetery containing three headstones and at least one bottle dump. The original road which went inland from Townsville to the supply town of Dalrymple, referred to in historical records as Hervey’s Range Road or Dalrymple Road, also passed through this camping ground.

Primary document research has added to the understanding of the landscape by revealing that this small community also included a blacksmith shop, described simply as being ‘at the foot of the Range’. The blacksmith shop was initially run by John McNeil and his wife Isabella (Cleveland Bay Express 14th March 1868). Blacksmith shops were extremely common during early European expansion in Australia, providing an essential service to both settlers and travellers and were often located adjacent to the hotels which quickly sprang up along each new road (Foggo 1990:18, Wright 2003:107). In fact these small hotels and blacksmiths could be described as being the equivalent of today's motorway service stations, providing food, drinks, accommodation, animal care and emergency repairs for equipment and drays.

Investigations, using both archaeological field work and historical research, are now being carried out for the heritage listed site and will form part of a PhD project looking into the cultural landscape of the area. Recent excavations in the area appear to have located the blacksmith’s shop mentioned in the newspaper archives. This is an important finding as research into Australian blacksmiths from this early colonial period is poorly represented in the literature, making it difficult to judge whether Light’s (1984) classic description of a blacksmiths can also be used as a workable model for early Australian smithies. The founding history of Townsville is an important backdrop to the discussion of why and how the smithy was built, contributing to an understanding of the features uncovered during the excavations. The arrangement and layout of the fragmented remains of two structures, one of which contains a possible forge, are compared to Light’s (1984:55–56) criteria, in order to see if these guidelines are directly transferable to Australia, or whether Hyett’s (2002) adaptations are more applicable.

RESEARCH RATIONALE

According to recent work by Schacht (2010) one of the gaps in Australian historical archaeological research themes is secondary industries, such as blacksmith shops. The classic description for a ‘stand-alone’ blacksmiths (ie one not associated with a similar shop, such as a cooperage, or part of a large manufacturer, such as a shipyard) is given by Light (1984:56–62) and is based on his excavation work in Canada on a Fur Trade era shop at Fort Joseph, Ontario, combined with other research on two assemblages, two abandoned shops and two working smithies. He concluded that blacksmith shops have four basic and separate areas, which can be physically demarcated by the structural arrangement of the smithy and its artefacts: the work area, domestic area, storage area and refuse dump.

The work area would contain the stone or brick forge with a chimney and windows allowing for removal of the fumes, an anvil mounted onto a wooden stump secured into the ground and work benches located close to the windows. A separate area could also be present for larger work, such as shoeing animals or making wagons (Light 1984:55–56). The domestic area, identified by artefacts such as storage jars, ceramics, glassware and clay pipes, was a social place for people to wait whilst work was carried out and where the smith ate his meals (Light 1984:56). The storage area, identifiable by piles of new stock, raw materials and fuel, could be located either inside or outside the shop, whilst the refuse area(s) would contain scrap metal, clinker and broken glass and ceramics (Light 1984:56). Light (1984:63) also commented that although the work of a blacksmith could vary depending upon the shop's location...
and customer base, this would affect the type and range of artefacts found, rather than the overall layout of the premises.

De Vore (1990:24) used Light’s criteria in his investigation into the various blacksmith shops at Fort Union Trading Post, North Dakota dating from the 1850s until 1864. He concluded that the structural layout of the forge, anvil, fuel containers and associated artefacts closely resembled the work area described by Light, and although a specific domestic area could not be physically delineated, certain artefacts indicated that social activities also took place. No explanations are offered as to why there is no dedicated domestic area and why this aspect differs from Light’s criteria.

Hyett (2002:93-94) tested Light’s (1984) model in Australia after completing research on an blacksmith shop located in the small township of Strathbogie in the North Central Victorian highlands. This heritage listed, intact blacksmith’s shop, which was established in 1894 and finally closed in 1987, was investigated and the findings specifically compared to Light’s criteria, with several differences becoming apparent. The forge was constructed of wooden slabs on three sides with brick only present on the side closest to the fire and there was neither chimney nor windows through which to dissipate the fumes. There was also no evidence for an in-ground anvil block and the benches were found on interior walls, rather than below a window. There was also no evidence, either physically or by the way of artefacts, for a domestic area.

Hyett (2002:93-96) proposed three main reasons as to why these discrepancies could occur: differing materials available for construction; transportation costs; and adaptation to local social and economic conditions. In Australia locally available materials could have impacted the design by providing alternatives not readily available in other parts of the world, such as the use of a free-standing heavy block of hardwood upon which the anvil could be mounted, negating the need for a stump to be secured in the ground (Hyett 2002:94). Charcoal, which was readily available in the heavily timbered Strathbogie district, could have provided a much cleaner, locally sourced fuel than Canadian black coal, rendering a chimney unnecessary (Hyett 2002:93-94). Transportation costs and favourable climatic conditions could account for the use of wooden shutters, rather than glass windows. The absence of a domestic area is explained by the blacksmith’s customer base with busy farmers having little time to wait around socialising whilst work was carried out, preferring instead to send work in with neighbours or passing trades people who were visiting town (Hyett 2002:94).

EARLY HISTORY OF TOWNSVILLE

Townsville, founded in 1864 by John Melton Black and Robert Towns, is situated on the North Queensland coast and is separated from the hinterland by Hervey’s Range.

In order for Townsville to become established as the primary port for the newly established Kennedy District it needed to have what neighbouring rivals Cardwell and Bowen did not – good access to the hinterland with its pastoralists and gold mines (Port Denison Times 9th November 1867, Griffin 1983). Hervey’s Range Road was built by Melton Black with the help of a government subsidy and opened in late 1865 (Viator 1933:77, Port Denison Times 12th August 1865:1). The road travelled west from Townsville, climbed and crossed the steep Hervey’s Range at Thornton’s Gap, then continued inland to the small township of Dalrymple on the upper bank of the Burdekin River approximately 73 miles (118km) away (Pugh 1870:258). In 1869 the government erected a much maligned toll gate on the road at Thornton’s Gap (Cleveland Bay Express and Cardwell Advertiser 4th January 1868), but this was forced to close in 1871 after a boycott of the road by local carriers (Ross 1868). This journey inland using bullock drays, which could only cover about 10–12 miles (17km) a day, would have taken several days with additional time and double-banking of bullocks needed to negotiate the steep and dangerous climb over the Range (Corfield 1921:42-43, Carrington 1871:207). Small roadside hotels were thus built at strategic distances along the route to service the travellers and miners and they were an essential part of the road’s and hence Townsville’s early success. By 1867 there were five hotels between Townsville and Dalrymple: The Alice, The Bohle, The Range, The Eureka and Plum Tree Creek. These hotels were a social hub for neighbours and provided alcohol, accommodation, meals and stabling for travellers and carriers.

John McNeill and his wife Isabella built and ran the blacksmith’s shop associated with the Range Hotel, moving to the area in early 1866. Originally from the Paisley and Calton areas of Glasgow, Scotland, both had worked in the cotton industry, John as a cotton yarn twiner and Isabella as a cotton spinner, prior to their emigration to Australia with their two young children (General Register Office for Scotland 1861). Although the exact travel dates are unknown, they had arrived in the newly opened Kennedy District of North Queensland by July 1864, when John gained employment as a labourer and blacksmith at Bluff Downs station owned the Hann family (Hann 1975, Registrar-General 1866). By February 1866 a new blacksmith had been employed at the station (Hann 1875) and the McNeills had taken residence closer to Townsville along the newly constructed Hervey’s Range Road close to the Range Hotel, which had recently been built by James Mead and his partner William Freer (Cleveland Bay Express and Northern Advertiser 22nd December 1866). The blacksmith’s shop was offered for sale as a ‘First-class opportunity’ in 1868 (Cleveland Bay Express 14th March 1868), but it is not known whether a sale eventuated or not. However, the McNeills remained in the area with John working various jobs, including that of tollgate keeper at Thornton’s Gap (Registrar-General 1869) and he may have continued at the blacksmith as needed if it remained unsold.
EXCAVATION WORK

Site Description

The gazetted camping reserve is a relatively flat area bordered on its western side by the steep Hervey’s Range and traversed by a myriad of small rivers and creeks. As well as the remnants of the original road, which is now referred to as Page Road, the area is also transected to the south by the new Hervey Range Development Road, opened in 1975, and by a row of high voltage power lines. The main native vegetation is open woodland and includes a variety of Eucalyptus trees, including Iron Barks, along with Black spear grass, Kangaroo grass and Cocky apple (Planchonia careya). Also present, especially around the excavation area and cemetery, are introduced species such as Lantana and Agave. There are a number of small farms and houses in the area, although none are visible from the site itself.

