

CLEAN AND DECENT IN  
CHRISTCHURCH, NEW ZEALAND:  
Personal and Public Hygiene,  
1850-1900

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## INTRODUCTION

This booklet is a by-product of a larger project on medical men and public health in Christchurch, 1850-1900, which has already seen several small studies published and one book, on Dr Llewellyn Powell, the city's first Medical Officer of Health. The first booklet, on chemists and druggists, was based on newspaper sources now available through the *Papers Past* website of the National Library of New Zealand. This present offering is likewise largely based on newspapers, especially their advertisements. The chemists and druggists often listed what they had to sell, and in the 1850s these often included items related to personal hygiene: soap, sponges, combs, brushes, razors and hair restorers. That prompted an obvious question: how did people keep themselves clean in early Christchurch? That led to a second question: how did they keep their clothes clean? That in turn led to wider questions of environmental sanitation: how did the growing city deal with human and household waste?

The answers to these and allied questions lie close to the central themes of the project, as they relate directly to people's health and well-being. The other side of the coin relates to disease and illness. Did people understand the links between dirt and disease? How the doctors attempted to cope with the latter will gradually be revealed in a series of biographical studies, but already a good deal of background information has been accumulated about personal and public hygiene, and it was thought advisable to make these notes available separately in this volume to form a context for the biographical studies.

Why Christchurch? It happens to be where the author lives, and he has already written about the city, its crimes and scandals, the history of Victoria Square, and some of its notable sons. In terms of public health, Christchurch is of interest as the first New Zealand city to build a system of deep sewers, in response to appalling death rates from gastrointestinal infections and high infant mortality. In this respect it bears comparison with Dunedin, about which Pamela Wood has written most capably in her bluntly titled book *Dirt*.<sup>1</sup>

The Canterbury settlement was the last and arguably the most successful of Britain's nineteenth century colonisation schemes based on Edward Gibbon Wakefield's theories of 'systematic colonisation'. At the core of his theory was the aim of transplanting a cross-section of English society to a new land to create a small patch of 'instant civilisation'. Wakefield wanted to avoid the lawlessness and dispersal of unregulated colonial settlement by setting a 'sufficient price' for land which would deter speculators and provide funds for schools, churches, hospitals and colleges. Also at the heart of his theory was religion: the Canterbury settlement would be a largely Anglican affair, with

enough clergy to maintain a high moral tone and cater for the spiritual needs of a largely law-abiding populace.

As the old saying goes, cleanliness is next to godliness, and Wakefield expected that his scheme would produce a well-fed, well-dressed, clean and respectable slice of England in a foreign land. It was perhaps a lucky coincidence that the young Anglo-Irish landowner he persuaded to lead the Canterbury Association was named John Robert Godley, for it was intended to be a godly settlement.

The reality, of course, turned out rather differently from the theory. Instead of forming a docile workforce for the landowning gentry, most of the colonists wanted to become independent farmers and artisans in their own right. The agricultural economy initially failed, and the settlement was only saved by the arrival of experienced sheep-farmers from Australia, the so-called 'shagroons', whose wool exports were to make Canterbury one of the wealthiest New Zealand provinces after Otago, which had grown very rich thanks to the 1860s Otago gold-rush. The subdivision of the Canterbury plains into small farms led to a boom in wheat exports in the 1870s, adding to the wealth from wool. As Christchurch grew rapidly from a small village to a large Victorian town, and then one of New Zealand's four main cities, local industries and manufactures added to the province's prosperity, helping it to ride out the 'Long Depression' of the 1880s and early 1890s. Then the advent of refrigeration enabled 'Canterbury lamb' to be added to the province's export list, rivalling wool in value.

Christchurch's flat site, surrounded by swamps, posed major problems of drainage and waste disposal. It also created a haven for water-borne diseases, especially typhoid, which became a major killer in the 1870s. The city's response, slowed at first by political bickering, was dramatic and successful. Dr Powell declared war on cesspits, and persuaded the new Drainage Board to convert the city to dry pan toilets and night-cart collection of human waste. The Board also decided to invest heavily in New Zealand's first system of deep sewers, and construction began in 1879, the year in which Powell died from TB. His successor Dr Courtney Nedwill kept up the good work, braving opposition from businessmen and politicians, and even from his fellow doctors. The sewage system's pumping station started work in 1882, and although not all households could afford to be connected to the sewers, the sewers had the effect of lowering the water table and making the city a drier and healthier place for all.

Christchurch's public health story is mostly one of progress and success, but it is people who make history, and some residents perversely resisted attempts to make them healthier and cleaner. Even some of the doctors were slow to accept the new germ theory of disease-causation flowing from Pasteur's discovery of bacteria. At times the Christchurch story resembles that of two steps forward and one step back. It is a story worth remembering, and celebrating, because civilisation is a precarious thing, a thin coat of varnish over an environment teeming with threats if basic lessons of hygiene and sanitation are neglected.

The Christchurch earthquakes of 2010-11 suddenly thrust us back to the situation faced by the early settlers, lacking reliable water supply and sewage disposal. Once again people were digging cess-pits in their back yards while the sewers were being repaired. The risk of gastrointestinal diseases and diarrhoea returned, albeit briefly. It was fortunate that New Zealand's modern health system and the resources of an advanced economy avoided a potential disaster. (We were so much luckier than the inhabitants of Haiti after their severe earthquake in January 2010, where thousands died from typhoid and related infections.) Portable toilets, water tankers and thousands of hand sanitisers helped to keep Christchurch healthy, but so did a generation of people well-educated in matters of hygiene and disease prevention, the inheritors of the nineteenth century bacteriological revolution and the advances of modern medicine.

The structure of what follows is simple and logical. Part One: Water is the basic resource for public health, not just for drinking and cooking but also for drainage and waste disposal. In this respect Christchurch was well-provided. Not far below the ground's surface abundant supplies of pure artesian water were discovered, and deeper bores tapped into aquifers which still provide the city with the purest urban water supply in New Zealand.

Part Two: Personal hygiene starts with water and soap. Where did Christchurch get its soap from in the early days? When did the city start making its own soap? Ironically the growth of soap and candle factories, based on tallow, created new nuisances of smell and noxious waste products, which had to be dealt with. In the 1850s most people were content to wash only their hands and face, and leave the rest of their bodies to be covered by their clothing. Bedrooms increasingly boasted water jugs and wide basins for basic daily washing. Bathing in the sea and rivers was available from the start of settlement, but bathing at home in small cottages with no bathroom demanded ingenuity. The zinc hip-bath was the simplest solution, and gradually acquired the refinement of shower-roses on hoses.

British cities in the nineteenth century had large public bath-houses for the working class, but Christchurch chose not to go down that path. Instead, private enterprise attempted to make money from Turkish baths which were part of a movement for heat treatment of various ailments. Having washed the body, how did people keep their clothes clean? Laundry was a heavy burden for most women in this period, but again private enterprise in Christchurch attempted to relieve them to some extent with commercial steam laundries.

Christchurch saw an ingenious invention in 1887, George Barrell's Patent Steam Washing machine, of which at least 500 were sold before the partnership between Barrell and S. Wills was dissolved in 1888. Barrell then resumed his former occupation as an undertaker from 1889 and became one of the city's leading funeral directors.

Decency and respectability in public involves being well-dressed, but this study does not extend to clothing. I leave that to the historians of fashion and material culture. (See

Claire Regnauld, *Dressed: Fashionable Dress in Aotearoa New Zealand, 1840-1910* (Wellington, Victoria University Press, 2021).

Part Three: Public hygiene starts with rubbish collection and the disposal of human waste or night soil. John Brightling's career as the city council's contractor enables us to trace the ups and downs of this essential but rather repellent public service. Christchurch's public urinals provided for one half of the population, and this raises the almost unanswerable question: how did women cope for toilets in the central city?

The major topics of drainage and sewerage have been covered in previous publications and only need a brief outline here. Prevailing medical beliefs about miasma and smells as the source of infectious diseases made drainage a high priority, yet the cost provoked political squabbles and delay. In the meantime, cesspits in the saturated ground caused cross-contamination with water wells, resulting in soaring death rates from typhoid and diarrhoea. Even as the city council formed new streets with side-channels for storm-water drainage, residents emptied their commodes and household 'slops' into them.

The introduction of dry-earth pan closets and the closure of cesspits in the late 1870s soon began to reduce the death rates, even before the deep sewers were completed in 1882. Sewer connections were slow, because of the cost, and the lack of a reliable water supply delayed the introduction of flush toilets. Christchurch did not achieve a high pressure water supply until 1909.

Air pollution and dust are topics that await detailed research, and may remain obscure for lack of reliable evidence, but they especially affected people suffering from asthma and respiratory illness.

Part Four: The final phase of public hygiene was the disposal of the dead. How many people died in Christchurch between 1850 and 1900? How many undertakers did the city have? Here we meet the remarkable George Barrell again, and his competitors, including the equally remarkable James Lamb. Where were Christchurch's first cemeteries? As the population grew, how well did the city cope with the increased demand for funerals and burial plots? When did cremation become a viable alternative to burials?

The title for this booklet is a deliberate echo of the title of a best-selling book, Lawrence Wright's splendidly-titled *Clean and Decent: the History of the Bath and the Loo, and of Sundry Habits, Fashions and Accessories of the Toilet, Principally in Great Britain, France and America* (1971), which was one of the books that first got me interested in the social history of health and medicine. It was preceded by another popular book, Wallace Reyburn's *Flushed with Pride: the Story of Thomas Crapper* (1969), also about the history of the modern flush toilet. I had long been fascinated by Roman aqueducts and Roman baths, and gradually discovered that the Romans had merely copied the Greeks, on a bigger scale, just as the Byzantine Empire continued the Roman traditions after the fall of Rome in the West.



While teaching a survey course on Medieval Europe I became interested not only in the role of famines and plagues as they affected the course of history, but also in the myths about medieval medicine, and medieval cleanliness, or the alleged lack thereof. The medieval peasant who never washed or the kings who bathed only once a year did exist, but they were not necessarily typical of the entire population. Soap existed and was used, especially in towns. Clothes were washed and floors were scrubbed. Cleanliness depended on one's social position, and increasing wealth enabled more and more people to be as clean as they desired in the thirteenth and fourteenth centuries, culminating in an obsession with bathing and cleanliness in Renaissance cities which has persisted in elite circles to the present day. The industrial revolution brought massive population increase and urbanisation to Europe and North America, with overcrowding and the spread of infectious diseases, especially the so-called 'filth' diseases such as typhoid. Yet the bacteriological revolution of the late nineteenth century and heroic efforts to improve water supplies and sewage disposal made towns and cities much safer places for the masses in the twentieth century. We now take public health for granted, until a pandemic comes along and demands more drastic measures to protect our lives.

This is not an academic work, though I have tried to be as accurate as possible and always faithful to the primary sources, so there is no lengthy bibliography or copious learned footnotes. The endnotes are simple references to sources, mostly the *Lyttelton Times*. I strongly recommend Virginia Smith's *Clean: a History of Personal Hygiene and Purity* (2007) as the best modern summary of the field, and of course the late Roy Porter's magnificent and highly readable *The Greatest Benefit to Mankind: a Medical History of Humanity from Antiquity to the Present* (1997) for the accompanying story of medical progress.

## SHORTER PUBLICATIONS IN THIS SERIES

- Chemists and Druggists in Early Christchurch and Lyttelton, 1850s to 1880s.* (Christchurch, Hawthorne Press & The Cotter Medical History Trust, 2020), 22 pp. ISBN 978-0-473-54460-7
- Surgery in Nineteenth Century Christchurch, New Zealand, 1850-1900* (Christchurch, Hawthorne Press & The Cotter Medical History Trust, 2020), 38 pp. ISBN 978-0-473-54453-9
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- The Unfortunate Dr Campbell of Lyttelton and Christchurch: the Life of Donald Campbell, LM, LRCS, LRCP (1844-81) and his Tragic End* (Christchurch, Hawthorne Press & The Cotter Medical History Trust, 2021), 63 pp. ISBN 978-0-473-57321-8

# PART ONE

## WATER

Christchurch is located on the seaward edge of the Canterbury Plains, the largest area of relatively flat arable land in New Zealand. The plains were formed over millions of years from the gravel outwash fans of alpine glaciers in the Late Tertiary and Pleistocene periods. Volcanic activity in the Late Tertiary period had produced two large cones offshore, later eroded to form Banks Peninsula with the sea entering to create Lyttelton and Akaroa harbours. The spreading shingle fans of the Rakaia and Waimakariri rivers joined the volcanic base and attached Banks Peninsula to the mainland. When Captain Cook made his circumnavigation of the South Island in 1770 misty conditions led him to believe that the eroded volcanoes were an island and he drew it thus on his map. It was not until 1809 that Captain Chase discovered Cook's mistake when he tried to sail between the volcanic hills and the coastline he had just named Pegasus Bay. Instead he became the first whaler known to shelter in what became Lyttelton Harbour.<sup>2</sup>

Successive advances and retreats of the alpine glaciers in the Pleistocene period, up to two million years ago, were accompanied by rising sea levels and the layering of marine sediments over the shingle fans at the seaward margin of the plains. This 'interfingering' has given Christchurch its artesian water supply. Water from the Waimakariri River descends through the layers of gravel to travel seaward, but is protected from surface contamination by the less pervious layers of marine sediments. Shingle deposits of various ages are found at different depths, and form large reservoirs of pure filtered artesian water.<sup>3</sup>

Lyttelton was less fortunate in its site and natural water supply. Established in 1849 as the port for the future Canterbury settlement, Lyttelton was on a steep site rising from a rocky beach to towering volcanic cliffs. In the last interglacial period Banks Peninsula had been covered by thick layers of loess clay which also formed the flat floor of Lyttelton Harbour. Loess is a fine powdery windblown clay, hard when dry but soft and slippery when wet. When the first Canterbury Association settlers arrived in December 1850 they were pleasantly surprised to find a jetty and immigration barracks, built by the Association's energetic surveyor, Captain Joseph Thomas, and a small army of labourers from Wellington and Hobart. A cluster of cottages, a pub and stores lined the shore. That summer was hot and dry, and water was in short supply. Captain Thomas's workmen had sunk a brick-lined well beside the immigration barracks, but the water was sometime brackish, being so close to the sea. As the other settlers erected V-huts

and shelters, they also dug wells for water and relied on a few streams that came down from the cliffs in deep gullies, but in summer these were often dry.

Māori had occupied the land for centuries, but their numbers had been severely reduced by disease and musket wars, enabling the Canterbury Association to buy Banks Peninsula and a vast tract of the plains for a mere £2,000. The nearest Māori settlement was at Rāpāki, a few bays west of Lyttelton, and the settlers were grateful for the potatoes and fresh vegetables available from this source. Fresh meat was provided by the Rhodes brothers, earlier settlers across the harbour at Purau Bay. The eldest brother, William Barnard ('Barney') Rhodes, now resident in Wellington, had first visited this harbour as a whaler in the 1830s, in search of water and firewood.

Winter brought abundant water, of course, as Lyttelton faced south, towards the prevailing winter winds which also watered the abundant forests of the south-facing slopes of Banks Peninsula. Then the settlers grumbled about the slippery yellow mud which stuck to their boots and trouser legs. Keeping clothes and bedding clean must have been an enormous chore for the women of the settlement. Getting the washing dry was often difficult in winter, and they would have welcomed the occasional nor'wester, a warm dry föhn wind that crosses the Southern Alps, leaving its moisture on the West Coast. The downside was that the same wind dried the clay and whipped up dust that entered between wallboards and under doors, adding another chore to the domestic round. For most of the year the prevailing wind came from the north-east, a cooling breeze on sunny days, a freezing wind in winter, and occasionally a warm drizzle from low clouds that could last for several days. The settlers soon learned to read the weather patterns. A nor'wester was invariably followed by a cold southerly change, often bringing rain. Farmers came to fear the easterly drizzle, which could delay and disrupt sheep-shearing for a week or more.