Methodology

The first excavation work in the area, done essentially to determine the site’s archaeological potential, was undertaken by JCU Honours students under the supervision of Dr Nigel Chang in 2008. This work, which uncovered a bottle dump, was part of the assessment undertaken for the site’s listing on the Queensland Heritage Register. Field surveys were then carried out in an area about 800 metres to the east of the original excavation in a place previously identified by Hatte (2000) as a possible location for the Range Hotel. Here surface artefacts, such as fragments of glass, ceramic and metal, were found intermingled with several clumps of non-native Agave plants and two surface stone features. The first feature consisted of two rows of stones, each only one stone wide and approximately 3-4m in length, running roughly parallel to each other 2m apart, whilst the second was a raised circular-looking stone arrangement covered in sand located at the end of one of the rows.

Excavation work in this area commenced in August 2010 under the supervision of Dr Nigel Chang and with help from JCU archaeology students. To gain as much information as possible about the nature of the stone features in the short time available for the work we excavated two trenches, designed to cut across both stone features and running at right angles to each other. The soil was removed in 1x1m squares using 5–20cm spits until a hard red layer was reached at a depth of 15–30cm. All of the excavated soil was sieved with any artefacts collected and bagged. The stones were left in-situ. In total sixteen squares were excavated and this was increased to thirty seven during a second excavation in May 2011, when most of the area between the initial trenches was removed to uncover the majority of the stone features.

Results

The excavations revealed two possible structures. The first was a raised platform made from large flat stones and measuring approximately 2x1.5m. It had been constructed on a slight slope and in order to make the platform level had been built up on the southern, western and eastern edges by at least three rows of stones which had now collapsed outwards (Figures 2 and 3).
A well-constructed stone ‘forge’ was revealed towards the southwest corner. This had a base made from one large flat rock, cracked into two pieces, which sloped down to a charcoal-filled hole at a depth of 20 centimetres. Multiple small metal fragments were also mixed in with the charcoal. The low walls surrounding this base were built up using rectangular shaped stones so that they were higher than the platform. There was a second concentrated charcoal deposit at the front edge of this feature and there was a possible post hole to the top right of the forge (Figure 3).

The second stone feature (Figure 4) was located to the southwest of the platform and appeared to be composed of one
stone wall base with a second area of stones located about 2 metres to the west. These stones appeared to be more randomly arranged than those in the wall base and could have been the remnants of a collapsed wall or even an attempt to create a floor. Two post holes 1 metre apart were found about 50 centimetres away to the west, running parallel to these stones (not visible on the photograph).

Artefacts

The recovered artefacts were associated with both stone features and were categorised according to function: domestic/social, structural and commercial.

Table 1: Type, function and number of artefacts fragments found across the two stone features.

<table>
<thead>
<tr>
<th>Artefact Type</th>
<th>Function</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass</td>
<td>Social/Alcohol</td>
<td>487</td>
</tr>
<tr>
<td></td>
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<td>306</td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td>Other</td>
<td>13</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Domestic</td>
<td>5</td>
</tr>
</tbody>
</table>

Unfortunately the majority of the fragments were too small for dating purposes and no makers marks were found on the ceramic pieces. Domestic items included variously patterned ceramic fragments from plates and bowls, the base of a small white vase and a delicate porcelain teacup handle. Lamp glass, glass from a jar, small fragments of blue glass, two buttons, a spoon fragment and a small piece of clay pipe were also found, as was a small, beautifully crafted, gold pendant (9 or 14 carat).

Alcohol related items included a complete green bottle neck with applied ring finish (dated from the 1880s to the mid-20th century), thick black glass from bottle bases and finishes and many other small fragments varying in colour from light to dark green. Structural items such as roofing nails were found around both features, whilst work related items including horseshoe nails, metal fragments, charcoal and two joined metal rings were discovered around the forge area.

DISCUSSION

The excavation exposed two separate, but related stone features, which appear to be part of John McNeill’s blacksmith shop mentioned in the archival records. Although the site has probably not been completely uncovered and very little of the shop’s structure now remains, knowing its function, location and the early history of Townsville provides enough evidence to attempt a comparison to Light’s (1984) classic criteria. Any differences to this will be assessed to see if Hyett’s (2002:95) explanations are also applicable here or whether other factors can be postulated.

Townsville was only just becoming established in 1866 and was an arduous three or four days journey away by bullock dray, meaning that supplies, such as glass for windows or bricks for the forge, chimney and walls would have been hard to come by and expensive to transport. In fact up until 1868 the majority of buildings in and around Townsville were constructed of weatherboard with bush timber and bark shingles as bricks had to be imported from the south until 1870 when the first brickworks opened in Townsville. Even though brick buildings appeared a year later in 1871, they remained very much in the minority until the end of the century (Sumner 1978:15, Gibson-Wilde 1984:45, Gray 1868: 15, Sundowner 1954:7). Thus, as also concluded by Hyett (2002) locally available material would have had to suffice for the construction of both the building and the forge.

The work area(s)

The structure for the work area and forge is located alongside Page Road, which is believed to follow the route of the original Hervey’s Range Road. The likely structure of the blacksmith’s shop would have been simple and could have been composed of a half wall of stones and/or wood with wooden shutters and a shingle or later metal roof. There is no evidence for a chimney to take the smoke and fumes out of the building, but a simple open nature to the building and the use of charcoal as a fuel would negate the need for both this and for windows as additional ventilation in the tropical heat. The forge itself was constructed of shaped rocks and originally the sides may have been built higher. A grate/fuel container would have been put across the top onto which charcoal was placed and burnt. The bellows used to increase the heat would be inserted into the opening below the grate. Rusted, metal fragments, small curved pieces of metal and horseshoe nails were found around and on the platform, whilst other metal fragments were mixed in with charcoal located in the forge.

The flat platform of stones would have provided a stable, level area on which to work and created a solid support for the quenching tub and anvil. The anvil was likely mounted on a large block of Australian hardwood (Hyett 2002:93-94), which may or may not have been secured into the ground (possibly into the post hole located in the platform – see Figure 3). There is no remaining evidence for the bellows or the work benches and it is likely that all movable equipment was removed and recycled once the blacksmiths closed down and the Range Hotel was abandoned in the mid-1880s.

The second stone feature could have been another work area for larger work, such as repairs to drays or shoeing of animals. The rough jumbled base of rocks could have
provided a dry, firm foundation for heavier items or for animals to stand on. This would have avoided overly damaging the ground through repeated use and reduced the risk of the area becoming a quagmire in the wet season. There is evidence for at least two post holes to the western edge, which could have been either structural or used for tethering animals.

**Domestic area**

Alcohol-related glass fragments were found across both stone structures, whilst ceramic fragments from cups, plates and bowls were particularly evident around the forge. A small piece of clay pipe was also found to the eastern side of the stone platform. However, other definitely domestic items were also located in and around the second stone feature: ceramics, a spoon, two buttons, lamp glass, blue glass, and a small piece of gold jewellery. The distribution of artefacts seems to indicate that social activity was an integral part of the shop’s activities, but does not point to a dedicated domestic area. These findings are similar to those described by De Vore (1990:12), but differ from Hyett’s Strathbogie shop, which had no evidence of any domestic area.

**Storage and refuse areas**

No evidence was found in the excavated area for any type of storage area. However, pieces of metal artefacts and bits of broken ceramic found on the ground on the opposite side of Page Road, point to a possible location for the refuse dump.

**CONCLUSIONS**

This study would seem to support Hyett’s assertions that blacksmith shops varied more widely than Light’s criteria suggest. However, although it seems that the availability of local materials, transportation costs and economic constraints were important determining factors in how early Australian blacksmiths were designed, this study also highlights other possibilities that may have had an impact upon their layout; the main function of the shop, its distance from the nearest town; and the background and experience of the blacksmith.