Lyttelton's water problems were not solved until the railway tunnel was being built in the 1860s. The Cornish miners tapped into a spring trapped between layers of volcanic rock, which for a while poured abundant water into the town.<sup>4</sup> Before then the residents of Lyttelton had relied on several public wells which grew muddy with use: it was wise to be first in the morning to get clean water. Later still the borough council built a reservoir further up the hill, and Lyttelton had a piped water supply long before Christchurch. Even so, early photos show Lyttelton hotels with down-pipes and barrels to collect rainwater from corrugated iron roofs. This was probably more palatable than any well-water in the 1860s.<sup>5</sup>

The site of Christchurch has been much criticised. The city sits on a gradually sloping plain bisected by a meandering small river, known to Māori as Otākaro and to the settlers as the Avon River. The latter name had been given by the Deans brothers, Scottish pioneers who named it in 1843 after a stream in their native Ayrshire. In 1850 the surveyors laid a grid pattern of streets on either side of the Avon in the largest area of relatively dry grassland they could find among encircling swamps. Captain Thomas chose the centre of town as a compromise. It was the furthest point of navigation on the Avon by a whaleboat, as the Deans brothers had found when they were bringing bricks

up river to make a chimney for their cottage at Putaringamotu, renamed by them Riccarton Farm. They had to unload the bricks near the present-day Barbadoes Street Bridge.<sup>6</sup>

John Deans left a memorable description of the water in the Avon/Otākaro River in the 1840s: it was crystal clear and icy cold. Sadly, European settlement meant that it did not stay that way for very long. Early photos from the 1860s show the Avon as a placid small river lined with a thick growth of lowland flax, Harakeke (*Phormium tenax*). The city site was covered in low-growing ferns and grasses with clumps of lowland tussock (*Poa cita* or *festuca*). There were no trees, apart from scattered clumps of *Cordyline australis*, known to the settlers as ‘cabbage trees’, and two remnants of coastal podocarp forest at Riccarton (today’s Deans Bush) and Papanui (all cut down by 1865).

Well to the south of the planned city a second small river meandered along the base of the Port Hills, known to Māori as Opāwaho but renamed by the surveyors as the Heathcote River, after a former secretary of the Canterbury Association.

Swamps and streams had been food sources for the indigenous Ngai Tahu people, and their seasonal camps for harvesting eels and birds dotted the banks of the Avon where Christchurch was to rise. But Europeans saw swamps in a different light. The prevailing theory of infectious disease in the early nineteenth century, based on classical and medieval beliefs, was that illness was spread by noxious vapours arising from rotting vegetation and organic matter. Bad smells meant danger. Swamps were to be avoided if you valued your health.

Victorian surveyors and engineers saw swamps as potential farmland. Drains and pumps could remove the excess water and, once dried, the soil was often found to be highly fertile for crops. Captain Thomas would not have been deterred by the presence of numerous small streams and swamps on the site of the future city. He would have seen them as a purely temporary problem, to be resolved by proper drainage as the settlement matured.<sup>7</sup>

Thomas did not remain to see this happen. After quarrelling with the Canterbury Association’s agent and designated leader, John Robert Godley, Thomas departed, and his subsequent career has until recently been somewhat mysterious.<sup>8</sup> The Canterbury colonists had already paid for their land, and a lottery system enabled them to choose a town site within the four ‘Belts’ (future avenues of the city boundaries), and a rural site where they could begin to farm. The first year of settlement in 1851 saw much building activity as the settlers constructed their cottages and a few more substantial wooden houses with timber imported from Wellington and Hobart.<sup>9</sup>

At first the Avon River provided all the water needed by the first settlers. It was clean and potable, even if it had to be carried in wooden pails or zinc buckets to one’s home. When the settler (or more likely his wife or children) grew tired of carrying water, he would dig a simple well. Water was found not far below the surface, as Christchurch had a very high water table in the early days. As in Lyttelton, simple wells soon became muddy from lowering a bucket on a rope and scraping soil from the sides. Water thus

obtained had to be allowed to settle before it could be used. More enterprising home-makers lined their wells with bricks, but few could afford this, and the bricklayers were far too busy making chimneys for all the new houses and cottages.

Those that did line their wells were also safeguarding their health, because the other hole that was dug in every back yard of the new settlement was a cesspit. Humans on average excrete about 130 grams of faeces and up to two litres of urine every day, and it has to go somewhere, preferably out of sight and out of mind, and beyond smell. Most of the Christchurch town sections were a quarter of an acre (a little over 1100 square metres). If the house or cottage were built on the street frontage, the cesspit would go at the far end, on the back fence. Early photos show that simple wooden shelters were erected over the cesspit, now known as the colonial 'dunny' or outhouse.<sup>10</sup>

Water wells were usually dug much closer to the house, to save the labour of carrying heavy pails of water. (One litre of water weighs one kilogram.) Unfortunately, where the water table is high, the risk of cross-contamination from an unlined cesspit to an unlined water well is also high. This was an issue not widely understood in 1850, but it became fully recognised in the 1860s. People in England were accustomed to drawing water from rivers which also received the discharge from town drains and sewers. London was especially notorious for the stink from the River Thames in hot weather, and the prevalence of summer diarrhoea, before the construction of London's deep sewers between 1859 and 1865 lowered the death rate from typhoid and summer diarrhoea.

Tea-drinking probably saved many British people from water-borne diseases, as the boiling water added to tea has killed most of the microbial nasties present in contaminated water. The taste of well water often put people off, and it was far safer to drink beer or cider. The possible dangers from drinking well-water were fully understood in 1850: hence the astonishing quantities of beer, wine and spirits consumed by the early colonists.

As in Lyttelton, buildings with corrugated iron roofs in Christchurch could be used to collect rainwater in barrels placed under down-pipes. Wooden shingles were less effective as they tended to absorb moisture, but they could easily fill the roof gutters in a heavy shower or steady rain.

Water supply in Christchurch remained largely a self-help affair until the discovery of artesian water in 1858. Taylor's brewery in Whately Road (now Victoria Street) was sinking a new well and found water at about 4 metres. But the quality was not good, so Taylor fixed an auger to a pole and this went down a further 3 metres. This bore produced a gush of water that rose several feet above ground, and continued to pour out 'a large and continuous volume of water' for many hours. This single bore was more than enough to provide all the water needed for the various departments of his brewery.<sup>11</sup>

Newspaper editorials waxed lyrical about the potential of artesian water for Christchurch, suggesting water tanks in various parts of town for fire-fighting purposes,

but nothing more was done for the next two years. The first report of the Municipal Council's Sanitary Committee in 1862 noted the risk of contamination from cesspits and recommended the immediate securing of a reliable source of good water from artesian wells: 'Well-water in Christchurch is bad, especially during the summer months ... We ourselves believe it to be unfit for the cooking and drinking purposes of a household'.<sup>12</sup>

Two months later the Municipal Council called tenders for an experimental sinking of an artesian well in the central city, but it apparently had no takers.<sup>13</sup> Finally in February 1863 tenders were called again for three wells in the central city and all three proved successful. Wooden troughs with hand-pumps were provided, which also served as horse-troughs. <sup>14</sup> By July that year several more artesian wells had been sunk. The one at Mr Thomson's house in Papanui Road saw water rise 'a considerable height' above the ground.<sup>15</sup> In August the Fire Brigade experimented by connecting their suction hose directly to the pipe of one of these wells, and watched as water flowed steadily for more than half an hour. Unfortunately it carried a quantity of sand which it was feared might damage the valves of the No.1 pump engine.<sup>16</sup>

In October 1863 the engineer Josiah Hadley launched the era of artesian water in Christchurch when he advertised a well-boring service from his workshop in Durham Street, near Oxford Terrace. He also offered pumps, tanks and boilers of all sizes.<sup>17</sup> In February 1864 a 2½ inch (63 mm) council bore at the intersection of Tuam and High streets gushed 3 to 4 metres above ground and continued to flow steadily.<sup>18</sup> A large iron tank capable of holding 500 gallons (1,892 litres) was set up to receive this water, and various suggestions were made for a fountain and pond on the site. However, the Fire Brigade's No.2 pump could empty this tank in exactly three minutes, showing that a much larger tank would be needed for fire-fighting purposes.<sup>19</sup>

The City Council in March 1864 ordered 500 feet (152 m) of 4 inch (101 mm) pipes from Melbourne for the artesian wells.<sup>20</sup> Another council well sunk in the triangle at the intersection of High and Colombo Streets later that month struck an obstacle, when the auger snapped at a depth of 41 feet (12.4 metres). It had struck a buried log, an ancient remnant of coastal forest. A second bore was successfully sunk in a new location a few metres away.<sup>21</sup>

Artesian wells proliferated in Christchurch from this year on, and with such an abundant supply of good water some people were content to see sewage drain into the Avon River as they no longer relied on the river for their household water. Unfortunately many of these wells were allowed to run freely all day and night, which soaked the ground and added to the drainage problem. Only gradually were taps fitted to control the waste of water, but by the 1880s the flow from the wells had reduced and hand-pumps were needed to extract the water. Early photos show some larger houses with windmills and water tanks on timber stands, making more economical use of the artesian wells. The City Council finally constructed a number of cisterns fed by artesian wells for fire-fighting purposes in strategic locations around the inner city. More water troughs were built to slake the thirst of horses and humans alike.

Despite warnings that over-reliance on the artesian wells would in time deplete the aquifers, the Christchurch City Council failed to act on suggestions made as early as the 1860s that pipes or aqueducts were needed to bring a more reliable water supply from the Waimakariri River or from reservoirs on the outskirts of the city. When the first reservoirs were built for the high-pressure system in 1909, they still drew their water from artesian wells. The problem with water from the Waimakariri was that it was often laden with fine glacial silt and needed settling and filtration before it could be used for domestic purposes.

Sydenham ratepayers approved a loan for waterworks just before the borough's amalgamation with the city in 1903. A deep bore was sunk beside Sydenham Park and a 90-foot tower and tank were erected to give high pressure to the system: some 23 miles of water pipes were laid throughout Sydenham. Christchurch ratepayers had always voted against water reticulation as most of them had their own artesian supply, and saw no reason to increase their rates. But the dry summer of early 1907 probably changed many minds when their wells ran dry. Loans for the various wards were soon approved, to a total of £120,000. This almost doubled the city council's debt, and constituted one of the city's biggest works projects. Work began in the central city, and the Cashmere Hill reservoir was filled from shallow 80 feet (24 metre) wells at the foot of the hill. Water first flowed in 1909, but the reticulation of the whole city took several more years, and was completed in 1914 on the eve of the First World War.<sup>22</sup>

City engineers were surprised by the heavy water consumption that resulted. People sealed their artesian wells and switched to the high pressure supply. From a projected 20 gallons a day consumption per household, engineers recorded almost twice that demand. Where was all that water going? Most likely onto lawns and gardens.

Christchurch acquired the label 'Garden City' in 1906, when the British Commissioner to the International Exhibition in Hagley Park, Sir John Gorst, took the electric elevator ride to the top of one of the Exhibition towers and exclaimed at the trees and colourful flower beds below. He said that Christchurch had already achieved the ideal of 'the garden city' movement then at its height in Britain.<sup>23</sup>

The Canterbury Horticultural Society had been encouraging the planting of trees and shrubs for half a century, and now entered its golden age, with rose and dahlia societies alongside. Christchurch became a city of home gardeners, with compost heaps servicing large vegetable gardens at the back of the section, and colourful flower beds at the front to brighten the street-scape. All this relied on an ample supply of water. Gardening may well have been a source of solace for many, especially during the dark days of the First World War, contributing to mental health as well as physical fitness.



## PART TWO

### PERSONAL HYGIENE

#### SOAP AND WASHING

Soap is such a familiar everyday item that few people stop to think how it is made or what it does when mixed with water. Standard encyclopedia entries tell us that soap is as old as human civilisation, soap-like materials having been found at archaeological sites dated to 2800 BC in Mesopotamia. Soap is the salt of a fatty acid produced by a chemical process known as saponification, when fat or oil is emulsified with a caustic substance such as potash or lye (sodium hydroxide). When combined with water to make a lather, soap solubilises particles of dirt which can then be rinsed away from the skin or clothing. When we wash our hands, soap kills micro-organisms by breaking their lipid bilayers, thus making our hands briefly clean and sterile.<sup>24</sup>

Making soap is a relatively simple process but it requires great care in the combination of the oils or fat with the caustic agent. Recipes for home-made soap warn you never to add the liquids to the lye, as this causes great heat and fumes, and can even be explosive. In the nineteenth century, when potash was commonly used as the common alkali, it was often hard to know how strong the potash was, or how much fat was needed. The result could be very harsh soap. Lye needs careful handling as it can burn the skin and cause blindness if it splashes in the eyes. If properly made, there is no lye in the soap; it combines completely with the oils. (Modern soaps often have detergents added to make more lather.) Laundry soap is usually yellow, while toilet or bath soaps are usually white and perfumed with essential oils.

The first Canterbury colonists brought soap with them, but how many used it for hand-washing is not known. The detailed shipboard diary of Dr Augustus Florance from the *Mersey* in 1862 makes no mention of hand-washing, and as this voyage predated the germ theory most people were unaware of its role in preventing disease.<sup>25</sup> More concern was expressed about the cook's lack of hygiene, which may account for the many cases of diarrhoea on this voyage. Another source of infection would have been the water-closets, which were disinfected with chloride of lime, but not often enough, to judge from the continuing complaints from passengers. Drinking water was always limited on slow sailing ships, and clothes were usually washed in sea water, leaving them rimed and uncomfortable.

Samuel Butler, later to become famous in England as a novelist and social critic, came out to Canterbury in 1860 to make his fortune from sheep-farming. (He doubled his capital to £8,000 in four years.) In a colourful account of his first year in Canterbury he describes a return visit to the ship that had brought him out, before it left Lyttelton:

Went on board. How strangely changed the ship appeared! Sunny, motionless and quiet; no noisy children, no slatternly slipshod women rolling about the decks, no slush, no washing of dirty linen in dirtier water. There was the old mate in a clean shirt at last, leaning against the mainmast ... The butcher close-shaven and clean ... Dined in Lyttelton with several of my fellow-passengers ... Then went and helped Mr and Mrs R. to arrange their new house, i.e. R. and I scrubbed the floors of the two rooms they have taken with soap, scrubbing-brushes, flannel, and water, made them respectably clean, and removed his boxes into their proper places.<sup>26</sup>

From this we may gather that migrants found it difficult to keep themselves and their clothes clean at sea, and that the crew rarely shaved or changed their shirts. Once ashore, however, the 'new chums' were anxious to achieve the same standards of cleanliness they had been accustomed to back home.

Advertisements in the early issues of the *Lyttelton Times* often include mention of soap, and in large quantities, so there must have been a steady demand for it. The merchant A. J. Duncan advertised soap for sale in January 1851 in one hundredweight boxes (50 kg) brought down from Wellington in the schooner *Henry*.<sup>27</sup> Later that month Augustus James Alport advertised 20 boxes of soap for auction.<sup>28</sup> Longden and Le Cren advertised both yellow and Windsor soap in February.<sup>29</sup> Yellow would have been laundry soap, while Windsor was a well-known brand of English white toilet soap. As far as we know there was no soap being manufactured in New Zealand at this time, and most of the soap imported to Lyttelton was either from England or Australia. The latter source was identified in advertisements as coming from Sydney, Melbourne or VDL (Van Dieman's Land, Tasmania).<sup>30</sup> The latter advertisement was for a ton of VDL soap. In 1852 Longden and Le Cren were offering shaving soap (presumably for a better lather) and mottled soap.<sup>31</sup> Bayfield, the first chemist in Lyttelton, advertised both white and brown Windsor soap in March 1852.<sup>32</sup>

As more immigrant ships arrived during 1852 and 1853 they brought with them an increasing variety of soaps. Alport advertised French soap and Robinson's soap in 1852.<sup>33</sup> Steel's soap from Liverpool arrived in 25 lb (11 kg) boxes while 'common' soap usually came in 28 lb (12.7 kg) and 56 lb (25 kg) boxes.<sup>34</sup> By 1853 Bayfield was offering brown and white Windsor soap, honey soap and common soap, along with tooth powder, Macassar hair oil, lavender and honey water, essence of patchouli, essence of geranium, extract of violets, and assorted hairbrushes, tooth brushes, nail brushes and shaving brushes.<sup>35</sup> It would seem that some at least of the new colonists were keen to appear 'clean and decent' among their friends and neighbours.

It was not until 1856 that Wellington soap was advertised by the merchant F. Noble Campbell, both yellow and mottled, indicating the start of New Zealand soap manufacturing.<sup>36</sup> By that date soap had been mentioned in over 1,800 advertisements in the *Lyttelton Times*, an indication of how essential a commodity soap had become in the Canterbury settlement. Most of this would have been yellow laundry soap, for washing clothes and scrubbing floors were major weekly chores for all housekeepers in this period. Clean linen or cotton undergarments were deemed essential for good health. Yet clothes-lines and wooden pegs are scarcely ever mentioned in shopkeepers' ads: they were too basic and familiar to be noticed.

Soap was now commonly identified by its place of origin: Liverpool, London and Sydney predominated, with Melbourne and Wellington mentioned less often. 'Colonial' soap could have come from Australian or New Zealand sources. Consignments were often large: Robert Waitt had 107 boxes of Liverpool soap and 92 from Melbourne in 1858, while John Thomas Peacock imported 140 boxes from England in September that year.<sup>37</sup> Peacock must have seen the demand, for he imported 5 tons of soap in February 1859, along with 50,000 feet (15,240 m) of sawn timber, 50 casks of Roman cement and 200 kegs of nails.<sup>38</sup>

In the early 1860s we begin to get some idea of the prices being asked for soap in Christchurch. Thomas Merson offered 'Hard' soap for a shilling per bar, while scented soap cost 2d or 3d a tablet, or 1s 6d and 2s 6d by the dozen.<sup>39</sup> The same merchant advertised 'Best London Soap' for 7½d a block in April 1861, and scented soap at 1s 6d for a dozen tablets.<sup>40</sup>

These prices were in line with a survey of commodities in May 1861: Windsor and other soap, 1s 6d per dozen tablets; 'Best Soap' 7d; Sperm candles 1s 10d; 'Christchurch dips' 9d; starch 9d; salad oil 1s 3d the bottle; vinegar 10d a bottle; rice 5d; split peas 4d; salt 2d; pepper 1s 6d; tea 3s; and sugar 7d per 7lb bag.<sup>41</sup> London Imperial pale soap could be bought for 45s a hundredweight in August 1861.<sup>42</sup>

The Albion Soap Works in Sydney began advertising in the *Lyttelton Times* from 1864, claiming to be 'the only steam soap works south of the Equator'. Cowan and Israel, the proprietors, had been in business for ten years, and Israel's soap had appeared in Lyttelton in 1858.<sup>43</sup> They now claimed to produce 'the finest manufactured soap' in the Australasian colonies.<sup>44</sup> Their Dunedin agents, Dick & Fleming and Company, were a few years later buyers of tallow, 'in any quantity', for the Albion Soap Works, Sydney, until they were replaced by one Mr Bardsley.<sup>45</sup>

Soap manufacturing apparently began in Christchurch about 1867. A first attempt by Nathaniel Sellars in 1866 failed to get off the ground when his partner Langford was unable to pay £55 for goods supplied by a Mr Jones.<sup>46</sup> Sellars was able to open his St Albans Soap Works sometime in 1867 or 1868, and also manufactured candles, but he had to declare bankruptcy in September 1868. His large brick building, a 1,499 gallon iron boiler (made by John Anderson) and three boilers of 60, 50 and 30 gallons were put

up for auction by the receivers.<sup>47</sup> He also had to sell his house, two spring carts and a horse.<sup>48</sup>

The next venture was by John Rochfort at Woolston, on a bend in the Heathcote River where there were already a fellmonger and two wool-scourers. His operation started about July 1869, although the newspapers did not report this until September. In the boiler house he had a large boiler (made by John Anderson) and a smaller circular boiler which could render a ton of tallow at a time. The boiler contained 200 feet (61 m) of coiled copper tubing to melt the tallow, a process that took four hours. Two tanks contained soda for removing the glycerine and other impurities from the soap, and a third tank held salt and water. The soap frames were of a new design, but the cutting of the soap by hand when solidified was fairly traditional. Rochfort claimed that his soap had met with the approval of his customers so far.<sup>49</sup>

Almost at the same time another new soap works was being built in Lincoln Road, on the farm of W. H. Mein, one of the city's leading butchers. The *Lyttelton Times* published a lengthy description of Mein's soap works in September 1869.<sup>50</sup> His buildings were all of wood and sat on about half an acre, surrounded by the 80 acres of Mein's farm. In the main boiling department there was a 12 horsepower engine (made by John Anderson) and two large vats or boilers for different types of work. (We may wonder which of the two, Mein or Rochfort, had bought the boilers sold by the bankrupt Nathaniel Sellars.) One was a typical Australian type, but the other had been built to Mein's own design. The Australian vat was lead-lined and could reduce the carcasses of 200 sheep at a time, whereas the other vat was wooden and could reduce 300. Mein preferred the wooden one, which allowed the use of sulphuric acid and produced a much better quality tallow.

The soap-making boilers were different, in that the steam was applied from the top rather than from below. Movable pipes were arranged so as to heat the tallow evenly. The lye or caustic soda was prepared in three adjacent iron tanks, each holding about 400 gallons (over 1500 litres). The liquid soap was drained off into large vessels which were then taken to the cooling frames in the packing department. The frames were made of wood, about five feet high by two broad and four long. Each of the ten frames held about a ton of soap. The frames were of the thickness of a bar of soap, and were bolted together by steel rods. When the soap had solidified, each layer was removed and cut into smaller sizes by a wire. These bars were then taken to a smaller machine for shaping into cakes and packing in boxes.

Mein's boiling-down operation employed about 35 men, but the soap-making took only eight men, for one batch a week. One of his constant problems was finding suitable casks, as New Zealand had no oak forests. The tallow casks each weighed a third of a ton when filled. Later in September 1879 Mein advertised that he could supply shopkeepers and merchants with 'a First Class Soap, equal to the best English imported, at considerably lower rates'.<sup>51</sup> He was also producing soft soap for wool-scouring purposes. Mein claimed to be able to boil down 2,500 sheep carcasses a week.

Before the invention of refrigeration farmers had to face the problem of what to do with surplus sheep once their wool had been removed. In the early days of European settlement, some flocks were deliberately driven off sea-cliffs to kill the unfortunate animals. Butchers also had the problem of what to do with the bones once they had removed the flesh for sale. Boiling-down works had appeared in the late 1860s to deal with unwanted carcasses, and the tallow was mainly used for making candles, an essential commodity in pre-electricity days. Steam-driven machinery was then able to grind the bones into a coarse powder used as manure. This was the origin of the 'blood and bone' fertiliser still used by home gardeners.

Now that New Zealand was producing its own soap there was a sharp decline in imports from England and Australia. In 1869 New Zealand imported 11,179 cwt of soap worth £16,483, and exported just 392 cwt worth £659. By 1874 imported soap had dropped to 2,529 cwt worth £3,562 and exports had risen to 1,069 cwt worth £1,069. In 1880 the Customs Department distinguished between common and fancy soap. New Zealand that year imported only 929 cwt of common soap, worth £1,092, but exported 2,836 cwt worth £2,895. Fancy soap was much more valuable, of course, and 464 packets were imported worth £2,464, whereas New Zealand exported a mere 4 packets worth £5 that year. With increasing population there was a steady rise in demand for expensive imported soap: 935 packets worth £5,737 were imported in 1885. Exports of common soap, nearly all to Australia, that year reached 3,617 cwt worth £3,847.<sup>52</sup>

While advertisements for English soap dwindled, new names were appearing. In 1870 the merchant Robert Wilkin advertised Carbohc Acid soap for the first time, along with Disinfecting Fluid and Powder.<sup>53</sup> This is a clear sign that the germ theory was taking hold, and in the 1880s soap advertisements were to mention their 'germ-killing' properties. There was increasing demand for wool-scouring soaps, powders and 'Potash Soap'.<sup>54</sup> John Rochfort proudly showed his soaps at the Canterbury A & P Show in November 1869, but he sold his factory in 1871 to an English grocer named Horlor.<sup>55</sup> At the Show in 1872 no fewer than four local soaps were on display, from Mein, Hancock, King and Horlor. The judges pronounced Mr King's soap to be 'very good'. There was also a display of McLeod's fancy soaps from Dunedin: 'a very great credit to the manufacturer'.<sup>56</sup>

An even greater variety of imported soaps was on offer by 1872: Rimmel's Dugong soap, perfumed with Australian eucalyptus oil, and Rimmel's perfumed soaps from London and Paris.<sup>57</sup> Advertisements in 1873 included three types of transparent soap, Old Brown Windsor, Royal Brown, floral, fancy and white glycerine, along with cold cream, useful for removing make-up.<sup>58</sup>

A new soap works appeared in Sydenham in 1872. Thomas Hancock's Excelsior Soap was produced at his 'Newtown Steam Soap Works' in Montreal Street South.<sup>59</sup> However, as Sydenham expanded and houses were built closer and closer to his works, the new neighbours complained about the smells and 'noxious discharges' from Hancock's works.<sup>60</sup> Horlor's works were also the subject of many complaints, especially when he let his vats overflow across the roadway.<sup>61</sup> The Board of Health usually gave the

manufacturers ample time in which to make improvements to reduce the public nuisance.

Another new soap works appeared in St Albans in 1882, operated by Thomas Sheridan and Sons.<sup>62</sup> He appears to have kept a clean operation, as few complaints were made about the A1 Soap Works. Horlor sold his Woolston works and moved his machinery to Upper Riccarton where he named his new factory the 'Peerswick Soap Works', but many complaints were made about the smells it created and the pollution of the headwaters of the Avon by his 'offensive and noxious substances'. The Board of Health thought this a most unsuitable site for a soap works and gave him two months to cease operations or they would take legal proceedings under the 1876 Health Act.<sup>63</sup>

Finally a famous brand first appeared in Christchurch in 1884. Pears transparent soap was imported and sold by Taylor's stores in the High Street Triangle for 1s 6d a box of four tablets.<sup>64</sup> This started a price war, as J. H. Gilchrist then offered the same soap for 1s 4d a box.<sup>65</sup> Taylor finally gave way and lowered his price to 1s 3d a box in 1886.<sup>66</sup> Pears soap was then marketed aggressively throughout the world, using recommendations from famous names such as Adelina Patti and Lily Langtry, and iconic posters such as the one of the dirty boy having his ears washed. (He is not in a bathroom, but is being washed from a large basin on the floor.)

The germ theory had been largely accepted by the 1890s. 'Titan' carbolic soap was claimed to spell 'Instantaneous Destruction to Microbes and Infectious Germs'. . . 'Disease flies from it'.<sup>67</sup> Advertisements for carbolic soap tend to outnumber those for fancy and perfumed soaps in the 1890s, though this may also reflect the anxiety about germs aroused by the 1891 influenza pandemic and its successive waves.

Christchurch clearly had an abundance of soap, matching its abundant artesian water, so there was no excuse for people to remain dirty in the 1890s. However, we do not know much about people's personal habits of cleanliness in the past. How often did hands get washed with soap and water? New Zealand's Education Act of 1877, modelled on the successful Canterbury system of free secular public schools, brought an opportunity for improvement. Dr Nedwill's reports from inspections of school toilets in the 1880s often complained about their primitive and dirty appearance, and he commented on the lack of hand-basins for washing. These matters were gradually addressed in the 1890s, and were reinforced by the public's widening understanding of the germ theory. Children would have taken better habits of personal hygiene home to educate their parents. We may assume that by 1900 the population was generally much cleaner than it had been in 1850.

## BATHING

Where did people wash themselves? Victorian British society was renowned for its prudery, and nakedness in public was unlawful. 'Indecent exposure' was the charge

faced by men who were seen relieving themselves in public. Women revealed extremely little of their bodies in public, and in the 1860s were covered by layers of skirts and petticoats. When they were sure to be free from prying eyes, men would bath naked in the sea or in a river, but that was more for the pleasure of swimming on a hot day than to get themselves clean. Part of the Avon River was set aside for bathing, near the hospital, but men were expected to wear drawers. Many ignored this rule, and shocked ladies who had taken boats further up the river for picnics. (Some, however, deliberately steered their boats amongst the embarrassed bathers.)

It was not until the 1890s that public attitudes relaxed enough to make sea-bathing popular. Sumner became an especially popular bathing beach in summer for Christchurch people, as it was easily accessed by tramcar. The tramcars also took people to New Brighton Beach, where a long wooden pier was constructed in 1894. Swimming baths at schools helped to teach children how to swim, but these mostly came after 1900.

We may safely assume that most washing for purposes of cleanliness took place at home. Many British cities had large public bath houses for the inhabitants of brick terrace housing which notoriously lacked bathrooms. The 1846 Public Bath and Wash-houses Act enabled British local authorities to spend money on public baths and swimming pools. But the public bath house never caught on in New Zealand, with its smaller and more dispersed population. The Turkish or hot bath was a different proposition, as we shall see in the next section.

How often did people wash themselves all over? Many migrants from rural areas of Britain and Scotland came from a tradition of the weekly bath, usually on a Saturday night, so that the faithful could go to church clean on a Sunday morning. Shaving was also a Sunday ritual for most working men, though men of the elite and shopkeepers were expected to shave every day. Zinc-coated or painted tin baths were mass produced in Britain from the mid-nineteenth century, and many found their way to New Zealand with successive waves of migrants. The most popular was the 'Sitz' or hip bath (from German, *Sitzbad*, the sitting bath). This had a high back and small elbow rests which could also act as soap dishes. Middle class families took their baths in the bedroom, or in front of the fire, with a waterproof sheet spread over the carpet or hearth rug. A servant would have to carry containers of hot water upstairs from the kitchen. Lower class families usually bathed in the kitchen, where the stove gave warmth and provided the hot water. Where water was in short supply, each member of the family would follow in turn to use the same water.<sup>68</sup> Babies and small children could be washed in the same tin or wooden tub that was used to wash clothes.

Alternatively a wide shallow tin basin could be used in which one either kneeled or stood in order to pour water over the head and body. This was the ancestor of the modern bathroom shower. Bath towels do not appear in Christchurch newspaper advertisements until the 1880s, which could suggest that full-body bathing may have

been rare before that time, but without further evidence this may be a dubious assumption.<sup>69</sup> Towels and towel stands or horses (for drying) appear from 1851.<sup>70</sup>

Scarcely any houses in early Christchurch would have had a separate bathroom. That was a luxury that only started appearing in larger houses in the 1880s. But one house had a separate bath house. This was Eversleigh in St Albans, an eleven-room mansion built by Edward Minchin in 1863. As well as a coach house, granary and five-stall stables, it had a 'Bath house with hot and cold water laid on'.<sup>71</sup> This was rare and exceptional, even for the 1880s.

Auction sales in Christchurch listing household items only start to mention hip baths from 1872.<sup>72</sup> Captain Morgan's hip bath, advertised along with his French bedstead, kauri wash-stand with marble top, mahogany commode and china toilet set, was described as a 'Japanned hip bath'.<sup>73</sup> (Unlike the thin layers of Asian or Japanese lacquer on wood, European lacquer was a black paint, like enamel, which was heated after application and polished to give a glossy finish. Flowers or scenes could be painted on the black ground to add to the visual attractiveness of such domestic items.)