John McNeill’s blacksmith shop was built at about the same time as the Range Hotel in early 1866 to service the local carriers, travellers and pastoralists of the new Kennedy District, North Queensland. In order to establish Townsville as the primary port for the area a road inland, passable by bullock drays, was an essential requirement. Hotels and camping grounds fulfilled the accommodation and social requirements for people, whilst the associated blacksmith shop provided a farrier service and could also cater for emergency repairs to wagons, bridles, drays and other equipment. The blacksmiths in these road side locations, which were often several days travel from the closest town, were unlikely to be doing intricate iron work, lock smithing or making household objects or tools from scratch; local customers did not need this type of work and both supplies and the finished products would be difficult and expensive to transport to and from the town. Thus the shop would need a work area with a small forge with another area set aside for larger repair work to drays. A separate domestic area was unlikely to be needed if a hotel was located close by, although with a drink in hand men may well have stood around whilst the smith worked, catching up on the local news or gossip.

The experience of the blacksmith may also have dictated both the layout and size of the shop as well as where he chose to work. If properly apprenticed with a wide range of skills a blacksmith was an important member of the community, but to use his skills to the fullest he would have needed to be in a town, close to both suppliers and customers. A less skilled operator, such as John McNeill with his background in the cotton industry of Glasgow, may have been unable to cope with the competition in the towns and thus may have chosen to work in a more remote location performing a necessary, but more limited variety of work. The fact that he tried to sell the shop just as the toll gate was established and boycotts of the road were being organised, gives added weight to the idea that his customer base was heavily reliant on the passing carriers and that his income was threatened by developments beyond his control.

This work adds weight to Hyett’s conclusions that further research is needed before any definitive criteria can be established for early blacksmith’s shops in Australia. The location of the shop and its customer base would seem to play an integral part in determining how the shop was designed and functioned. Even for ‘stand-alone blacksmiths’ it may be more appropriate to see the shop as being part of a community complex, intricately connected to and affected by both its neighbouring businesses and customers.

**ACKNOWLEDGEMENTS**

Many thanks go to my PhD supervisors Dr Nigel Chang and Dr Shelley Greer for their support and assistance. Thanks also to the James Cook University archaeology students, both in Cairns and Townsville, who have given their time and energy to help with the excavation work. I am grateful to Sandie Robb from the Department of Environmental Resource Management in Townsville and to John Edgar from the council’s heritage department. Townsville City Council gave permission for work to be carried out in the area and their works department were extremely helpful in maintaining the road access and with the clearing of the cemetery.

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RESEARCH NOTES

Pakington Whaling Station, Port Gregory: a short report on site inspections and later discoveries of whaling-related features and evidence

JENNIFER RODRIGUES

A series of site inspections and test excavations were carried out at an historic whaling site at Port Gregory, on the mid-west coast of Western Australia, by volunteers and researchers of the Department of Maritime Archaeology, Western Australian Museum. The site contains considerable archaeological evidence associated with shore based whaling activities, which is also confirmed by the available historical resources. This research note provides a brief historical background to contextualise the site and its associated activities. The paper also discusses the findings of the site inspections, the extent and nature of the archaeological evidence distributed across the area (which includes both surface and subsurface evidence), the natural and human impacts from which it suffers and the archaeological potential it contains.

INTRODUCTION

Between 1985 and 2006 five site inspections were carried out by the Department of Maritime Archaeology, Western Australian Museum, at an historic whaling establishment in Port Gregory, on the mid-west coast of Western Australia, known as the Pakington whaling station (refer to Rodrigues et al. 2006 for the full report). Museum staff first visited the site in 1985, while on an expedition to carry out archaeological investigation of Western Australia’s first coastal steamship, SS Xanthe, which sank at Port Gregory in 1872. An opportunistic visit was then made in January 2006 in conjunction with test excavations carried out at Kalbarri, a site believed to be associated with the explorer George Grey’s 1839 expedition (Rodrigues 2006). This visit was conducted in order to record the GPS position of the whaling station including significant features observed, photograph the area and its features, and to assess the station’s present condition, including any evidence of more recent disturbances, deliberate or natural, since the last inspection in 2003. A discussion of the artefacts recovered during the 2003 visit is included in this report. This paper also reports on some features and structural remains that became uncovered within the intertidal zone shortly after the 27 January 2006 visit that resulted in a further site visit in February to identify these newly exposed features and structural remains.

LOCATION, DESCRIPTION AND A BRIEF HISTORY OF THE SITE

Port Gregory lies 47km north-west of the town of Northampton, which is 474km north of Perth (Figure 1). The Pakington whaling station is in the area of the proposed Pakington township (Lands and Surveys map, Pakington, A.C. Gregory 1883), located behind the sand dunes of Hillock Point, opposite Gold Digger Passage (Figure 2). To more accurately describe its historic location, it is now referred to as the Pakington whaling station. The whaling business in the area was started by Captain W.A. Sanford and his partners David Ronayne and Joshua Harwood in 1854 and another whaling party run by John Bateman operated in the area between 1857 and 1875. In addition, oral history records a whaling station operating north of Hillock Point up until the 1920s (Gibbs 1995:373; McIlroy 1987:87). It is possible that the Sanford and Bateman whaling parties lived closely on separate lots of the Pakington township (Gibbs 1995:377) although such proximity is considered unusual given the natural rivalry that could expected between two competing shore whaling parties (see for example Kostaloglou 1998). Gibbs (1998:40) reports that consolidation occurred between 1843–1869 when ownership of whaling parties had moved from broad joint investments of the 1830s to smaller partnerships or single owners. Eventually, the west coast industry fell increasingly into the hands of Harwood and Bateman who both ran more than one station on different parts of the coast.

Early explorations

The first known European to pass through the area was George Grey who, after aborting his attempt to explore the Shark Bay and Gantheaume Bay regions, was forced to walk back to Perth through this region in 1839 (Henderson 2007:215). At that time, the Swan River settlement had begun to outgrow itself and attention had turned further north for suitable land for agriculture as well as the hope of finding minerals similar to those that caused the gold rushes in the eastern states.

George Grey kept a journal (1841i and ii) in which he described the countryside around Port Gregory, which impressed him, as being ‘good country’. It should be noted that Grey travelled through the area in April 1839 after a lot of rain had fallen. Nevertheless, his description of this countryside aroused much interest in Perth. In 1849, the explorer Captain A.C. Gregory described the harbour as being well protected from all winds by the reef and as well adapted for small vessels (McDonald 1993:18). By now, interest in Port Gregory began to intensify and people wondered seriously about the possibility of agriculture and available land in the area. At the same time, debate began to arise as to its suitability as well as issues of safety because of perceived problems with Aboriginal people in the area. Consequently, in 1852, Governor Fitzgerald visited Port Gregory to assess its suitability for himself (McDonald 1993:19-20). He eventually came to a decision that Port Gregory was storm-proof and appropriate for large boats to enter.
Figure 1: Declared area (lined) of Pakington Whaling Station and the wreck of the SS Xantho (1872) at Port Gregory, Western Australia (J. Rodrigues).

Figure 2: Location of proposed Pakington township in Port Gregory (after Lands and Surveys 1883 map).
Industry and agriculture

The establishment of a whaling station at Port Gregory followed soon after the opening of the mid-west region of Western Australia for mining and pastoral purposes (Gibbs 1995:373). Lead ore from the Geraldine Mine (Australia’s first commercial lead mine and Western Australia’s first commercial mining venture), located 40km north of Lynton, was shipped out of Port Gregory to Singapore. Farming of grain and grazing also occurred before whaling began, and Messrs Steele and Co. had also reported good quality salt from the lagoon immediately inland and had been sending salt to Fremantle since 1850 (McDonald 1993:1).

Lynton Convict Hiring Station

The Lynton Convict Hiring Station, located on the road to Port Gregory (10km east of Port Gregory), was established in 1853 to serve the Geraldine Mine as well as pastoralists in the area. The depot served as an employment agency where ‘ticket of leave’ holders could be hired by private enterprise. Lynton House was also the residence of Captain Sanford, discussed further below.