When the Reverend W. J. Habens left Christchurch in 1878 to take up a position in Wellington he advertised, among many other things, marble-top wash-stands and a 'large hip bath'.<sup>74</sup> Other refinements were possible. The plumber's merchant H. Dunkley of Rangiora in 1879 advertised 'a great sale of tinware', including hip baths, plunge baths and seat baths.<sup>75</sup> Hip baths appear frequently in auction sale lists of household effects during the 1880s, suggesting that they were by then quite a common item, at least in middle class houses. A solitary iron bath is mentioned in 1887, along with the usual marble-top wash-stands.<sup>76</sup> In 1890 Mrs Ovenden thoughtfully offered a Japanese screen to accompany her hip bath.<sup>77</sup>

At a Christchurch industrial exhibition in 1880, Deane Brothers of Cashel Street were praised for their 'Japanning' or enamel ware. They claimed to be the first to use this process in Christchurch. The hip bath shown by them was 'extremely well-finished', the inner surface being 'very white, smooth and hard'. This finish was achieved by placing the coated item in a furnace and raising it to 'such a degree of heat' as would fuse the silica in the enamelling and convert it to 'an imperishable glaze'.<sup>78</sup> Here was the origin of the ubiquitous New Zealand enamelled iron bath of the early 1900s, standing on clawed feet in its own bathroom.

## TURKISH BATHS

Europe had long been accustomed to the idea of cold water baths as treatments for a range of illnesses. Dr Hahn of Silesia had written *On the Healing Virtues of Cold Water* in 1738, and at the end of the eighteenth century Dr James Currie's work on the



usefulness of hot and cold water to treat fevers and many other ailments was translated into German and had a great influence there. By the mid-nineteenth century hydrotherapy or hydropathy had many adherents on medicinal grounds. This was also the great heyday of the Continental spa, where hot mineral waters for bathing or drinking were also claimed to have beneficial effects. The famous spas of Britain, France and Germany were also major cultural centres with casinos where the rich and would-be rich flocked during 'the season'.

Turkish baths were somewhat different, as they followed the Middle Eastern pattern of a series of rooms with increasingly higher temperatures followed by a cooling pool and a luxuriously-furnished room for relaxing and socialising after the bath treatment. (This pattern of course dated back to the Romans.) In contrast to the spartan and bracing cold water treatments, Turkish baths offered sensual pleasure as well as medical benefits, and catered for a higher class of person than the large communal bath-houses of industrial British cities.

Turkish baths first appeared in Australian cities in the 1860s, in Sydney, Melbourne and Hobart.<sup>79</sup> Newspaper articles occasionally extolled the virtues of Turkish baths, even claiming them as cures for insanity and alcoholism.<sup>80</sup> A letter in the *Lyttelton Times* in 1871 under the nom-de-plume 'Health' made a plea for a Turkish bath for Christchurch:

Everyone will admit that cleanliness is necessary to health – a Turkish bath is the best means to produce thorough cleanliness, therefore a Turkish bath is necessary to health ... Now, Christchurch is very badly off in the way of baths; very few houses contain a bath-room ... In Melbourne nearly every house, however small, has its bath; there are also two Turkish bath establishments. Doctors of all shades of opinion – allopathic, heopathic and hydropathic – all agree that the Turkish bath is beneficial to all, injurious to no one, except to anyone with a heart disease or in very delicate health ... it is a capital cure for colds, rheumatism, feverishness, headache, and so on.<sup>81</sup>

But this plea fell on deaf ears, and nothing resulted in Christchurch.

That same year, in Dunedin, a mesmerist known as Dr Carr announced plans for a Turkish bath, but failed to find enough backers.<sup>82</sup> Dr Purchas made a similar proposal for Auckland in November 1873, and was more successful in attracting investors: the Onehunga Turkish Bath Company held its first meeting of shareholders in January 1874, and was floated successfully within a month.<sup>83</sup> However, nothing more was heard of Auckland's 'Turkish Bath Company'.

Instead, Dunedin took the lead, and in February 1874 investors were invited to subscribe to the 'Otago Turkish Bath Company'.<sup>84</sup> The company was floated successfully and built new premises in Moray Place. The baths were opened at the start of 1875, with Mr and

Mrs Burton as managers. One day a week was reserved for ladies only, for those who had qualms about attending a largely male establishment.<sup>85</sup>

Christchurch followed Otago's lead a few years later, thanks to the entrepreneurial spirit of one Professor Ayers, who as well as being a professional wig maker and ladies' hairdresser was also noted as a galvanist and mesmerist. He announced his plans in February 1877.<sup>86</sup> A new brick building designed by the leading Christchurch architect Joseph Maddison went up in High Street, and was described in detail when it opened in January 1878 as 'The Christchurch Palace and Turkish Baths'. The entrance lobby led to a sitting room with 'luxurious furnishings', deep pile carpet, heavy maroon curtains and 'superior fittings'. Small private changing boxes enabled customers to prepare for the bath. The first hot room was heated to 102 degrees (38°C) by warm air from floor vents. A fountain (made by the brick and tile makers Austin and Kirk) in the centre of the room moistened the air. (This emulated the perfumed fountain which made such a sensation in London when it was first introduced by the parfumer Rimmel.) The next room was kept at 150 degrees (65° C). Here were marble slabs for customers wanting a massage. Taps delivered hot and cold water to various parts of the rooms, and vulcanite hoses with shower roses were available for playing water over the entire body. After that a cooling room lowered the body heat, then it was back to the changing rooms.<sup>87</sup>

The reporter noted that the Turkish bath had 'well-designed earth closets' as toilets, and 'private enamel baths'. Professor Ayers advertised 'Hot, Cold, Sicilian and Sulphur Baths', on Tuesdays from 8 am to 4 pm, and on Fridays from 5 pm until 8 pm. A Sicilian bath was one in salt water heavily perfumed with citrus and other essential oils. The premises included hairdressing saloons, which were open every day of the week. Professor Ayers was said to be preparing a pamphlet explaining the benefits of hydropathy and galvanism.<sup>88</sup>

After the large crowds at first attracted by curiosity, patronage settled down to a steadier rate by March 1878, when it was claimed that several bad cases of rheumatism had been 'cured'.<sup>89</sup> But thereafter the newspapers give no indication of how well the Christchurch Palace and Turkish Bath Company did, and since its advertisements cease after April 1878 it may be surmised that the business failed.<sup>90</sup>

However, Professor Ayers gathered new medical support and proposed the opening of new baths as a Hydropathic Establishment in 1881. The committee that met in February that year comprised himself, Dr Prins, Dr Tivy, Mrs Packe (the wife of Colonel Packe of the Volunteer Militia), Mrs Barnes, Miss Lohse, Mr Wolfe, W. Robinson and John Grigg, Esq.<sup>91</sup> The last-named was the highly-regarded pioneer of Longbeach Station near Ashburton. (Grigg had set up his own brick and tile works and had drained a large area of coastal swamp to create a model farm, one of the most productive in Canterbury.) This was a formidable committee of highly respected and respectable citizens.

Dr Philip Ryder Tivy was an elderly Irish doctor, recently arrived in Christchurch. He had LM and MRCS qualifications from the Westminster Hospital, London, from 1827. He was added to the NZ Medical Register on 11 September 1880.<sup>92</sup> Early in March 1881 he gave a lecture on 'Hydropathy and the Use of the Turkish Bath' in the St Michael's schoolroom, at a meeting chaired by John Grigg Esq. His main argument was that by opening the pores of the skin, hydropathy enabled the body to correct itself of many ailments, most notably sufferers from rheumatism and the 'bronchial and pulmonary affections'. He cited 'numerous medical authorities' in support of these claims. He was keen to see a Turkish bath in Christchurch (which implies that Professor Ayers' first establishment had failed) and that Mrs Packe had volunteered to be in charge of the ladies' department.<sup>93</sup>

The text of his talk was later printed and was available from White's bookshop in Victoria Street or from Professor Ayers' shop in High Street, opposite the Triangle, or from Dr Tivy himself, at his residence in Chester Street West. It cost sixpence.<sup>94</sup>

Christchurch was somewhat preoccupied with the International Exhibition of Messrs Joubert and Twopeny during 1882, held in a large temporary building in Hagley Park across the road from the Christchurch Hospital. The interior was a splendid classical hall complete with plaster columns and statuary. Over 200,000 visitors went through during the almost four months of the exhibition, but the promoters still lost money on the venture. One of the exhibits of local manufactures was a portable Turkish bath made by W. Harding.<sup>95</sup>

Before the buildings were taken down, another more local exhibition was arranged, and one of the exhibits was another portable Turkish bath made by K. D. Sykes of Auckland. He claimed six years' experience as a hydrotherapist there. His Turkish bath was a large wooden cabinet on castors. The patient (note the medical terminology) was fully encased, with only the head appearing at the top. The flames of a gas jet underneath the cabinet generated the required heat and steam. A cold or tepid bath was to follow, with 'a smart rub with a rough towel', making the patient feel like 'a new man'.<sup>96</sup> An auction sale in August 1883 included an 'Ellis's Patent Turkish Bath', presumably another example of the portable Turkish bath.<sup>97</sup>

The Turkish bath project of Dr Tivy and Professor Ayers took a long while to materialise. In 1884 a large new building was finally erected in Cashel Street East, next to the Kaiapoi Woollen Company's clothing factory, at a cost of £1,000. The first hot bath was set at 125° F and the second at 150° F. The baths were floored in red and white tiles. A notable new feature was the 'Needle Bath', an arrangement of pipes with small jet sprays which could be varied from warm to cold and aimed at various parts of the body.<sup>98</sup>

Christchurch's 'Oriental Turkish Baths' were opened in October 1884, under the management of Messrs Fisher and Wallace. (There was no mention of the original promoters.) In addition to the baths, there was a men's hairdressing saloon and a tobacconist's shop, suggesting that this may have been a largely male establishment.<sup>99</sup>

But the business failed to prosper, and Fisher and Wallace declared bankruptcy in January 1885.<sup>100</sup>

The building was taken over by new owners, and reopened in February 1885, under the same name. They were open from 6 am to 9 pm, except for the ladies' special times: Tuesdays 10 am to 4 pm, and Fridays 5 to 9 pm. 'Warm, Cold, Shower and Needle Baths' were offered at one shilling each. Turkish Sulphur and Vapour Baths cost three shillings, and a Sicilian Bath cost 1s 6d. Quarterly tickets were available.<sup>101</sup> These advertisements were repeated up to June 1885, when the business again changed hands. The new owner was R. Hall, who announced that 'The Establishment is now in First Class Order'. He offered a new range of Turkish, Russian, Sicilian, Sulphur and Vapour baths, with Liver packs and Hot and Cold Sheet packs, 'at all hours'. The prices remained much the same.<sup>102</sup>

Hall was a much more astute businessman, or perhaps knew how to charm his clientele, for Hall's Turkish Baths at 121 Cashel Street became a Christchurch institution for the next decade or more. He survived occasional setbacks. After all, boilers and steam pipes are known to spring leaks now and then. In June 1886 he announced his reopening after repairs: 'the hot rooms are in splendid condition'.<sup>103</sup> More extensive renovations were necessary in 1889. Crompton's the plumbers had made him a new heating apparatus, which enabled heat to be supplied more reliably, and a third chamber had been added where the heat could be raised to 200° 'for those who desire it'. The shampooing and needle bath rooms were located next to the heated chamber, and the cooling room was now 'a pleasing apartment'. Hall had recently acquired the freehold of the property, and had made 'a special study of hydropathy'. Mrs Hall was on hand to look after the ladies.<sup>104</sup>

Coincidentally, Beath's department store was now advertising large 'Turkish Bath Towels'.<sup>105</sup> Does this suggest that more people were investing in their own portable Turkish baths at home? The Rhodes Memorial Convalescent Home on Cashmere Hill received the gift of a portable Turkish bath from W. Acton-Adams in November 1889.<sup>106</sup>

Hall was involved in a court case that month when a labourer from Timaru, one Job Hopkins, sued Hall for £20 damages after an altercation at the Turkish baths. On getting dressed after his bath, Hopkins found his pocket empty and claimed that someone had stolen his two shillings. Hall said, 'I have seen men like you before; you are telling this tale to try and get the bath for nothing'. Hopkins became violent, shouting and pushing Hall away. Hall sent for a constable, and restrained Hopkins by locking him in a cupboard. Hall told the court that he had seen Hopkins earlier that morning, and he was already drunk. Magistrate Beetham said there had been faults on both sides, and chided Hall for restraining Hopkins against his will, but then dismissed the claim for damages.<sup>107</sup> Presumably Hopkins had had his bath for free after all.

More repairs followed in 1890, by which time Hall had taken shares in the Dunedin Turkish baths.<sup>108</sup> In 1891 Hall reduced his prices, which may suggest declining patronage, but he was still going strong in 1893.<sup>109</sup> Yet more renovations followed in 1894,<sup>110</sup> but no further mention is made of Hall's Turkish Baths, or any other Turkish baths in Christchurch, after this date.

The closest Christchurch came to having a heated public bath was the tepid swimming pool opened in Manchester Street in May 1908, 'the finest indoor swimming pool in Australasia'.<sup>111</sup> The water was heated by the municipal rubbish destructor nearby in Armagh Street. This had been opened in 1902, not only to burn the city's rubbish but also to generate electricity. The Municipal Electricity Department had its yards on the same site. The destructor's tall chimney was a city landmark until its demolition in 1939, but few lamented its passing as its smoke had contributed to the city's winter smog and in summer left a smelly haze hanging over the central city. By then electricity from the Waitaki Power Station at Kurow had made the city less dependent on the destructor generator. The old tepid baths were finally replaced by the Centennial Pool in 1950, on the other side of Armagh Street. (This site is now occupied by the Margaret Mahy Playground.)

## LAUNDRY

Clean linen was a high priority for British people in the Victorian era. There was a deeply held belief that clean linen and undergarments helped to keep one healthy. Conversely, dirty linen was assumed to breed disease because of its smell. Women were especially concerned with cleanliness every month because of menstruation. Rags or small towels needed daily washing at such times. Sheets and blankets were also washed fairly regularly to keep fleas and bed-bugs at bay, and table linen and curtains at longer intervals.

Laundry was heavy work for the women in colonial Canterbury. They had to get up before dawn to heat water as hot as possible and pour it into wooden tubs, adding and dissolving grated yellow soap. Then the clothing or sheets had to be soaked and stirred with a wooden paddle or pole, to remove the dirt, then hauled out and transferred to another tub for rinsing, then passed through a mangle to squeeze out excess water, before being hung on a line to dry in the wind and sun, assuming that the weather was cooperating that day.

Stubborn stains had to be scrubbed by hand with soap and water, or as a last resort soaked in a solution of bleach (sodium hypochlorite). Sheets could be made to look whiter by the addition of 'laundry blue' to the rinsing water. This was dilute Prussian blue or synthetic Ultramarine colouring, mixed with baking soda. Cotton and linen

naturally have an off-white colour, and are 'blued' in the manufacturing process to make them look whiter. With each successive wash, this original faint dye is lost, hence the need to renew it in the weekly wash.

Once dried, shirts and blouses had to be ironed flat with a hot iron, while collars and table linen had to be starched into stiffness. Ironing then left a shiny clean-looking surface. All of this was heavy and tiring work before the age of electricity. It was also dangerous. Christchurch newspapers in the 1860s and 1870s have a number of sad reports of children being scalded by hot laundry water, or of toddlers being drowned by falling into a wash tub of water. Irons heated on a fire or stove could burn the hands of the careless or tired housewife or servant.

Having a servant to do the laundry was surely the dream of every colonial housewife, but only the middle class and elite families could afford to employ a laundry-maid. Cooks resented being asked to do the laundry as well, yet in the early days the kitchen was where the water would be heated for the laundry. In fine weather the laundry could be done outside in the back yard, but in wet weather it had to be hung indoors, wherever the actual washing was done. By the 1880s larger houses had separate wash-houses where a copper water container could be heated over a brick fireplace. Kauri and Tawa were favoured native timbers for making laundry tubs and corrugated washboards as they did not have a strong-smelling sap to stain the clothes. In wet weather the washing could be hung to dry inside the wash-house.

Laundry was such a chore that enterprising men saw an opportunity to make money from housewives who would rather not do their own laundry. They employed working women to do the laundry and ironing and paid them a pittance, but there were always women desperate enough for such work. If drowning had been 'the New Zealand death' in the gold-rush days, then desertion was 'the New Zealand divorce' in the 1870s and 1880s. In the long depression of the 1880s, men would go 'up country' in search of work, and some never returned, leaving their wives to bring up children as best they could. 'Taking in' laundry was one way such women survived, but these casual and personal arrangements have left little evidence, except when they are mentioned in passing, usually during a court case.

Steam-powered machinery could take much of the drudgery out of doing the laundry, and large establishments appeared in Britain and North American cities in the mid-nineteenth century, mostly catering to the needs of hotels and hospitals. However, steam laundries were slow to appear in New Zealand. Dunedin had a commercial steam laundry by 1877, but Christchurch had to wait until 1880 for its first commercial laundry.

Messrs Bradshaw and Isherwood opened their Christchurch Steam Laundry near the South Belt (now Moorhouse Avenue) in August 1880.<sup>112</sup> It was in Richmond Terrace (now Waller Terrace), next to the Christchurch West High School. They assured the public that no chemicals were used, yet claimed to be charging only half current laundry rates.

They charged a shilling a dozen for ordinary plain linen pieces, and could do ladies' and gents' collars and cuffs for sixpence a dozen. The reason for this cheapness was their patent ironing machine, which put a glaze on starched collars 'equal to new'. For ladies' more complicated garments they offered fluting, crimping and coffering, but this naturally cost a little more. Their advertisements listed different types of clothing and the prices for each. They also cleaned mats and carpets.

Bradshaw and Isherwood advertised for 30 laundresses in October 1880, and by November their laundry was in full operation. A reporter from the *Lyttelton Times* penned a detailed description of the operation. The wooden buildings could not, of course, compare with the large laundries found in British cities, but the washing system was almost identical with that of the Model Steam Laundry at Upper Norwood (in the suburb of Croydon, South London). Large wooden vats soaked the clothes at the start of the process, before the clothing was passed to the boiling vats, where a central column raised the boiling water and sprayed it over the clothes. The soap was melted by steam before being added to the vats. This dispensed with hand-rubbing for the most part. The washing machine was a large wooden drum two metres across, divided into four sections. The soap was added from the top, and the temperature of the water could be regulated precisely. The drum was then agitated at 15 revolutions a minute, tumbling the clothes in each quadrant. After the washing came the rinsing, with abundant pure artesian water.<sup>113</sup>

Unlike traditional laundries, there was no hand-wringing. Instead, the wet clean clothes were placed inside a large cylindrical metal cage inside a wooden vat. The cage was then set spinning by steam-powered belts to 750 or 1500 revolutions a minute. This centrifugal drying machine removed most of the water, and the damp clothes were then pegged out on long clothes lines to dry in the sun. If the weather was wet, the clothes were hung inside the ironing room. A steam-heated drying chamber was in the next plan for development. The irons were heated on stoves which had their fireboxes facing outside, and they were stoked from the outside, to reduce the risk of coal-dust dirtying the freshly-laundered clothes.

Unfortunately for them, Bradshaw and Isherwood had to declare bankruptcy in December that year, and the laundry was taken over by T. B. Craig and C. B. Taylor.<sup>114</sup> It continued to operate well into 1881. In July the trustees removed some of the older machinery and rebuilt the premises with new machines. Scott Brothers built them a new hot room.<sup>115</sup> A new manager was appointed, one George Mills (late of the Greenwich Steam Laundry, London). His advertisement is revealing: 'The complaints against former work arose from an incompetent manager using inferior plant and wrong processes. Rain-water is now used for woollens, which will no longer be destroyed, while the new machinery will not tear the clothes'. Mr Mills promised the remarkably quick turnaround of one hour for drying wet clothes from ships in Lyttelton Harbour.<sup>116</sup>

Bradshaw had found enough backers to open a rival steam laundry in Lyttelton in May 1881. He assured the public that almost identical machinery to that of the Christchurch Steam Laundry was used, with no chemicals, and far less wear and tear than from ordinary hand-washing. With his wife and two assistants to help with the mangling, starching and ironing, he said he could cope with 100 dozen items a day at very reasonable charges.<sup>117</sup>

The winter of 1881 was unusually wet, and the Christchurch Stream Laundry responded to its new competition with an advertisement that assured the public that a 'THOUSAND DOZEN OF CLOTHES' could be turned out daily from their renovated premises. Even better, they offered a free pick-up service: 'A Post Card notice will bring the Van to your Door'.<sup>118</sup> In September 1881 Mills advertised for a new boiler and a six to eight horsepower engine, due to increasing trade'.<sup>119</sup> John Anderson was the leading boiler-maker in Christchurch, and had bought shares in the restructured company. He presided as chairman of directors at a shareholders' meeting in October 1881.<sup>120</sup>

The Christchurch Steam Laundry again went bankrupt in 1882. A mortgagee sale was announced, to auction the land, house, large brick and wood store, steam engine, engine room, drying rooms, etc. Quantities of galvanised iron clothes line and a steam gauge were included. The claims to a chemical-free process were somewhat undermined by the listing of a quantity of liquid ammonia.<sup>121</sup> The new owners are unknown, but the steam laundry carried on until 1887 when it was again offered for sale by auction.<sup>122</sup> Whatever its new name, after this it fades from view in the newspapers.

Instead of an industrial laundry, a domestic steam washing machine appeared in Christchurch in 1886. George Barrell first advertised his new invention in October 1886, promising that a family wash could be completed in one hour, with no rubbing whatever.<sup>123</sup> Barrell had been an undertaker in Leeston, and his invention won a prize at the Leeston A & P Show in November 1886. After moving to Christchurch he advertised the sale of his hearse for £28 10s from his new premises at 64 Manchester Street.<sup>124</sup> Within a few months he moved to 'more convenient premises' at 133 Manchester Street, opposite Barrett's Hotel.<sup>125</sup>

In April 1887 Barrell advertised a range of sizes and prices for his washing machine. The standard model in wrought-iron plate cost £3 17s 6d. A cast iron model cost £4 6s. Larger sizes were available from £5 to £5 12s 6d, while a superior model in copper cost from £6 10s to £8 10s. Wooden tongs were an extra at 1s 6d. This advertisement was accompanied by fulsome testimonials from a schoolmaster at Opawa and the postmaster at Rakaia.<sup>126</sup> Barrell spared no expense with advertising: almost every day the *Lyttelton Times* or *Press* carried brief advertisements for his steam washing machine.

How did it work? Some idea can be gained from a lengthy advertisement in July 1887 which gave detailed instructions for its use:



1. Steep clothes in water for a few hours, no soap.
2. Put water to the depth of about three inches in the cistern (that is, until it just flows into the inside of the cylinder), then set the machine in the furnace.
3. Cut into thin slices sufficient soap to make suds, which should put into the water when you light the fire. After the water boils, put in a quarter of a packet of washing powder.
4. Lightly fill (but not overcrowd) your cylinder with white clothes first. Fasten the lid, then turn the handle a few turns to warm the clothes, and wait until the water boils.
5. When the water boils, turn the handle very slowly, reversing the motion occasionally, for ten to fifteen minutes. The clothes are then washed, but care must be taken that there is sufficient soap in the boiler, which can be easily seen by lifting the lid when turning the handle, and you should then see a good lather of suds running around the wooden cylinder.
6. Take them out of the cylinder (using the wooden tongs) and rinse thoroughly in cold water. Wring them into a tub of blued water, then wring and hang on the line.
7. After washing the white clothes, wash your flannels, but only keep these in for five minutes. Wash coloured clothes, towels and dusters last (for five minutes).

NOTES: The water does not require changing throughout (as the steam from the dirtiest water is pure), but care must be taken to add a little occasionally when required.

To thoroughly clean the machine, put in a piece of soda when the last clothes are taken out, and then rub it with a scrubbing brush, and immediately empty it away, putting in a little clean water before putting it over the furnace.

Other sage advice included not letting the wooden cylinder dry in the sun (presumably lest it split). Barrell claimed that the cost of soap and fuel was so little that his machine would soon pay for itself. He claimed 500 sales to date in and around Christchurch. He also claimed the process was simple enough for a child to do the whole wash.<sup>127</sup>

This advertisement is interesting from the public health viewpoint as it also claimed that the machine would disinfect clothes which had come into contact with contagious diseases: 'no germs of infection being able to survive the ten minutes' immersion in the steam'. This is clear evidence that the germ theory was winning popular acceptance in Christchurch in the late 1880s.

Barrell gave his address as 'Meadow Bank', Ellesmere, 27 June 1887. (This was the old homestead. The property was later bought by George Rhodes, brother of the equally wealthy Heaton Rhodes, in 1890. The present mansion was designed by Collins and Harman and built in 1891.) Barrell advertised for a Canvasser with horse and trap in August 1887, presumably to help sell his steam washing machines.<sup>128</sup> However, his partnership with S. Wills was dissolved 'by mutual consent' in November 1887 and

Barrell carried on the business from 157 Victoria Street.<sup>129</sup> (Wills was presumably the manufacturer of the washing machines designed by Barrell.)

However, the demand for steam washing machines seems to have slackened, and there are even a few advertisements for used machines for sale. Had housewives discovered that flannels and woollens tend to shrink when steamed, just as they are when boiled? As we shall see, Barrell then returned to his former occupation as an undertaker, and the washing machine advertisements appeared again only briefly in 1891. They were available from Barrell's new premises as an undertaker, at 62 Colombo Road, Sydenham. But there were no further washing machine advertisements after that year.

By 1903 there were at least five Chinese laundrymen operating in Christchurch, whether for the same firm or independently is not known. Their names were Lan Sing, Ah Ting, Wee Wah, Ah Hoo, and one other whose name is illegible on the petition they signed (with occupations) asking the government to restrict the importation of opium. The 1898 Census listed about 100 Chinese living in or near Christchurch. Most were market gardeners or storekeepers, but a few were earning a living doing laundry. They had a good reputation, and many elite families living north-west of Cathedral Square in Papanui, Merivale and Fendalton preferred to use the Chinese laundries, as their starched work was impeccable. One of the laundries based in Victoria Street had a contract for the starched collars of the boarders at Christ's College for many years to come.<sup>130</sup>

While most working-class households persisted up to the 1950s with hand-washed laundry, using copper boilers and kauri rinsing tubs, families who could afford it relied on commercial laundries or the services provided by church-based homes for unmarried mothers. The Essex Street maternity hospital, the Salvation Army and the nuns at Mt Magdala in Halswell all used the unpaid labour of pregnant single women to pay for their keep by doing laundry for big houses of the elite such as Otahuna, the residence of Sir Heaton Rhodes, or Te Koraha, the residence of his cousin Arthur Rhodes, Mayor of Christchurch in 1901. A few of the wealthy elite acquired early electric washing machines, but for the general population in New Zealand the revolution in home laundry had to wait for the post-war electrical appliance revolution of the 1960s.

## PART THREE

### PUBLIC HYGIENE

#### RUBBISH AND NIGHT-SOIL

In the era of horse-drawn carts and drays, the name of John Brightling stands out in Christchurch. He was not only one of the city's leading carriers but he held the city council contracts for rubbish collection and night-soil collection for the last quarter of the nineteenth century. His sons continued the carrying business into the era of motor trucks and Brightlings remained a familiar name among Christchurch carriers well into the 1970s.

John Brightling (1843-1928) came from Sevenoaks in Kent and arrived at Lyttelton in June 1866. He was first in partnership with a man named Hadfield, and together they won the Provincial Council's contract for 'scavengering' or rubbish collection in 1872.<sup>131</sup> He was then aged 28. He won the contract again in 1874 under his own name, and by then was also carting shingle for the city council as it levelled the roads and filled in gullies. In January 1875 he became the council's sole contractor for carting shingle.<sup>132</sup> He shrewdly began to buy parcels of unwanted land where shingle deposits were to be found, and in 1876 he successfully tendered to supply the council with 2,000 cubic yards of shingle for £416.<sup>133</sup>

With the introduction of the dry-earth pan toilet and night-soil system from 1877, Brightling became the city's night-cart contractor. He was consulted by the Medical Officer of Health, Dr Powell, about ways to improve the system. He told Powell that the pans in use were intended to suffice for six adults for about a week, requiring weekly collection. These pans were much larger than a hospital bedpan. They were more like a small barrel cut in half, about 50 cm across, and fitted underneath a fixed oval seat. The system was also called the 'dry-earth system' because a box of ashes or dry earth was meant to be alongside with a scoop to scatter earth over the latest contribution, to reduce the smell.<sup>134</sup>

However, the term 'dry pan' was a euphemism, because the combination of urine and faeces made for a largely liquid content that was also referred to as 'sullage'. Brightling often found the hotel pans full to overflowing, especially when country folk came to town with their livestock or produce on market days. Powell recommended that the city council provide public toilets to deal with this demand, but as we shall see in the next

section, public urinals were as far as the city council moved on this suggestion. Powell thought that dry-earth pans and closets should be mandatory for all schools, factories and hotels. However, Brightling thought that the existing metal pans would last only two years or so. He knew of a better system in Rochdale in England, where wooden tubs with lids were used. Perforated false bottoms separated solids from the liquid sewage. Powell's idea was to clean the pans at the sandhills reserve in Bromley, so that a fresh pan could be substituted for the full pan on collection. Brightling thought this could be done with little extra cost. Powell recommended carbolic of lime to clean the pans and the night cart.<sup>135</sup>

The Board of Health announced a competition for locally-made wooden pans, and in July 1877 awarded the prize of £20 to Robert Seager of North Avonside.<sup>136</sup> Brightling had already modelled his night-cart on the Rochdale type. This was a horse-drawn dray with iron tanks into which the pans were emptied by hand, a most noisome and disgusting procedure. The night cart men had to be tall and strong, able to lift a full pan to shoulder height and tip the contents into the night cart. At the sandhills the tanks would be tipped up to empty their contents into prepared trenches. Brightling's contract for scavenging in April 1878 specified the removal of all ashes, rubbish and night-soil within the city boundaries. His vehicles were to be well-washed and disinfected every day. Each householder had to sign a form agreeing to the work, and Brightling had to provide for the alteration of closets to admit the new pans. Emptying was to take place only between 11 pm and 6 am.<sup>137</sup>

Brightling also won the contract for the borough of Sydenham, at the rate of 7s a pan weekly or 3s 6d a fortnight.<sup>138</sup> The Christchurch City Council had ordered 1,000 of the new style pans, and the first 50 were delivered in May 1878. The Board of Health had started its door-to-door inspection, and the council had agreed that 'Every house will be compelled to have a pan', while cesspits were to be filled in.<sup>139</sup>

The city's rubbish and night-soil were taken out to the council's reserve at the Bromley sandhills to be buried there, but Brightling started using one of his own shingle pits in Sydenham to save the long trip through town. The Inspector of Nuisances warned him that he would be liable to prosecution if any nuisance arose from this pit.<sup>140</sup>

He had another complaint early in 1879, from Cr William Wilson, a former mayor, who accused Brightling of overcharging and conducting his work in 'a slovenly manner'.<sup>141</sup> Though this complaint was not upheld, and the council expressed its satisfaction with the manner in which the contract was being performed, Brightling threatened to give up his contract, as he was tired of 'many groundless complaints'; and people being late in paying his fees.<sup>142</sup> He was also dumping night-soil on land owned by a Mr Rowe at Dudleys Creek on the New Brighton Road, and 15 nearby residents had complained about the smell. However, when the Inspector of Nuisances visited the site he could detect no smell and saw no nuisance above ground. Brightling kept using this site until the council sent him a formal letter asking him to desist.<sup>143</sup>

His old shingle pit on Gasworks Road (now Waltham Road) near Wilsons Bridge was apparently kept clean and secure, and in October 1879 he again won the scavenging contract for Sydenham for two years, paying the required bond. The Sydenham Borough Council encouraged its residents to convert to the pan system 'for the preservation of the public health'.<sup>144</sup>