The advent of convict labour and their pensioner guard soldiers in 1853 saw a small community struggling to exist in the area (McDonald 1993:29). Life was hard for the families of pensioner guards who were still living in tattered tents in 1855, while five single women from ‘Bride ships’ were also recorded to have arrived at Lynton. On 1st March 1854, the Government officially proclaimed the twin town-sites of Pakington (Port Gregory) and Lynton, with building lots available for purchase. The name Pakington was chosen in an attempt to secure the favour of J.S. Pakington, the Secretary for the Colonies at the time, who did not favour the project and felt the money being spent on Port Gregory was a waste (McDonald 1993:29). In December 1856, the Lynton Convict Hiring Station was abandoned because of harsh conditions and continued problems with transporting ore from the Geraldine mine.

Whaling (1854–1875)

The Port Gregory whaling industry was established through the efforts of Captain W.A. Sanford who was already managing farming and grazing in the area (McIlroy 1987:82). In January 1854, it was reported that sperm whales were ‘literally swarming’ on the coast adjacent to the harbour. Several months later, Captain Sanford announced that he was forming a whaling party in partnership with Fremantle businessman David Ronayne. However, the party suffered difficulties and only one humpback was caught in that first year, resulting in the dissolving of the partnership. Sanford, however, still hoped to attract one of the major whaling parties up to Port Gregory so he persisted the following year and, despite losing two whaleboats, obtained 16 casks of oil valued up to Port Gregory so he persisted the following year and, despite losing two whaleboats, obtained 16 casks of oil valued at £800 (McIlroy 1987:82; Heppingstone n.d.:6). With the 1855 season proving more profitable, the following year saw Harwood’s crew (1856 –1860) is known to have lived in Sanford’s storehouse, built on lot number one of the proposed Pakington town site (BL M386) … There are no historical references which pinpoint the location of either Harwood’s or Bateman’s processing areas or try works, although there are several allusions in contemporary sources that the station(s) were opposite Gold Digger Passage (eg Inq 29/6/1859).

On the 1883 Lands and Surveys map there is a rectangular feature that could be a shed or another built structure aligned with, but not within, lot one of the Pakington township (Figure 3). Shortly after the 27 January 2006 visit, Mrs Sandra Simkin, regional historian and owner of historic Lynton Station near Port Gregory, advised that historic features of the Port Gregory whaling site that had never been seen before had become exposed as a result of a week of strong southerly winds. The exposed features included a stone ‘jetty’ in the intertidal zone on the beach (exposed at very low tide), a pile of brick ‘ruble’ also on the beach (possibly relating to a try works) and further erosion from the existing sand dune blow out/four-wheel drive track, exposing a stone ‘floor’ of a built structure (Rodrigues et al. 2006). Overall, the extent of the site based on the 2006 visits, previous documentation and the more recent report (Rodrigues et al. 2006) suggests a much larger extent than was initially known, covering an approximate area of 200x70m and encompassing the protected section behind the dunes as well as the beach and fore dune areas.

Difficulties and setbacks

By 1854 Port Gregory was a hive of activity although not the happiest of places. Work on the Hiring Station was slow and the site chosen for the station was hot and airless. Fresh water and vegetables were hard to come by and men began to suffer from scurvy (McDonald 1993:24). Complaints also began to emerge about the bad road from the mine and the lack of water in summer. In addition, there were problems with the causeway between Lynton and Port Gregory. Furthermore, people felt deprived of religious services, mail services (which did not commence until 1860) and suffered general health problems. It was also found that the port was not as safe as first thought (Heppingstone n.d.:5). Setbacks, such as the loss of ships and cargo (the American whaler Iris, for example, was stranded for 6 months between July 1855 and January 1856), affected shipping activity. The pensioner guards managed to make the best of the harsh conditions, as they could supplement their income by collecting salt from the Hutt Lagoon to support their families.

Letters from Captain Sanford in 1854, in regard to the whaling station discussed: the want of provisions (flour); carelessness of his men who lost three boats; abusiveness and theft of rum from the stores; a drunken riot between whalers; and a series of north-west gales hampering activities and destroying equipment (Lynton to Ayshford 5 July 1854; Lynton to Ayshford 15 September 1854).

In his study of whaling stations on the west coast, Martin Gibbs (1995:373) states that:

Harwood’s crew (1856–1860) is known to have lived in Sanford’s storehouse, built on lot number one of the proposed Pakington town site (BLM386) … There are no historical references which pinpoint the location of either Harwood’s or Bateman’s processing areas or try works, although there are several allusions in contemporary sources that the station(s) were opposite Gold Digger Passage (eg Inq 29/6/1859).

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Site conditions

Port Gregory is bounded by the Pink Salt Lake and is itself a lagoon formed by a reef running parallel to the coast for about 3km. The enclosed area of water forms a safe harbour for boats and small ships and is entered through one of three
passages at the far northern end of the reef (Gibbs 1995:376). McIlroy (1987:79) also observed that the site was less isolated compared with many other whaling stations along the Western Australian coast.

The Pakington whaling station site is located behind the high foredune surrounding Hillock Point (at the north end of the harbour) and is generally well protected from wind and spray. The site is generally covered by thick shrub so that the archaeological features and isolated artefacts, even though located within small sandy clearings, are not immediately visible. Good water was also known to have been available 0.6m (two feet) below the surface (Roe 1854 in Gibbs 1995:376). This is interesting given that one of the complaints from residents at the time included the lack of fresh water.

The site predominantly consists of brick and other light artefact scatters on the surface including isolated features of burnt or blackened bricks showing evidence of animal fat, possibly blubber. Other features include whalebones, as well as a variety of glass bottles (mainly dark olive green) and ceramic fragments in the rubbish heap located along the track connecting the site to the beach. Gibbs (1995:376) excavated a 1m square test pit and found subsurface material buried to a depth of 50cm. Deteriorated ironwork was also reported previously by Museum archaeologists. Iron fragments were recovered during the 2003 inspection and some were also observed during the 2006 inspection, including what appeared to be a ‘hook’.

Feature and material recording

During the January 2006 inspection, GPS positions were taken of individual features of the site, which included brick and stone scatters, ferrous metal, whalebone and a previously unrecorded rubbish heap of historic material including glass, ceramics, bone, oyster shells and brick exposed by a four-wheel drive track cutting through the fore dune (Figure 4).

Figure 4: Four-wheel drive track cutting into foredune (WA Museum).

Previous site visits

On 5 May 1985, Mack McCarthy, Steve Cushnahan, Brad Duncan, Nancy Mills-Reid and Jon Carpenter carried out a search over Leander Passage, which included a preliminary survey and predisturbance recording of artefacts. The team saw signs of holes made from souvenir-hunting activities and probing, which had unearthed one camp oven. They concluded that it was either an 1840–50 whalers’ camp or wrecking camp associated with the whaler Iris which ran ashore on Hillock Point in 1855. Some evidence of Aboriginal post-working of glass fragments was also recorded.
McCarthy (pers comm. 2008) advises that on 19 March 1988, he swam looking for a ‘reef of whale bone’ but was unsuccessful. He subsequently proceeded to Sanders’ whaling camp where he noted, with disappointment, that a whaling tour taken through the site had caused disturbance to the site and those involved had failed to cover their disturbance, thus, leaving it open to natural and human degradation. On 29 July 1999, another visit was made to the whaler camp at Port Gregory for a general site inspection. In October 2003, McCarthy and volunteers from the Maritime Archaeology Association of Western Australia (MAAWA) again visited the Pakington site. This time, they searched for but found little evidence apart from some surface scatters, which were recovered for identification and analysis.

Artefacts recovered during 1985 inspection

Samples of artefacts were collected in 1985. There included ceramic fragments consisting of white sherds with blue prints or patterns, including stoneware and earthenware. Most of the sherds are in forms indicating bowls or jars (HPC1, HPC29 HPC36 and HPC44). There is also one obvious bowl base fragment (HPC46, Figure 6) and one unidentified small fragment (HPC7). A clay pipe bowl with a design around the lower half and a stem fragment was also recovered.

The glass artefacts consist mainly of bottle fragments. These consist of two bottleneck fragments, fragments of a circular, olive-green bottle (HPC4) similar to HPC3 and one square or case bottle fragment (HPC43). The olive-green bottles are a common item found at nineteenth-century historical sites and often referred to as ‘wine bottles’ (based on the shape of the neck and body) though they could have contained some form of ale as well. At least one of the HPC3 necks has twisting marks, a flat-sided lip and lower neck ring. The other fragment has a rounded lip with a v-shaped string rim. The remaining glass fragments consist mainly of light or pale green bottle fragments. There is one near complete, circular, pale green pickle jar (HPC45), which is missing its base. HPC2 and HPC42 appear to be fragments from circular, pale green pickle jars though not of the same one judging by the difference in thickness and form. HPC37 are two fragments of pale green glass.