Cr Hulbert thought that 11 pm was too early for the night-cart man to call, and wanted collections to start after midnight. Brightling pointed out that he would need another horse and dray and two extra men to get all the work done by 6 am. He was willing to provide the horse and dray if the council paid the two men, but this would cost £286 a year, so the 11 pm start time remained.<sup>145</sup>

Cr Wyatt also objected to the 11 pm start, and 'fairly drove the contractor off his property', even threatening him with a stick. Brightling reported this as one of many examples of people obstructing the night-cart contractor in doing his duty. When this was revealed at a council meeting, there was much laughter, though Wyatt pointedly did not join in.<sup>146</sup> The Inspector of Nuisances issued eight formal complaints to the police about persons obstructing the night-cart man, and several were fined. One was a labourer named Woodcock who had threatened to 'put a bullet through' the contractor, thinking he was a burglar. He said he would bar his gate and set his pan on the footpath, or use the night-soil on his garden.<sup>147</sup>

By July 1880 the city council had sold 3,000 pans, and had ordered another 100. The rate roll had the names of 3,234 householders, and 3,177 of them had pans. This was an excellent rate of uptake for the central city. The night-soil contract was also a money-spinner for the council, as they collected £1,440 in rates more than they paid Brightling, and after deducting the inspectors' salaries they still made a profit of £600.<sup>148</sup>

In September 1880 Dr Nedwill and the Inspector of Nuisances, William Pearce, visited Brightling's shingle pit at the bottom end of Waltham Road, and saw that he had been dumping town rubbish there. They urged him to stop doing this, but also admitted that by covering it with earth he was preventing any nuisance from arising.<sup>149</sup>

Brightling's tender for 1881 was unsuccessful, and the council gave the contract to one Mr Duncan, for £45 less than they had paid Brightling. However, this penny-pinching backfired on the council, as complaints about Duncan's service accumulated, reaching 200 by August that year. Despite many warnings, Duncan failed to improve, and with pans being left uncollected the council stopped his contract and asked Brightling to clear up the mess.<sup>150</sup> By this time Brightling had seven night-carts operating, and soon dealt with the backlog. Dr Nedwill had been complaining to the council all through July about Duncan's deficiencies, and that his neglect was causing a danger to the public health. He urged Brightling's men to use disinfectant to clean 'those places which have been rendered offensive'.<sup>151</sup> Brightling's new contract was significantly increased, to £2,000.<sup>152</sup> He also won the scavenging contract for Sydenham, and won tenders for the lowering of Wilsons Road near the bridge, and in parts of Ferry Road. His men were also

levelling and shingling the South Belt at this time. His scavenging contract for 1883 was worth £2,628.<sup>153</sup>

He could afford to buy Henry Smith's six acre block next to his Waltham Road shingle pit in 1882, for over £1,700. This had a deep deposit of 'best shingle and sand', so he was likely to recoup his investment fairly quickly.<sup>154</sup> Dr Nedwill kept a close eye on Brightling's Waltham Road pit, and warned him not to dump 'objectionable matter' there, but Brightling insisted that he only dumped ashes and dry rubbish there.<sup>155</sup> Then he was caught dumping smelly organic waste in 1884: the neighbours said the smell was so bad they had to keep their doors and windows closed.<sup>156</sup>

Perhaps because of this, Brightling lost the scavenging contract to W. B. Campbell, but by now he had many other irons in the fire. He had won the tender to lay the sewer along Lincoln Road to Sunnyside Asylum in 1884,<sup>157</sup> and also won the contract to pave the Addington sale-yards with bricks, and a pipe-laying contract for 31 chains of stoneware pipe from Gloucester Street to Tuam Street.<sup>158</sup> In 1885 he won the contract to supply shingle to the Linwood Town Board, and was part of the merger in 1885 with Goss and Austin & Kirk to create the Brick Tile and Pottery Company.<sup>159</sup>

In 1885 Brightling won a city council contract to build a new tramline from Latimer Square to the Linwood cemetery reserve. Another branch led from the cemetery up Rudds Road to the Bromley sandhills reserve. The line and equipment cost £8,840. The idea was to replace the horse-drawn night carts with tip carts on rails to carry rubbish and night-soil out to Bromley. This service would operate between midnight and 5 am. It employed four men and two horses during the week, with an extra horse and two more men on Saturdays. At its peak this service used 12 tip carts. It remained in use until the opening of the city destructor in Manchester Street in 1902.<sup>160</sup>

Brightling's men seem to have done their job well, with few spillages, for in 1886 he again won the city's night-soil contract for the following three years.<sup>161</sup> Brightling was now winning very large contracts, including the construction of the tramway to Sumner, and the Halswell Canal. The latter was a big government contract worth £5,000. This canal (which still does its job today) takes the Halswell River three miles to Lake Ellesmere. Brightling excavated a canal 40 feet wide (12 metres) and up to 2 metres deep, all through sand, which he then carted elsewhere and sold.<sup>162</sup> He also built the North Beach tramway and when the company failed he took it over and operated the line until the formation of the Christchurch Tramway Board. Brightling was also the cartage contractor for the Railways Department in Christchurch and engaged in many roading and construction contracts. But for the generations who grew up in Christchurch in the late nineteenth century he was best known as the night-cart man.<sup>163</sup>

Flush toilets were rare in Christchurch before the advent of the high pressure water supply in 1909. Some large houses with their own water tanks had these rare appliances, which drained into a cess-pool, but the cess-pool needed regular emptying. As we shall see, the extension of the sewers took a long time, and some outer suburbs were still relying on a night cart man in the 1950s.

## PUBLIC URINALS

A hitherto untold part of the story of Christchurch's sanitation history concerns the public urinals. Hotels were supposed to provide closets for female customers and urinals for the men.<sup>164</sup> Prisons and lunatic asylums also had urinals for their male inmates, and schools had urinals for the boys.<sup>165</sup> The absence of any mention of public toilets for women is problematic. Does this mean that most women were expected to stay at home and look after children and housework? There were very few women in the mainstream workforce before 1900. Dressmakers and milliners often worked at home, and most shop assistants were male in the nineteenth century. If a woman ventured into town to shop, and was caught short, did she have to resort to a hotel? Or did she ask to use the facilities at the back of the shop? This is an area where the written record of the past falls silent.

Johann Ruddenklau, proprietor of the City Hotel facing the Colombo and High streets Triangle, first moved for a public urinal in Christchurch in 1868.<sup>166</sup> The City Surveyor drew up plans for a urinal in Cathedral Square, but the estimated cost of £57 10s made councillors blink and 'consideration was deferred'.<sup>167</sup> A cheaper option was to attach the urinal to a water tank which supplied the council water carts. This large tank was built in November 1868 at a cost of £95, and the small urinal was attached for another £30.<sup>168</sup> This Cathedral Square urinal proved so popular that the Public Works Committee recommended another tank and urinal at the southern end of High Street.<sup>169</sup> More urinals were then proposed for other parts of the central city. One obvious site was at the High and Cashel streets corner where the council already had an artesian well. This tank and urinal cost only £45.<sup>170</sup> No photos survive of these early urinals, but they were probably simple timber and corrugated-iron structures.

The Central Hotel on the corner of Colombo and Gloucester streets was the subject of more complaints to the Inspector of Nuisances than any other hotel in Christchurch. The urinal lacked a proper drain and often overflowed across the public footpath. The house drain also often overflowed, carrying the contents of bedroom commodes. The Inspector of Nuisances, William Pearce, noted that 'the closets [were] so dilapidated that the requirements of decency [were] not even observed'.<sup>171</sup> The proprietor, Mr Moir, had made many promises to improve things, but never did them, and the nuisance to neighbours was getting worse. The threat of prosecution finally moved Moir to improve the urinal.

Another urinal appeared attached to the water tank in Oxford Terrace in 1870 near Tattersall's Club (later the Midland Club).<sup>172</sup> But private urinals continued to cause nuisances. Barnard's Repository in Cashel Street allowed its urinal to flow into the side-channel, causing an 'offensive smell'. The Sanitary Committee suggested that the proprietor increase the flow of artesian water to flush the urinal more thoroughly.<sup>173</sup>

A rare public-private partnership added another public urinal in 1870. Messrs Bird and Bennett offered their urinal to the city council for a seven-year peppercorn lease provided the council made some alterations recommended by the Inspector of Nuisances. These repairs cost a mere £7 10s and the deal was clinched in October.<sup>174</sup>

The alley between the *Lyttelton Times* office and the Central Hotel that linked Cathedral Square to Gloucester Street was a notorious nuisance, as men leaving the hotel used it as a urinal, and ladies leaving the Theatre Royal were often shocked to see them doing so. A number of cases of indecent exposure from this locale came before the Magistrates. Mr Moir offered a part of his yard for a urinal, but the council thought it too small. Instead they opted for part of the alley itself, and plans were drawn up for a urinal with a concrete floor and corrugated-iron walls. This was opened in January 1872.<sup>175</sup>

The ladies from the theatre were not the only ones offended by men urinating in public. Dr Powell, the Medical Officer of Health, complained to the city council in November 1871 about the 'very unpleasant' sights to be seen at the Cathedral Square urinal, which stood opposite the window of his consulting rooms. Cr Hart suggested removing the whole 'pagoda' structure as it was no longer needed. Cr Sawtell wanted to keep the urinal but thought the water tank should go. Cr Jones thought a screen would 'obviate any unpleasantness' at the urinal.<sup>176</sup> But the matter was deferred and the urinal remained.

When Charles Clark the auctioneer and land agent built his new offices in Hereford Street, a handsome Italianate building faced in Portland cement and Halswell stone, he provided a urinal and water closets under the main stairs which could be used by the public.<sup>177</sup>

The Sanitary Committee remained keen on public urinals, but neighbours often complained about them. In 1874 Mayor Hart said the whole question of public urinals would have to be reviewed, and he suggested that in future they might be made more ornamental, 'as was the case in Paris'.<sup>178</sup> Cast-iron panels were ordered in 1877 and arrived in February 1878.<sup>179</sup> This was the origin of Christchurch's 'Clochemerle' style urinals of the 1880s.

In the meantime the city council had conducted a survey of hotel urinals and found that some hotels, like the Golden Fleece, had none at all, or that others, like the Golden Age, had only very small and inadequate facilities. Most were found to be clean, and a few had been recently improved. The Royal Hotel in Oxford Terrace West had a concrete urinal and an ample supply of artesian water. Lack of water was the main reason for smells and complaints. The Sumner Hotel was said to have 'bad beer and no urinals'.<sup>180</sup>

The Magistrates who sat as a licensing bench made it clear that they would insist in future on proper urinals and earth closets, and that hotels lacking urinals would not



have their licences renewed.<sup>181</sup> Likewise, the Education Board was embarrassed by the school inspections of Dr Nedwill, who was still finding defective and offensive urinals in some schools. At Phillipstown School he found one urinal that was simply a sheet of corrugated-iron bent to form a trough, with no proper drain. The ground was soaked and ‘smelt abominably’.<sup>182</sup>

Sites for the new council urinals were decided in March 1880. Six were planned, in the Market Place, Cathedral Square, Victoria Street, High Street, the Triangle and outside Matson’s, at a total cost of £214.<sup>183</sup> Each site not only had a good water supply but was to be lit by gas lamps. (Christchurch had been producing coal gas since 1863.) The new urinals did not come without controversy. They were clearly a very divisive issue, with some strong supporters and equally strong opponents. Cr Gapes said he was opposed to placing such structures in public places, however ornamental they looked. They would attract drunken men and should be hidden away in more private places. Cr Lambert responded that they needed to be found easily by visitors to the city.<sup>184</sup>

Protests were soon being lodged by people living in the vicinity of the new urinals, especially the one in Victoria Street, opposite the timber yard of James Goss. Similar protests were received from Hereford Street businessmen against the one proposed for the City Hotel in the Triangle. A move to have the matter referred back to the Sanitary Committee was lost, and Mayor Ick declared that the council would not alter its decision.<sup>185</sup> The urinals were duly erected during 1880, but complaints and requests for their removal continued to be received by the council well into 1881 and 1882.

The Sanitary Committee’s usual reply to such complaints was that the urinals were a ‘public convenience’ and should stay. However, they tried to prevent passers-by from being offended: screens were erected at the entrances of ‘the French urinals’ to allow men more time to rearrange their trousers before sallying forth into the view of ladies and others.<sup>186</sup>

Once the sewers were completed and operating, advertisements appeared encouraging people to invest in water closets and have them connected to the sewers. William Summerhayes was a plumber in Springfield Road who frequently advertised his services in 1883-4 for house drains and sewer connections, latrines and urinals constructed ‘on reasonable terms’ with a 12 month guarantee.<sup>187</sup>

Local manufacturers also offered a variety of sanitary appliances in the 1880s, suggesting that this period saw a general improvement in the city’s attitudes towards toilets and waste disposal. Austin, Kirk and Company, brick and pipe makers, displayed a wide range of useful items at the Industrial Exhibition of 1883: house sewer traps, urinals and closets and kitchen sinks, all with syphons to eliminate smells, glazed white-ware sanitary appliances, fresh air valves and ventilators. They also made glazed terracotta chimney pots, guaranteed as ‘a perfect cure for smoking chimneys and scolding wives’.

Their Farnley Works in Colombo Street South now employed 50 men, and their new brick kiln was capable of producing batches of 300,000 bricks.<sup>188</sup>

Petitions for the removal of some urinals were still being received by the council in 1884, and Mayor Hulbert remarked at one meeting that 'He thought there were already too many public urinals'.<sup>189</sup> Cr Louisson thought they should be removed altogether. Rather than remove all of them, the Sanitary Committee recommended moving some to new locations. The one in Victoria Square behind the old Post Office could be moved to the river bank by the fish market, and the one in Victoria Street, so much complained about, could be moved to Barrett's Hotel in lower Manchester Street.<sup>190</sup> But the council could not agree on these suggestions, and the urinals stayed where they were. A new site for the Victoria Street urinal was suggested behind the Cathedral, but the City Surveyor estimated the cost at £317: dismantling it, £27, building a new one £80, boring a new artesian well £200, connecting to the sewer £10.<sup>191</sup> So that idea came to nothing.

When Daniel Reese the city's leading plumbers' merchant announced plans to build a hotel and shops on Morten's Block (later named the United Service Hotel), opposite the Bank of New Zealand at the southern entrance to Cathedral Square, the council announced that it would build a new public urinal in the alley behind the hotel, between the Square and Hereford Street.<sup>192</sup> This proved enormously popular with shoppers, and was the ancestor of the Women's Rest Rooms that were built on this site in 1932.

Male patrons of the Theatre Royal in Gloucester Street often lamented the removal of the urinal that previously stood behind the Central Hotel. Even Mayor Hulbert, not a fan of public urinals, thought this part of the city needed a public urinal. When the council had plans to build a new town hall in Victoria Square, the demolition of the old Post Office left the urinal standing alone, so it was decided to move it to Gloucester Street near the Theatre Royal. This was done in July 1885.<sup>193</sup>

Another plumber, Hement Brothers at 148 Hereford Street, advertised in 1887 that they could supply urinals, patent water closets, lavatory basins, sinks, cisterns, hot water pipes, taps, and a variety of baths: cast iron, galvanised, enamelled or plate zinc, in all sizes. They even had hot water cylinders, the first mention of such an item in a Christchurch newspaper.<sup>194</sup> These ads were still appearing in 1889.

Christchurch seems to have accepted its French-style public urinals by the end of the decade, and instead of complaints there were occasional requests for new ones. In 1888 the council received a petition by 27 residents for a urinal to be erected at the intersection of High, Manchester and Lichfield streets. The one that had been moved to Barrett's Hotel (near A. J. White's) now had little use, so the council simply moved it further along High Street at a cost of £10 3s.<sup>195</sup>

The 1890s saw very few mentions of urinals in the newspapers, suggesting that they had become an accepted part of the city's streetscape, or perhaps less noxious. Two petitions

to remove the urinals in front of hotels came to nothing. The Cathedral Square urinal was moved in 1897 to a spot near the base of the Godley Statue, and at some date early in the next century this was replaced by an underground men's urinal which lasted for nearly another century, until the Christchurch earthquakes of 2010-11. By then, public urinals were only a memory, most having been removed during the general improvement of the city's appearance between the world wars.