The lead artefacts include two fragmented flat sheets of lead (HPC39) and two pieces of collapsed lead sheets (HPC6 and HPC35). HPC6 appears to be made of thin lead strips that have collapsed or crumpled into a ‘ball’. Ten fragments of orange bricks were recovered (HPC8), which are only part of the number of orange bricks still on site. These are consistent with what can be found at whaling sites, as they are normally associated with try works. At least one orange brick observed on site had evidence of having been burnt with what looked like animal fat residue. Six pieces of charcoal or burnt wood were recovered from the site (HPC10). This is to be expected
given that manufacturing of whale oil on site as well as other forms of cooking or heating processes would have occurred.

An iron nail or bolt (HPC34), identified as a ship’s fitting, has been recovered from the site. Five fragments of iron bolts (HPC11) were also recovered including fragments of long, flat iron pieces of varying thickness (HPC12 and HPC13). It is not known what these were used for. A brass pen nib (HPC31) and a copper alloy nail fragment (HPC38) were also collected, the nail fragment being a possible sheathing tack.

The marine artefacts in the collection consist of limpet shells (HPC15), possible sea snail/winkle shells (HPC16), oyster shells (HPC18) and white coral fragments (HPC33). A variety of animal bones were recovered from the site. HPC14 consists of fish bones, an exoskeleton piece and crab claw section. HPC19 are mandible or jaw fragments of a large mammal. There are also assorted bone fragments (HPC20), some with butcher marks. HPC21 are whalebone fragments showing signs of surface erosion. In the collection are also knuckle bones (HPC22). HPC23 is an assortment of bone pieces including ribs, tibia and femur. There are also rib fragments (HPC24) and also some butchered bones. HPC26 are bone fragments of a large unidentified mammal, which consists of two pelvic fragments and other pieces with butcher marks. HPC27 are assorted bone fragments and HPC28 includes bone pieces from a large mammal.

The evidence points to a variety of activity in the area associated with whaling but also of daily activities associated with those who lived and worked on the site. The evidence of the try works, remains of whales as a result of whale hunting and processing, as well as other animal bones, glass bottles and jars reflecting what was consumed by the people, all confirm the archaeological potential of the area associated with nineteenth-century whaling-related activities.

**Threats to the site**

One advantage of the site is that it is hidden behind the sand hill and not obvious particularly to visitors unaware of its existence. Brick scatters and other features within the area are often also hidden by thick and prickly shrubs and unless one is aware of an old whaling establishment in the area it would generally be difficult to come across these features. The four-wheel drive track leading to the site has some modern rubbish indicating that people have passed through in more recent times. The dirt track running through the site is probably the only direct and obvious disturbance.

This provides the site with better protection compared to other sites where, for example, well-used camping areas are built directly over remains of former whaling stations (Nash 1998:27) which is directly impacting on archaeological evidence. Being protected behind the high foredune also means that the site is significantly protected from wind and spray. The only natural erosion noted recently took place on the beach, including the intertidal zone and sand dune blow out and four-wheel drive track, which is impacting on the historic material.

**SIGNIFICANCE ASSESSMENT**

Features consistent with relatively long-term occupied shore whaling sites include storehouses and sheds to house whaleboats, whaling gear, casks of oil, try works whalebones and discarded material. Most of the structures were built on or just behind the beach to allow easy access to the boats and for processing of whales. The recently discovered features are consistent with whaling related structures expected to be found at such a site, especially given the reference to ‘Sanford’s storehouse’ and the absence of historical evidence of other activities in the area that would have used built structures. In addition, the exposure of the structures on the beach and intertidal zone, as well as the subsurface materials as excavated by Gibbs in the mid 1990s, suggest that more material may lie buried along the beach area as well as within the site. A previous archaeological assessment states that ‘The Port Gregory site contains no extant structures related to the whaling period’ (Gibbs 1995:376), so the identification of such features would quite significantly increase the heritage and archaeological values of the site.

The site and artefacts so far recovered provide the potential for insights into the lifestyle and diet of the whalers. There is certainly sufficient evidence to indicate that the site is archaeologically and historically significant. From a scientific point of view, there is also a potential to compare the rate and extent of disintegration with other whaling stations along the Western Australian coast to assess the environmental and human impact in contributing to this process.

The Pakington site is associated thematically with a number of other archaeological whaling sites as well as aspects of early exploration and industry expansion in Western Australia. For instance, Port Gregory was explored and established as a result of the Swan River settlement’s expansion. Port Gregory was also first discovered by a significant historical and political figure, George Grey, who was travelling south to Perth after being forced to abandon his plan of exploring and charting the Shark Bay and Gantheaume Bay areas in 1839. The Pakington site, being one of Western Australia’s earlier whaling stations, is also significant in its potential to inform about the state’s early whaling industry. Furthermore, the site may also provide insights into early European contact with Aboriginal people.

**CONCLUSION**

The variety of artefacts recovered in 2003 as well as those remaining in-situ provide sufficient diagnostic evidence of nineteenth century whaling and associated activities. The archaeological evidence associated with the site, along with supporting historical documents, confirms the site’s significance in terms of its operations and associated historical identities.

Harwood’s crew is known to have lived in Sanford’s storehouse, built on Lot One (Figure 3) of the proposed Pakington townsite. It is probable that Bateman would have been required to lease land within the Pakington townsite subdivisions, although no record of this has been found. No historical records pinpoint the location of either Harwood’s or Bateman’s processing areas or try works although, as mentioned earlier, there are several allusions in contemporary sources that the station(s) were opposite Gold Digger Passage (eg *The Inquirer* 29/6/1859:2). The only reference directly relating to a processing plant is an 1858 report, which states that the try works building and a considerable quantity of whaling gear had been completely destroyed in a fire originating from the tryworks furnace (Perth Gazette 13/8/1858:2). As Bateman had not formed a Port Gregory party during that season, this could only have been Harwood’s plant (Gibbs 1995:376).

An assessment should be made of the significance, condition and potential for damage to the exposed remains, and if site stabilisation work is required if natural processes do not rebury the exposed remains. Furthermore, the four-wheel drive track should be closed and/or re-sited in consultation with the Port Gregory community to avoid further damage and erosion to a significant part of the archaeological site.
Further research should be carried out into historic sources and the distribution of artefacts over the site in order to determine if there are the remains of one or two whaling stations in the area. As well, in accordance with a research design, test excavations should be carried out on the exposed structures to determine their likely function and extent, that is, to confirm if they are associated with whaling activities. Comparisons can then be made with the findings of excavations carried out at other shore-based whaling sites, such as Bathers Bay in Fremantle (Pearson 1983), and on the subject of examining the historical and archaeological evidence for the selection and use of particular locations for whaling and the living and working conditions of whalers, as examined by Gibbs (1998:36).

ACKNOWLEDGEMENTS

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The Historical Archeology of Tourism in Yellowstone National Park examines the role of tourism in facilitating historic land use and settlement in Yellowstone, a national park which was created in 1872 and which extends through the U.S. states of Wyoming, Montana, and Idaho. A recurring theme throughout the book is the way the creation and marketing of Yellowstone reflects several key phenomena in the mid-nineteenth century, including the push towards industrialisation; the expansion of railroads into the west; and the increased demand for distinct leisure activities and mass tourism facilitated by the shift to wage labour.

Each section begins with an overview of various theories from the anthropology of tourism, with particular reference to the idea of tourism as a key framework or context from which historical settlement and land use developed. As part of the Society for Historical Archaeology's new *When the Land Meets the Sea* series, it establishes the presence of material culture relating to tourism activities in both marine and terrestrial elements of the park. In doing so, this volume blurs the often firm line drawn between underwater and land-based archaeologies, recognising the fact that human activity is rarely restricted by this divide.

The preface scripted by editors Corbin and Russell effectively illustrates that while the anthropology of tourism has been a field of study for 30 years, this book is the first major contribution to the archaeology of tourism. Since this book was published, the *International Journal of Historical Archaeology* released a special issue focused on the archaeology of tourism (O'Donovan and Carroll 2011), signalling the start of a hopefully fruitful new area of study in historical archaeology.

The book is broken into three long sections. In the first section, ‘A Model of Tourism as Context For Historical Sites: An Example of Historical Archaeology at Yellowstone’, Hunt begins with an interesting consideration of the fraught concept of the ‘natural landscape’ at Yellowstone. In a discussion that has obvious parallels for the Australian context, Hunt points out that that this supposedly ‘untouched’ landscape is in fact a result of thousands of years of human history, use and modification. Following a discussion of theoretical approaches to the anthropology of tourism, Hunt proceeds to outline the history of Yellowstone as a national park, breaking it into four phases: Nascence (1872–1882), Transition (1883–1892), Diversification and Expansion (1893–1915), and Transition and Reformation (1916–1942). These phases then form the basis of a systems-based model, in which Hunt combines relevant demographic information about tourists with internal and external factors such as transportation, support, supply, and management to predict where tourism-related archaeological features might be located in the park. He concludes with a discussion of potential archaeological research topics in the park, including the cultural landscape, economics, the tourist system itself, architecture, subsistence, status and ethnicity, and health and sanitation.

The second section, ‘Maritime Archeology of Tourism in Yellowstone National Park’, aims to examine maritime heritage through the systems-based framework outlined by Hunt in the previous section. The authors, Russell, Murphy, and Bradford, discuss various watercraft and maritime sites within Yellowstone to try to illustrate how tourism within the park exists as part of the larger, capitalist world-system. Underwater sites within the park are conceptualised as the ‘Yellowstone Lake Maritime System’, a landscape approach that recognises that sites cannot be understood in isolation, but rather must be explored in their wider context. The authors go on to explore the ‘Yellowstone Lake Maritime System’ as a representation of post-industrial tourism, itself a by-product of capitalism, and examine how it fits into the larger, interconnected system of nineteenth-century tourism and industrial expansion.

Several watercraft and potential underwater sites within Yellowstone Lake are outlined by the authors in detail, perhaps to excess for the general reader. Those interested in highly detailed descriptions and images of historic maritime vessels and their construction, however, may find this section useful. The crux of the authors’ argument rests on the remains of the E.C. Waters, a wooden-hulled passenger steamer which was built to transport visitors to the park, but which was never used. Using a systems-based framework, the authors show that the E.C. Waters was a victim of changing times, rendered obsolete by the introduction of automobiles to the park.

The final section of this book, ‘The Marshall/Firehole Hotel: Archeology in a Thermal River Environment’, discusses material culture from the earliest hotel complex established within Yellowstone. The authors, Corbin, Hunt, Valvano, and Harris, begin by outlining the history of accommodation and the hotel site, emphasizing the fact that until 1891 the Marshall/Firehole Hotel, a notably rugged place, was the only accommodation within the park. In this context, the authors explore the material culture recovered from the thermal stream adjacent to the hotel site in terms of theories about colonial frontiers.

One particularly notable thing about this volume is the fact that most archaeological work at Yellowstone has been driven by the need for salvage before construction or following natural disasters, mirroring most of the work done by field archaeologists with consulting companies worldwide. Without any major research-driven projects, the authors of this book have sought to link mostly salvage-oriented data with major anthropological and economic theories, and so encourage other heritage professionals to do the same. This is unquestionably an important aim, particularly given the large number of historical archaeological salvage operations conducted in the U.S. (and Australia), but there were a few flaws in the final product.

While the authors clearly address several anthropological theories, they struggle to convincingly integrate these with the archaeological data or wider discussion and, resultanty, the final interpretation of the archaeological data can sometimes come as a bit of a surprise. In the second and third papers, the theoretical components are rather overwhelmed by the sheer weight of descriptive detail, unfortunately giving the impression that they have been ‘tacked on’ to the end. It may be the papers were in need of more judicious editing, or perhaps that they needed to be split into two parts; one descriptive and one analytical. While the final conclusions were unquestionably interesting and thought-provoking, it just took a bit too long to get there.

The first paper, in which Hunt sets up his systems-based framework, is more successful in its attempt to integrate salvage data into a broader research framework, but the resulting systems-based approach seems a little narrow, failing to engage the deeper issues of class, industrialization and
labour he begins with. It is still, however, something potentially useful for heritage management and planning.

Despite these failings, however, this book does contain a great deal of interest, both in terms of detailed descriptions of the material culture of tourism, and the clear explication of theories related to the topic. While it does not seem to fully integrate the two strands, it does provide a useful sourcebook for both, and so will be informative for archaeologists at any point in their career. Overall, I found this to be an interesting book that brought a lot of new, useful ideas to the archaeology of tourism.

REFERENCE


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This edited volume examining gendered landscapes and their preservation provides an interesting collection of papers with a range of examples drawn from North America. The editors have sought to ‘present new perspectives on gendered cultural landscapes by expanding the analysis of power dynamics involved in altering cultural landscapes’ (p. 4). Fifteen researchers from a range of institutions present several different perspectives on landscapes, the process and/or manifestation of gendering in those landscapes, and issues for preservation.

The volume is divided into five sections – Native American landscapes, African-American landscapes, multi-ethnic landscapes, religious landscapes and industrial landscapes. It traverses a diverse range of landscape types and scales, from relatively poorly-preserved Native American Haudenosaunee landscapes to extant heritage buildings, and raises an array of issues related to the analysis, interpretation and preservation of these varied landscapes. The volume concludes with a strongly argued critique of feminist frameworks for the analysis of power and gender by co-editor Spencer-Wood.

The papers presented provide a variety of examples of the way in which gender differences, similarities and interactions can be understood. Although Voss (2006:108) suggests that archaeologists have struggled to come to grips with the study of gender in the archaeological record, this volume clearly demonstrates a more equitable distribution of power. This is articulated by Spencer-Wood as a ‘power with’ and a ‘power to’ that is accessed and exercised by many community members, especially women. Though these communities are generally regarded by outsiders as homogenous, Spencer-Wood shows how differences in material expression, the distribution of places of worship, and functioning of aid networks actually reflects internal ethnic diversity.

Delle and Levine provide another consideration of power in the landscape in their examination of several women in post-bellum Lancaster, Pennsylvania (Chapter 6). In this paper, the authors show how women used property as a means of economic power to not only improve their own and their families’ lot in life, but also to provide safe haven on the underground railway, assisting runaway slaves to move to relative safety and freedom in the north.

Another major theme in the volume is that of resistance through the adoption of liminal spaces and subversive action, and it is one that has particular resonance with the actions of Aboriginal and Chinese communities in Australia. Greenwood’s work on the Chinese fishing communities in California (Chapter 12), for example, uses one man’s story to demonstrate the changing interactions of ethnic minorities in the landscape, while in Chapter 4, Battle-Baptiste provides a thought-provoking analysis of the use of space by slaves in a plantation landscape. She most particularly addresses the dooryards of domestic areas to illustrate the insubversive practices of culture in the most innocuous of activities – sweeping.

In another approach that examines the spatial arrangements of everyday routines, Sydoriak Allen (Chapter 3) considers Native American Haudenosaunee landscapes and longhouses from the Cayuga region of upstate New York. She investigates both temporal and spatial patterning to show that domestic tasks, viewed largely as being carried out by women, do have spatial elements but that these spaces are not exclusive of male activities. Haudenosaunee longhouses are presented as ‘multifunctional, adaptable unit of residence where alternative gendered activities are carried out in different spaces depending on need’ (p. 71).

In Chapter 5, McBride examines everyday domestic activities in a very different context – that of military camps. The analysis of an undocumented and largely unacknowledged camp for the families of African-American soldiers in the Civil War sheds light not only on the story of this particular camp, but also the practices, occupations and spatial organisation of these settlements found at the periphery.