## DRAINS AND SEWERS

Unlike the preceding sections, which offer mostly new information from newspaper sources, the story of Christchurch's public hygiene through drainage and sewerage works has been told before, and needs only an outline summary here.

In 1948 the Christchurch Drainage Board published *A City Built Upon a Swamp*, the 1942 MA thesis of Agnes I. Hercus. In 106 pages she had reconstructed (according to the subtitle) *The Story of the Drainage of Christchurch, 1850-1903, with Epilogue, 1903-1936*. Based almost entirely in the primary sources of minute books, inspectors' reports, engineers' reports, and official letters, this remains one of the most important books ever written about Christchurch. Appendix IV (pp. 77-97) lists the streets connected to the sewers according to a series of contracts between 1881 and 1930. Though the book lacks maps and illustrations, Hercus referenced her sources faithfully with 270 endnotes.

In 1989 the Drainage Board published John Wilson's *Christchurch: Swamp to City: a Short History of the Christchurch Drainage Board, 1875-1989*, on the eve of the board's disappearance in the most radical restructuring of local government New Zealand has ever seen. Though it lacks footnotes and index, this is a well-written and interesting account for the general reader. Well-illustrated with maps and plans as well as photos, this useful summary was intended as a precursor to a more substantial history from primary sources covering the period after 1903, but such a volume never eventuated.

The section that follows is entirely based on Hercus and Wilson, and has no endnotes, as the primary sources are fully referenced by Hercus.

The key problem facing drainage engineers since the earliest days of settlement was the flatness of Christchurch's site. The floor of Christ Church Cathedral is only 4.7 metres above the high water mark for spring tides. The Bush Inn at the end of Riccarton Road stands only 16 metres above high tide. There is a slope to the sea, but it is so gradual

that drains and sewers relying on gravity will flow only sluggishly, if at all. The greatest advantage of the site, as we have seen, was the ample supply of artesian water to be found in the deep aquifers.

The first drainage works in the city were undertaken by the Canterbury Provincial Council between 1853 and its abolition in 1876. Edward Dobson was the Provincial Engineer and he wrote a report on city drainage in 1858 which was forward-thinking and comprehensive. He recommended a storm-water drain along the South Belt (now Moorhouse Avenue) and along Ferry Road to the Heathcote River. He recognised that underground sewers would be ideal, but were far too expensive for the infant city. Instead he proposed a system of smaller drains into the Avon River and the use of 'portable cess-pools' by households, in containers which could be taken away for disposal well outside the city boundary. However, there was never much money for drainage works as the top priorities for the provincial government were roads and bridges to provide an infrastructure for the whole province. And of course a set of offices for the council.

Public concern was often expressed about the many bad smells of early Christchurch. Some of this came from the prevalence of pigs kept in back yards to consume household scraps (and produce domestic bacon and meat) but rubbish heaps and stagnant water were also suspected of breeding disease, according to the prevailing miasmatic theory of disease causation.

Christchurch was gazetted a municipal district in February 1862, when the population was barely 3,000. In April 1862 the Municipal Council set up a Sanitary Commission to investigate ways to improve the city's sanitation. Just a month before, Christchurch had appointed its first Surveyor, William Frederick Moore, whose main task was to level the streets and fill in dips and gullies that harboured stagnant water. There were plenty of these. A former stream bed extended through the central city, starting near St Michael's Church and passing through the triangle formed by Colombo, High and Cashel streets. Some of the first shops in this area had to stand on piles where the rear of the premises extended over this deep gully. West of the Avon River a former stream bed ran between Gloucester and Worcester streets. Another deep gully snaked across Hereford Street between Colombo Street and Oxford Terrace. North of the river a network of former channels occupied the blocks bounded by Colombo, Manchester and Salisbury streets. These gullies were gradually filled in, using shingle taken from the Market Place (now Victoria Square), leaving a large lagoon in the Avon River next to the Colombo Street Bridge.<sup>196</sup>

The Municipal Council also passed a by-law for the regular emptying of domestic cess-pits (which was largely ignored) and set up a Night-soil Committee to organise a night-cart service to collect the contents of Dobson's 'portable cess-pools'. This committee strongly recommended the use of a dry-pan system, where solid excreta could be covered by dry earth or ashes to reduce the smell. However, most householders simply

dug cess-pits in their back yards, not realising that an unlined cess-pit could contaminate a nearby unlined water well.

Surveyor Moore presented his 'Report on the Drainage of the City of Christchurch' to the council in July 1864. This envisaged an elaborate network of underground drains and side-channels on the streets. It was costed at £700,000 and the council threw its hands up at such a huge expense. Edward Dobson presented a revised scheme in August 1864 which was estimated to cost a mere £30,000 and the council thought it might cope with that, if spread over several years. This involved cast iron and glazed earthenware pipes to remove household 'sullage' and take it to a main drain in Tuam Street which would follow the line of the future Linwood Avenue to the Estuary. Dobson also suggested spreading the house-slops ('liquid filth') on the sandhills at Bromley. The council, duly impressed, ordered its first batch of iron pipes from Scotland.

Unfortunately the council was facing increasing criticism from the ratepayers, who had seen little tangible result from the money they had been handing over. In 1866 there was a rate-payers' strike led by the lawyer Henry Wynn-Williams, and the council came close to bankruptcy. Council workers were laid off and night-soil collection ceased for six months. The drainage scheme was abandoned, and when the pipes arrived they were sold off, unused. They had cost £882 to be shipped from Glasgow, and another £400 to be brought by boats and drays from Lyttelton to Christchurch. The discovery of abundant artesian water persuaded the council that there was no need for underground drains as the water could dilute 'household slops' before they drained into the Avon River.

Though it was legally only a municipal council (it was never a town board), Christchurch called itself a city by virtue of the presence of an Anglican bishop and a royal charter of 1856. It formally became a city council in 1868, when William Wilson was elected its first mayor.

There remained an urgent need to get rid of stagnant water in low-lying southern parts of the central city. In the winter some of these areas resembled small lakes. The engineer William Bray (who first warned the council about the risk of flooding from the Waimakariri River) urged the council to implement part of Moore's plan and build a large brick sewer from the East Belt (now Fitzgerald Avenue) eastwards along Tuam Street, and an open timbered drain from there to the so-called Canal Reserve (now Linwood Avenue). Work began on this project in December 1871. The open timbered drain through Linwood remains a major storm-water outfall for the city to this day.

The Canal Reserve later became the focus of a long-lived movement to build a ship-canal from the Estuary to central Christchurch, but this never eventuated, largely because of the shallowness of the Estuary and the expense of building locks. In the 1930s the Drainage Board widened and deepened the lower reaches of Bray's drain as a flood

storage basin. It still resembles a Dutch canal, and people have assumed it was part of the proposed canal scheme.

Having resolved part of the drainage problem from the central city, the council faced a challenge from the Heathcote Road Board in 1871 over the Ferry Road drain. This had become an open sewer, from the discharge of many properties along Ferry Road. Perversely, the inhabitants then complained about the smells. A determined group obtained a Supreme Court order to force the city to stop using this drain. The section along the South Belt was then diverted into the Tuam Street drain, and the Ferry Road drain fell into disuse and disrepair, but it still carried stormwater to the Heathcote River in times of heavy rain.

The 1875 Drainage Act allowed for the setting up of local drainage boards throughout New Zealand, and the city council responded promptly, given Christchurch's notorious problems. A drainage district was declared with its boundaries the Styx River to the north, the Heathcote River to the south, a western boundary at Upper Riccarton, and the sea shore as its eastern boundary. Christchurch elected four members to the board, and the road boards of Avon, Riccarton, Heathcote and Spreydon one each. When Sydenham declared itself a borough in 1878 its representative (usually the mayor) was also added. The Act gave the Drainage Board wide powers. They could make drains on private land, levy rates and borrow money. The board also sought control of artesian wells, but this amendment to the Act was rejected by the Legislative Council.

The mayor at the time, Frederick Hobbs, was also elected chairman of the first Christchurch Drainage Board which met in January 1876. Hobbs was an enlightened and energetic mayor, who counted engineers and doctors among his personal friends. He read widely and may have been an early convert to the germ theory established by the researches of Louis Pasteur, while most of Christchurch's older doctors remained stubborn adherents to the miasmatic theory of infectious disease causation in which they had been trained.

Hobbs approached the Chief Engineer of the Public Works Department in Wellington, John Carruthers, to ask if he would be willing to draw up a comprehensive plan for the drainage and sewerage of Christchurch. Carruthers said he would, but as he was a busy man it might take a while. The new Drainage Board also appointed its own local engineer, Charles Napier Bell, who was already engineer to the Lyttelton Harbour Board. Hobbs had chosen the best engineering talent in New Zealand to advise the Drainage Board.

While Carruthers worked on his plan, the new board got busy, fixing a datum level to establish the levels for drains so that they would flow by gravity towards the sea. The Drainage Board took control of the Tuam Street drain and began converting the old open drain in Ferry Road into an underground brick-lined storm-water drain. This immediately eased the surface flooding in Sydenham and Waltham. More underground

drains were built down Riccarton Road, and in Antigua and Madras streets, and in Stanmore Road. Other major drains were built in Papanui and St Albans. The board cleaned out the St Albans Creek and Jackson's Creek, the latter an old stream that had become a noxious open sewer between Addington and Waltham, running through lower Sydenham.

Carruthers presented his plan to the Drainage Board in 1877. He proposed a system of underground sewers and pumping stations that would carry sewage to the Tuam Street drain, from where it would be pumped to an outfall either in the Estuary or on the Bromley sandhills.

This plan produced an immediate public outcry. A large and noisy public meeting early in March heard from a number of speakers, including the usual civic demagogues, John Ollivier and Henry Wynn-Williams. They all said it was far too expensive, and the *Press* published an editorial objecting to the Estuary being turned into a cesspool. (This was unfair to Carruthers, as he had proposed two other options, all of which involved disinfecting the sewage before it was discharged.) Frederick Hobbs and other members of the Drainage Board reminded the meeting that Christchurch faced peculiarly difficult drainage problems, and an effective solution was likely to be expensive. After some further debate, the board bowed to public pressure and decided not to implement Carruthers' plan. Not long after this Carruthers left New Zealand to continue his brilliant career in England.

A deputation of ratepayers suggested consulting another eminent expert. William Clark had recently visited New Zealand, and Henry Tancred, who had replaced Hobbs as chairman of the Drainage Board, contacted him in Sydney and asked him if he would consider devising a plan before he returned to England. Clark agreed, and came to Christchurch, where the board gave him all of its accumulated plans and maps.

Clark worked swiftly and produced a new plan in April 1878. It had 73 clauses, and covered every aspect of Christchurch's drainage and sewerage problems. Clark proposed a 'Separate System', allowing only rainwater to drain into the rivers. Sewage would be collected in iron pipes connecting to large egg-shaped underground sewers along the main streets, all leading to a pump station in Tuam Street. (The board already owned a large low-lying paddock in Mathesons Road which was below the level of the proposed sewer network.)

The plan was largely confined to the central city within the Four Belts, but with extensions north along Papanui Road and Springfield Road as far as St Albans Road, and south between Addington and Waltham. The built-up parts of Linwood between the East Belt and Stanmore Road were also included. The south-west corner of the central city, and the north-east corner, were both left without sewers for many years to come. Clark was anxious that if too much surface water was allowed into the sewers it would overwhelm the pumps, so he provided for pipes to be laid alongside the sewers to carry

sub-soil water directly into the Avon River. A Roman-style syphon would carry the sewage from the north-west of the central city under the river to join the main sewer in Kilmore Street, near the Madras Street Bridge.

By now the general public had accepted that an effective scheme would be expensive, and that the matter was urgent. Soaring death rates from typhoid and diphtheria had made Christchurch notorious as New Zealand's 'fever city'. Many of the deaths were those of infants and children. New migrants had not come all this way to see their children die from preventable 'filth' diseases. Clark's plan had the advantage of needing only a single pumping station, a large saving in cost, but it was essentially only a refinement of Carruthers' plan.

The Drainage Board accepted Clark's plan in May 1878 and set about raising loans to pay for the grand scheme. Carruthers in London handled the tenders for boilers and pumping machinery, and ordered the cast iron pipes needed for the large 'rising main' that would pump the sewage under pressure from Tuam Street out to the Bromley sandhills. Carruthers also designed the pump house and large sewage collection tank needed at Tuam Street. Work began almost at once on the ground in Christchurch, or rather, underground.

Main streets in the north-west of the city were the first to be dug up for the construction of the brick and concrete egg-shaped sewers. Excavations at the Tuam Street site of the pump station encountered serious problems which delayed the whole project for a year. Springs and quicksand were found instead of solid shingle layers. Three stationary steam pumps were needed to dredge out the water and sand. Carruthers was asked for his advice, and he endorsed Napier Bell's suggestion to build the brick sides of the tank on a concrete kerb which would be gradually lowered into place as watery sand was pumped out. The remaining sand in the middle would then be removed and the bottom sealed with concrete.

A large workforce pushed ahead with laying the sewers in the central city. They worked fast so as to cause minimal disruption to businesses and householders. This was dirty and miserable work, especially in the wet winter months, but the first stage of the network was finished in 1880. This was a busy time in Christchurch's history: 1881 saw the opening of the Boys' High School, the opening of Lancaster Park, the opening of the telephone exchange (first in New Zealand), the consecration of the Cathedral, the founding of St Albans Borough, the founding of the Canterbury Frozen Meat Company, the opening of the Kaiapoi Woollen Company's clothing factory, and the start of the Christchurch Lawn Tennis Club.

Bell retired as chief engineer in August 1882 and was replaced by his first assistant, Edwin Cuthbert, who was also appointed secretary-treasurer to the Drainage Board. This was the start of Cuthbert's forty-year career with the Drainage Board (he retired in



1921). Much of the board's success and mere survival in those decades must be attributed to his skill, sagacity and diplomacy.

The sewage system was finally completed in mid-1882, and pumping from the Tuam Street pump house started on 14 September. With its tall brick chimney it became a notable landmark on the eastern side of the city. The system of sub-soil and storm-water drains had already brought about a significant lowering of the city's water table, by as much as 3 metres in some parts, making it a drier and healthier place.

The typhoid death rates had already started to come down, even before the sewage system was finished, thanks to the work of the Local Board of Health set up by the Drainage Board in 1877. Under the legislation this board had extensive powers of inspection and closure where premises were considered a threat to the public health. Dr Llewellyn Powell was appointed Christchurch's first Medical Officer of Health in 1877, and he immediately identified cess-pits as the main cause of the city's prevalent fevers and deaths. The city council cooperated and banned cess-pits in the central city, forcing householders to switch to the dry-pan system with night-soil collection. Powell also campaigned to ban pigs from the central city, which increased the demand for a regular council rubbish collection.

Though Powell died from TB at the tragically young age of 36, his successor was his best friend, Dr Courtney Nedwill, who served as Medical Officer of Health from 1879 to 1885. He carried on the good work, and was able to declare that cess-pits had been virtually eliminated from the central city by 1881. He also traced one outbreak of typhoid fever to a milk supplier in Lincoln Road, and lobbied the government in Wellington to pass legislation for the inspection of milk and dairies. He personally inspected all schools and was appalled by the primitive and insanitary toilets he found. He campaigned for slaughterhouse inspection and the establishment of a public abattoir. Nedwill's very public campaign for better public health helped to change people's habits, with an emphasis on hand-washing with soap and water as the best basic prevention of disease and infant mortality.