Changes to the gendered domestic landscapes of followers of the Shaker belief system are seen in the archaeological analyses of both McBride (Chapter 11) and Starbuck and Dennis (Chapter 10). Shaker towns like Canterbury and Pleasant Hill in New Hampshire have generally been viewed as having highly gendered spaces and roles, but the work of these authors demonstrates far more nuanced and less conforming landscapes, landscapes that shifted with changing demographics and resultant pressures on the communities. In these studies, archaeology has been able to reveal a flexibility around Shaker divisions of labour and spaces associated with highly gendered activities (such as laundry), which is absent in the historical record.
In this volume, authors not only consider landscapes across a range of scales, but also present different ideas about using, understanding and being-in landscape. Delle and Levin, for example, use a contextual examination of the landscape at a household scale to show the changing urban landscape and residential history of ‘the women of Vine Street’ (p. 119). In contrast, in Chapter 2, Venables examines not only the Haudenosaunee longhouse and settlement but the landscape beyond to illuminate the gendered landscape between the ‘clearing’ and the ‘Woods’. She illustrates the inextricable link between the Haudenosaunee identity, their belief system and their living-in, and movement through, the landscape. In Chapter 7, Sunseri examines the differences in the conflict landscape of colonial New Mexico, identifying the influences of power, ethnicity, gender, and violence in the construction and operation of the landscape, where indigenous genízaro women and men occupied buffer settlements on a contested frontier.

For a number of the case studies in the book, encroaching twenty-first century land use has eroded the landscape and preservation has therefore been a pressing and important challenge. In considering the extended Haudenosaunee landscape (Chapter 3), Sydoriak Allen makes some interesting points about the preservation of this relatively concealed landscape, showing that early recognition of the significance of villages, together with intent of land owners, was critical to the preservation (and subsequent investigation) of the landscape. However, she also noted that the early marking of these ‘sites’ has also made them the target of ad hoc surface collection and pit digging by collectors looking for artefacts.

Urban landscapes in particular present challenges of preservation around over-building and urban renewal, while rural townships and extended farming and mining landscapes share challenges of dilapidation. Culturally significant mining and agricultural landscapes are further threatened by potential re-use. Examinations by Hardesty (Chapter 13) and Metheny (Chapter 14) particularly address the challenges of preserving the landscapes of mining towns. Metheny contrasts the social values that drive the preservation of cultural heritage with the conflicting economic impetus to mine. Hardesty addresses the other challenge, that of the cost and difficulty of preserving the entirety of a widespread landscape. This kind of debate clearly shows that challenges such as articulating the significance of an extended landscape are important in enabling and justifying the preservation of those landscapes.

This volume provides a complex set of ideas, and presents a fascinating array of case studies which allow readers to explore a number of different views of gender. Influenced by the editors’ views, the role of power in the landscape is seen as both cooperative and hierarchical (p. 5). The discussion of gender power dynamics, however, is largely practice-oriented rather than dialectically engaged with landscapes. To me, this touches on a shortcoming of this volume – that the view of landscape is sometimes rather simplified. In many cases, landscapes are regarded merely as the stage for performance (Patterson 2008: 77), the setting of gendered activities, or the backdrop of power dynamics, while the archaeological evidence is seen as a spatial scattering rather than a more intimately bound experience and engagement with place and space. If there is one other issue with the volume, it is that it attempts to do too much. The examination of gender and power in the landscape, or the challenge of preserving landscapes of cultural significance would both ably stand alone in an edited volume. Incorporating both here makes the volume seem somewhat disjointed.

Overall however, the variety of case studies presented make this book a worthwhile addition to the libraries of archaeologists interested in the application of themes of power and gender to archaeological interpretations. The value of this volume lies particularly in the integration of gender and landscape, providing a valuable focus that argues for more nuanced considerations of landscape, engaging with ideas such as gender, class, power, and ethnicity.

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When Christer Westerdahl’s 1992 article ‘The Maritime Cultural Landscape’ appeared in the International Journal of Nautical Archaeology, it initiated a paradigm shift within the discipline of maritime archaeology that has persisted to the present day. Westerdahl recognised that aspects of a given landscape, whether cultural, political, environmental, technological or physical in scope, are interrelated and therefore cannot be understood unless analysed and interpreted relative to one another. He applied this concept to maritime landscapes, placing particular emphasis on the interpretive potential of archaeological sites to explicate the relationship between human beings and the sea. In Westerdahl’s view, these sites, whether prehistoric or historic, terrestrial or submerged, could be assessed holistically within a cultural landscape framework to illuminate and integrate a variety of broad-based maritime themes, including habitation, resource procurement, industry, and warfare.

A significant aspect of Westerdahl’s work was that it prompted maritime archaeologists to move beyond purely underwater, predominantly shipwreck-based studies and consider other aspects of historic and prehistoric maritime culture, including land-based coastal infrastructure and communities; inland areas connected to the sea via trade, defence, and other activities; and even immaterial aspects of human activity such as folklore. Westerdahl’s ideas also inspired archaeologists from both ‘terrestrial’ and ‘maritime’ backgrounds to tackle the maritime cultural landscape concept and contribute – directly or indirectly – to its methodological and theoretical development. In many cases, these scholars forged beneficial alliances with specialists from other disciplines (such as geography), thereby introducing an interdisciplinary approach to the analysis and interpretation of the maritime past. Ultimately, all of this has served to better integrate maritime-based studies within the larger discipline of archaeology – and the broader scope of the humanities and
social archaeology’s intellectual growth.

*The Archaeology of Maritime Landscapes* is a compilation of 19 essays penned by individuals from a variety of professional backgrounds, including academia, the consulting industry, government agencies and research institutions. Most hail from the United States, with a handful of others based within the United Kingdom, Australia, Canada and Norway. The level of expertise represented by the book’s contributors ranges from established scholars to early-career professionals; this in turn imbues the book with a diverse but balanced array of experience and innovation. Its chapters feature archaeological research at sites that range from the Palaeolithic to the modern era, and span a geographic area that includes North and Central America, the Caribbean, Europe, and Australia.

In his introduction, editor Ben Ford provides a brief overview of the application of cultural landscape studies in archaeology and maritime archaeology, and emphasises its utility in creating a ‘balanced approach to the past’ through its integration of ‘multi-vocal’ data such as oral history, archival documents, and the archaeological record (p. 3). He also considers how the use of landscape studies within maritime archaeology has expanded beyond Westerdahl’s original concept(s) to include the notion of ‘seascape’, or those factors – including stars, currents, winds and the presence of seabirds – that enabled individuals at sea to determine their location when out of sight of land. The introduction concludes with a discussion of the broader goal(s) of the book. Ford notes that its main point is not to present the study of maritime landscapes as a unified field, but rather a conceptual starting point from which the contributing authors have diverged to explore a variety of themes. Despite the breadth and scope of topics addressed in the volume, Ford seems somewhat disappointed that he could not add more to it, describing what the reader holds in their hands as a mere ‘sample’ of what currently exists in the realm of maritime landscape research and scholarship (p. 6).

The chapters that follow are initially arranged roughly along chronological lines. The first three address the investigation of North American prehistoric indigenous landscapes in the Northern Channel Islands (California), Glacial Lake Iroquois (New York) and northeastern Lake Ontario. The primary thrust of these research projects has been to develop predictive models for Paleoindian migration, habitation and other cultural activities in submerged coastal (i.e. maritime) zones through the use of varying methodologies, including remote sensing and diver surveys, material culture studies, and analyses of bathymetric data and geological processes. Although preliminary, the results outlined in these chapters make a persuasive argument for the research potential of submerged prehistoric landscapes, as well as the utility of cultural landscape concepts in their discovery, identification and interpretation.

Chapters 4 and 5 assess the maritime landscapes of two regions in the North American Great Lakes: northeastern Lake Ontario (which forms part of the border between Canada and the United States) and Thunder Bay (located within Lake Huron on Michigan’s Lower Peninsula). Both bodies of water have been occupied by humans since the Paleoindian period, and were perceived for centuries as both cognitive ‘barriers and avenues’ to a wide array of prehistoric and historic cultural activities, including subsistence, transport and commerce (p. 81). Building on this theme, the two chapters address culture contact between indigenous populations and Europeans in North America during the sixteenth, seventeenth, and eighteenth centuries. The first considers data recovered from terrestrial and submerged archaeological sites at Hare Harbor, Quebec to reconstruct the area’s transition from a predominantly indigenous (Inuit) cultural landscape to one alternately shared with, or dominated by, visiting European whalers and cod fishermen. The second examines how geologic landscape change within the ‘pond region’ of coastal Rhode Island facilitated the creation of a maritime cultural landscape, and later influenced settlement and other use activities of its prehistoric and contact-period inhabitants.

At this point, the book’s chapters seem to shift from a chronological arrangement to one based on geographic location, as the next six contributions focus on maritime cultural landscape studies around, or within, the waters of the Gulf of Mexico and circum-Caribbean. A discussion of post-contact period sites at Old Navy Cove and Deadman’s Island in Pensacola, Florida (Chapter 8) is immediately followed by an assessment of the potential for submerged prehistoric landscapes and archaeological sites in the northwestern Gulf of Mexico (Chapter 9). The focus then shifts back to the historic period to address the maritime culture of the port city of Galveston, Texas, (Chapter 10) before going on to explore pre- and post-contact maritime activities associated with the Maya (Chapter 11). The emphasis on the Gulf and circum-Caribbean regions concludes with two chapters. The first, (Chapter 12) is an assessment of maritime subcultures and identity at a logwood cutter settlement in the Barcádares, Belize and two sugar production centres on the island of Nevis. The second, (Chapter 13) examines the maritime cultural landscape of the mouth of the Río Chagres (Panama), placing particular emphasis on its role as a strategic waterway since the sixteenth century.

The geographic focus shifts again in Chapters 14 and 15 to highlight maritime cultural landscape studies in Australia. The first addresses the significance of ‘place’ in the ‘land-culture nexus’ through an evaluation of American sealing and shipbuilding activities on Kangaroo Island, South Australia during the early nineteenth century (p. 261). As a consequence of their presence, American sealers created cultural identity and meaning in the form of specific place names (i.e. Independence Point and the town of American River), local lore, and commemorative monuments that persist to this day. The second chapter utilises a variety of sources, including oral histories, folklore, toponymy and the archaeological record, to explore the social history of fishing in the coastal community of Queenscliff, Victoria.

The book’s concluding chapters emphasise past, present and future directions in the theoretical development and application of maritime cultural landscape studies. The first (Chapter 16) is authored by Christer Westerdahl and explores his past and current hypotheses regarding ‘human cognition at the sea and at the shore’ by highlighting his decades-long study of the belief systems and lifeways of maritime societies in northern Europe from prehistoric times to the modern era (p. 291). Joe Flatman’s contribution (Chapter 17) considers Westerdahl’s original concepts – and a number of interrelated themes that have subsequently developed from them – to consider issues of tangible versus intangible heritage and the presence of human agency in the creation of both past and present maritime cultural landscapes. In the final chapter (Chapter 18), Westerdahl returns to summarise and remark upon the book’s preceding sections, revisit the maritime landscape paradigm, and propose avenues for its future growth and development.

For the most part, *The Archaeology of Maritime Landscapes* is well written and the content of each of its chapters seamlessly integrated with the other sections. One notable exception is the aforementioned organisational shift that occurs between Chapters 7 and 8. This apparent move from a temporal to geographic emphasis – and the frequent chronological shifts that occur in its wake – proved confusing
to this reader and disruptive to the narrative’s overall arrangement and flow. Unfortunately, the disruption is only exacerbated by a number of spelling and grammatical errors scattered throughout the text. The volume features several illustrations, and the majority complement their respective chapters well, although it should also be noted that some— including those depicting decorated ceramic artefacts or survey maps with colour codes—would perhaps have been more effective if they had been printed in colour.

Despite these relatively minor issues, *The Archaeology of Maritime Landscapes* is an engaging, informative, and long-overdue contribution to archaeological literature and scholarship. As the discipline’s inaugural academic compendium of maritime landscape-themed studies, this volume is a useful reference for first-year students and established scholars alike. Given its wide geographic and temporal scope, it is also fair to say that all professional maritime archaeologists, no matter what their theoretical or methodological inclinations, will benefit tremendously from reading its contents.

**REFERENCE**


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Australian historical archaeology is a particularising discipline, consisting of the results of a very large number of field or laboratory investigations. The research focus of these is often narrow, whether they have a primary academic purpose or one that is partly motivated by the more pragmatic demands of commercial archaeology. As a result, it is often difficult for students of the discipline and, indeed, for many of its professionals, to ‘see the wood for the trees’. This means that any monographic synthesis is of great importance, providing an overview of past research and a pointer for future endeavours. The book reviewed here is such a synthesis, the first in 23 years and, arguably, only the second such book to be published. It therefore deserves the very closest attention by anyone seriously involved in Australian historical archaeology.

Attempting to write an archaeology of Australia since 1788 is a daunting task that inevitably raises problems of what to include and what to exclude. This is mainly decided by the structure of a book and there are, perhaps, two main ways of structuring such a synthesis. The first is to discuss major themes or ideas, drawing on selected studies to illustrate the overall argument. The second is to construct a mosaic of published and other available sources, to a great extent allowing the literature to determine the shape and limits of the book. The former approach might prove a severe test of the writer’s talents, whereas the latter would require a detailed knowledge of a massive amount of data and would produce a specialised text for a readership largely confined to the discipline, in practice it will result in a textbook. Although attempts are sometimes made to combine the two approaches, they are rarely successful. The book reviewed here is unashamedly a textbook and it is a good one. Witness its reference list that is 44 pages of closely set small print and its index of 17 pages. Historical archaeology students be warned: this is a book that you cannot afford to ignore!

The book consists of 13 chapters, commencing with an Introduction that is apparently aimed at American and other overseas readers. Chapter 2 considers the archaeology of convictism and Chapter 3 post-contact Aboriginal archaeology. The next two chapters discuss the related subjects of shipwrecks and maritime trade, in Chapter 4, and sealing, whaling and maritime industries, in Chapter 5. The archaeology of pastoralism and agriculture is examined in Chapter 6 and that of gold rushes and precious metals in Chapter 7. The book then moves on to manufacturing and processing in Chapter 8 and to migration and ethnicity in Chapter 9. Urban archaeology is dealt with in Chapter 10 and the archaeology of daily life in Chapter 11. The book ends with a discussion of the archaeology of death, in Chapter 12, and of the twentieth century and beyond in Chapter 13 (although the stated end-point of the book is 1945). The organisation of these subjects is well handled and in general the writing is clear. This is in spite of heavy in-text Harvard referencing that in places impedes continuity.

Explicitly, the book emphasises social themes such as gender, status, ethnicity and identity (p. 2), repeatedly demonstrating the ways in which archaeological evidence can contribute to our knowledge and understanding of these matters. Inevitably, this occasionally results in content that borders on the esoteric, such as pages 223–226, and in the use of specialised terms without enough explanation. It is to be hoped that the increasingly sociological orientation of much of Australian historical archaeology will not ultimately result in the obscurantism sometimes found in social anthropology. Furthermore, there is a danger of naivety in the interpretation of the circumstantial evidence that most commonly results from archaeological investigations. These remarks are not a criticism of the book but a comment on the present state of parts of the discipline as reflected in the book.

One could go further and ask what direction Australian historical archaeology might take in the next few decades. Perhaps this will be to contribute far more to environmental studies than has yet been the case, although this book does touch on some of the relevant issues. Historical archaeology has the opportunity to conduct investigations of major relevance to Australian society as it faces the challenges of the future. These could include analysis through time of such subjects as water-use, droughts, floods, erosion, siltation and changes of watercourses, salinity, pollutants, tree loss, bushfires, exotic fauna and flora, feral animals, and probably other topics. Such an orientation would require a greater emphasis on science in the training of archaeologists than the traditional inclusion of archaeology amongst the humanities has permitted, but there are signs that this is already beginning to happen. Hopefully, historical archaeology will eventually become something more than an adjunct to historical studies.

Finally, the production of this book merits some comment. In general, its quality is high: typographic errors are rare and illustration quality, with a few exceptions, is good. It was unnecessarily, however, that there is a small front of the book consisting of captions for each figure in the text, rather than of abbreviated captions as is usually done. There is also the problem of this book’s price. It seems to have been published only in hardback, and a bullet-proof hardback at that, resulting in a retail price of US$129.00. Although the volume is available at a slightly lower price through a number...
of online retailers, the cost could limit the extent to which the book will be read, and that will be a tragedy. It is unfortunate that an Australian publisher did not produce the book in paperback, in Australia. Nevertheless, gratitude is due to Susan Lawrence and Peter Davies for a book that will remain a benchmark of the state of the discipline at the end of the first decade of the second millennium. Without doubt, it is a remarkable achievement.

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