However, he faced concerted opposition from some of his medical colleagues, who should have known better. In 1880 he called for a Royal Commission to investigate the misreporting of typhoid cases at Christchurch Hospital, and his charges were fully supported by the commissioner, Dr Skae. Nedwill then campaigned for the hospital to be connected to the sewers, but the Hospital Board chose to spend its loan money from the government on a new kitchen, and the sewer connection was not made until 1884. In the meantime the hospital continued to discharge all of its waste and sewage into the Avon. Thanks to Nedwill's lobbying, a sewer spur was extended along Lincoln Road in 1884 to reach the Sunnyside Lunatic Asylum, which until then had been discharging its waste into the Heathcote River.

Industrial pollution was another source of ‘nuisances’ investigated by the Medical Officer of Health. As noted earlier, breweries and factories making tallow and candles and soap were the chief offenders, especially when their waste water was discharged into the side-channels or into the Avon River. Holding tanks produced noxious smells that made neighbours fear for their health. The smoke from tallow factory chimneys also spread bad smells in the neighbourhood. Christchurch’s early tanneries were fortunately confined to the lower reaches of the Heathcote River, in Woolston.

Nedwill’s career as Medical Officer of Health demonstrates the constant vigilance needed to prevent people slipping back into bad habits that were detrimental to the public health. He was still finding the odd cess-pit as late as 1884. A perennial problem was the overflowing of pan toilets, especially in hotels, due to heavy patronage or irregular attendance by the night-cart contractor. He described the threat posed to public health by overflowing pans as almost on a par with cess-pits. Backyard rubbish heaps were another source of nuisance to neighbours and passers-by. We shall take a more detailed look at the night-carts and rubbish collection in a subsequent section.

Christchurch was lucky to get its sewers finished before the so-called ‘Long Depression’ of the 1880s deepened. The Drainage Board had exhausted its loan money getting the sewers built, and the Board of Health was cancelled in 1884 as an economy measure. Nedwill continued making his reports as an unpaid officer, but finally gave up in 1885. The cost of connecting a house to the sewer (£10) meant that many households continued to rely on the pan-system and night-cart collection for decades to come. Sydenham had an especially low rate of connections, and miles of expensive sewers lay idle there until the advent of a high pressure water supply in 1909 made it easier to adopt flush toilets.

Nedwill at least had the reformer’s satisfaction of seeing that he had made a difference. Christchurch’s death rate in 1875 had been 30.4 per thousand; that year saw 49 typhoid deaths. By 1889 it was down to 9.7 per thousand, with no typhoid deaths.

## SMOKE AND DUST

Christchurch could be a very smoky town in winter if there was no wind to blow the smoke away. Winter frosts created an inversion layer which trapped smoke close to the rooftops. Every house had a fireplace or two, and larger dwellings had several. In the early days of settlement wood was the universal fuel, and most of the Papanui Bush was cut for firewood in the 1850s, only to disappear as smoke from domestic fireplaces. Coal was imported at great expense from Australia, and was necessary for working boilers and steam trains. The discovery of the Malvern coal field was a great boon for the city,

and provided most of the needs of factories and houses throughout the later nineteenth century. The West Coast became the city's main source of high quality coal with the growth of coastal shipping in the 1880s and 1890s.

Coal produces thicker smoke and soot than wood, and is high in sulphur. It must therefore be regarded as an environmental hazard to human health at least from the 1880s, when the city's population reached over 30,000 in the 1881 Census. The railway yards at Christchurch Station and the Addington railway workshops added to the burden of coal smoke, while the gasworks at the junction of Waltham Road and the South Belt (now Moorhouse Avenue) produced interesting smells as well as copious amounts of steam and smoke from the production of gas, tar and coke. Most factories used steam boilers, and tall brick chimneys were a feature of the skyline, even as domestic brick chimneys were a feature of the skyline in the expanding suburbs.<sup>197</sup>

People took smoke for granted in the nineteenth century, as an inevitable penalty for staying warm or powering one's factory, and the health risks from breathing in smoke laden with carcinogenic particles were not fully recognised until the mid-twentieth century. We have no measurements for air pollution in the nineteenth century, yet it must have added to the general grime of the Victorian city and made the weekly laundry an essential part of keeping clean and decent.

It is impossible to measure the amount of smoke voluntarily taken into the lungs of tobacco smokers, but the amount of tobacco consumed in nineteenth century New Zealand was considerable. Nicotine is an addictive sedative, and Māori took up tobacco smoking with enthusiasm, women as well as men smoking pipes or chewing tobacco plugs. Pipe smoking was almost universal amongst European men during the gold rush era, and it has been estimated that tobacco consumption reached 3.4 kg per person in 1864. Tobacco imports, mostly from Australia, comprised 95% loose pipe tobacco in the 1880s. Consumption had declined to 0.9 kg per person by 1890, but after 1900 cigarettes became more popular than pipes.<sup>198</sup>

The 1918 influenza pandemic converted many women to cigarette smoking as a hopeful personal fumigant, and tobacco was issued to soldiers during the Second World War to reduce stress, so tobacco addiction was widespread during the twentieth century, until the link between smoking and lung cancer was established beyond doubt in the 1960s. Tobacco consumption greatly increases the risk of death from heart attack, COPD and stroke as well as lung cancer, and is estimated to have killed 5 million people a year between 1990 and 2015.

Dust was another environmental problem in early Christchurch, which especially affected people with asthma or bronchial illness. Unsealed streets and roads produced large amounts of fine dust in the summer months, especially when the nor'west winds blew strongly. The simplest solution was to apply water to the streets. In the early days

water was pumped from the Avon River into water carts, but this was a slow process and only the main streets of the central city could be watered. On very hot days the streets dried again almost as soon as they were watered.

Ample artesian water seemed to provide the answer, but the water carts had to be filled frequently during the day, and at a horse's walking pace it was still a very slow business. Even by 1900 the city council only had ten water carts for the central city. The Tramway Board came to the rescue with a large tanker on wheels which could do the job far more swiftly and effectively than the water carts, but they could only 'treat' the streets which had tram tracks.

The best long-term solution was to seal the road surfaces with asphalt or tar-seal, but the footpaths had first priority for asphalt in the 1880s. Paths were often sealed with a fifty per cent contribution from the shopkeepers who would most benefit. The Christchurch Gas Company produced tar from the works in Waltham Road from the 1860s, but only in small quantities, and road-sealing had to await the importation of bulk tar from overseas after 1920. Then the programme of street-sealing progressed steadily into the 1930s and after the central city had been completed the suburbs were gradually included in the area of sealed surfaces.

As we have seen, the high-pressure water supply from 1909 meant that people could use vast quantities of water on their lawns and gardens, further reducing the areas of bare earth that could produce dust when the wind blew. The city's main source of dust thereafter was the surrounding farmland, especially from the Waimakariri riverbed and farms along its south bank. Strong nor'westers were still to be feared by asthmatics, as the air could be laden with dust particles as farmers lost their precious topsoil to the wind.

## PART FOUR

### DISPOSAL OF THE DEAD

#### NUMBERS

How many people died in Christchurch between 1851 and 1900? This is a simple question, yet answering it is anything but simple. Exact statistics are lacking for the first decade of settlement, when even population figures for the living were unreliable before the 1861 Census, but it was a young and mostly healthy settler population. Nelson in 1852 had only 26 deaths from a population of 4,287, and seven of those were accidental.<sup>199</sup> Christchurch's population reached about 3,000 by 1861, and probably had fewer deaths than Nelson. A reasonable estimate would be between 150 and 200 deaths in the first decade of settlement.

Dr Powell's survey of causes of death in Christchurch 1859-69 found 2,307 deaths within the city boundaries. While the population continued to grow across that decade, deaths averaged about 150 each year.<sup>200</sup>

Finding out how many people died in Christchurch is fraught with difficulty. The published official figures for births, deaths and marriages refer to the whole province, and while Christchurch was the largest town those totals include deaths from Akaroa, Lyttelton, Kaiapoi and Rangiora. That is why Dr Powell's analysis of causes of death is so valuable, because he counted only those normally resident in the city. The provincial figures from 1863 include Westland, which saw a phenomenal increase during the gold-rush. (With no bridges, drowning was the commonest cause of death in Westland during the gold-rush era.) Deaths for Canterbury Province and the West Canterbury goldfields peaked at 716 in 1867. Then Westland was declared a separate province, and the Canterbury figures drop back to 499 and 414 in 1868-9.

For 1870-73 we have only the provincial death totals. Christchurch deaths must have been over 200 a year by then, from a population increasing from immigration. From 1874 we have reliable figures for the central city, and in the typhoid outbreak of 1875 the death toll for central Christchurch reached 323. By now the suburbs were starting to grow and in 1877 Sydenham was declared a separate borough with separate vital registration. The official figures now distinguish between central Christchurch (within the four Belts) and the surrounding 'District'. The whole 'District' roughly coincided with the Drainage District, though the medical officers of health repeatedly complained that the Health District did not coincide with the boundaries of the Registration District. In the second major typhoid outbreak of 1879 the city recorded 315 deaths from all causes and the 'District' 760.

From 1880 separate figures are given for Christchurch, Sydenham and Lyttelton. Adding the figures for Christchurch and Sydenham will give a close approximation to the built-up area, though St Albans, Linwood and Riccarton were starting to add more households from 1880. From 1894 figures are given for Christchurch central and the four boroughs, Sydenham, St Albans, Linwood and Woolston. The total would not comprise the whole built-up area, as Spreydon and Riccarton were growing in this period, but it is likely to be close to actuality. The surge in deaths for 1892-4 is mainly attributable to the so-called 'Russian' influenza pandemic of those years, though not all were registered as influenza, as some doctors saw these deaths as pneumonia or bronchitis.

After sifting out Lyttelton, the best estimate for the area now covered by Greater Christchurch is about 12,000 deaths between 1851 and 1900. This is likely to err on the low side. With a margin for error of 5% the true figure may be about 12,500.

What happened to all these dead bodies? Who handled them? Where were they buried?

## UNDERTAKERS

The rules for burials were clearly spelled out by the Colonial Secretary in 1848:

No burial is to take place without a certificate from the deputy registrar to the undertaker or person having charge of the funeral, that the death has been registered. If a funeral take place without notice of the death having been given, then the person burying, or performing services at the burial, is to give notice of it to the deputy registrar, within one month. Penalty for default not exceeding £10.<sup>201</sup>

Edward Wright, the Deputy Registrar for Births, Deaths and Marriages at Lyttelton, reminded the Canterbury colonists about these rules in 1851: every birth was to be registered within 42 days, and every death, 'by the occupier of the house where it occurs', within 10 days. Penalty for default in either case not exceeding £10. After 42 days a birth could be registered on payment of a late fee of 10s 6d.<sup>202</sup>

Lyttelton remained the largest settlement in Canterbury in the early 1850s, with the first bank, post office, custom house and gaol, until Christchurch overtook it in terms of population in 1854.

The first mention of an undertaker in the *Lyttelton Times* appeared in January 1852: James Stout, Builder, Carpenter and Undertaker, could be contacted at 45 London Street, Lyttelton.<sup>203</sup> This advertisement was much repeated, probably because he had a competitor in Robert Taylor, Builder, Joiner and Undertaker, in Oxford Street, who did not advertise until 1854, but then claimed to have been in business for the past three years. He assured the public that he was a fast worker: 'Funerals furnished and conducted on the shortest notice'.<sup>204</sup>

A carpenter or joiner was the obvious person to make a coffin, but the family would normally prefer to prepare the body for burial. In the case of a pauper or somebody with no nearby kin, the undertaker would have to deal with the body. This was never a pleasant task, and in some cases such as drownings or a lonely death where the body had lain undiscovered for some time after death, it required considerable intestinal fortitude.

The first record of an undertaker in Christchurch comes from 1856, when Edwin Coxhead announced himself as a carpenter, builder and undertaker in the Market Place, near the Papanui Bridge.<sup>205</sup> His previous workshop had been near Ferry Road, and he was later to become the licensee of the Royal Oak Hotel.<sup>206</sup>

In Lyttelton another undertaker appeared in 1856, prompting Taylor to renew his newspaper advertisements. This was a man called Riddle, whose premises were in London Street.<sup>207</sup> (He may be the Charles Riddle who later operated the Bee-Hive Store in Christchurch, before opening an accommodation house at Porters Pass in 1865, to profit from the streams of hopefuls heading for the West Coast gold-fields.<sup>208</sup>) Two years later two more undertakers advertised their services in Lyttelton, both in London Street. J. B. Stout said he was just an undertaker, while H. E. Taylor said he was a Contractor, Builder and Undertaker.<sup>209</sup> The Sexton of the Lyttelton Cemetery, W. Graham, offered his services as an undertaker in 1859, also taking orders for gravestones and railings.<sup>210</sup> That same year Thomas Hester of Oxford Street first advertised himself as an undertaker.<sup>211</sup> One of the first undertakers in Lyttelton, Robert Taylor, moved to Timaru in 1862.<sup>212</sup>

All of these early undertakers advertised heavily, some with brief ads in every issue of the *Lyttelton Times*, which was published three times a week from 1863. As Christchurch grew rapidly in the 1860s, several more undertakers appeared there. Rees William Walters did not advertise until 1867 but then claimed he had started in 1860.<sup>213</sup> Alfred Osborn first advertised in September 1862, and the funeral director for Dr Hilson's funeral in December that year was James Johnston.<sup>214</sup> Two more appeared in 1863: J. Rutland<sup>215</sup> and George Lea. The latter was a Blacksmith, Builder, Wheelwright and Undertaker, near the Union Wharf on Ferry Road.<sup>216</sup> Two more appeared in 1865: A. Weastell<sup>217</sup> and Joseph Baldwin in Colombo Street. The latter was an upholsterer, who offered 'complete arrangements'.<sup>218</sup> G. Clarke first advertised in May 1866 and David Shaw in February 1867.<sup>219</sup>

The growth of smaller towns in Canterbury, especially Kaiapoi and Rangiora, attracted Charles Jennings to set up in business as an undertaker in Rangiora in 1867.<sup>220</sup> Two new undertakers appeared in Kaiapoi in 1868: George Hancock and Robert Wright.<sup>221</sup>

Joseph Baldwin retired in 1868 after three years as an undertaker in Christchurch, and his business was taken over by H. Fuhrmann from Melbourne, who proclaimed himself a Cabinetmaker, Upholsterer and Undertaker with premises on the corner of Colombo and Gloucester streets. He was an importer of carpets and 'Scotch and English furniture'.

He had previously been upholsterer to two governors of the State of Victoria.<sup>222</sup> Fuhrmann was to have a long career in Christchurch.

Henry Scrimshaw had arrived at Lyttelton on the *Brothers Pride* in 1862 and found work as an assistant to the cabinetmaker and undertaker R. W. Walters, where he learned both trades. In June 1868 he set up business in his own name and like Fuhrmann was to have a long and successful career, finishing up with two premises, in Victoria Street and Durham Street South.<sup>223</sup>

Christchurch saw no fewer than four new undertakers in 1869: John Harker, Theodore Dethier, Henry Killner and H. Hale.<sup>224</sup> But Dethier was the only stayer; advertisements from the other three soon faded away. That left Christchurch with seven leading undertakers who advertised regularly: Walters, Osborn and Fuhrmann inserted advertisements in almost every issue of the *Times*, with Jennings, Weastell, Dethier and Hester not far behind. Between them, and the other undertakers who did not advertise much at all, they were coping with over 400 burials a year in 1869.

The 1871 Census counted 7,931 inhabitants of Christchurch within the four Belts, and 4,535 in the surrounding suburbs, a total of 12,466. Immigration was to boost that total to 16,959 by 1874. Such a rapidly growing population seems to have suggested that there would also be money to be made from funerals in the longer term, and Christchurch saw no fewer than ten new undertakers in 1870-2. Little is known about any of them, so their names might as well be listed, with the date of their first advertisement in the *Lyttelton Times*:

Samuel Neville 22 September 1870

William Verrall 7 November 1870

J. M. Rennie 11 May 1871

George Robson 22 August 1871

R. Herbertson 5 September 1871

H. Wood 11 June 1872

Robert Clayton 26 June 1872

Daniel Petre 11 July 1872

J. Blake 25 July 1872

Thomas Free 13 September 1872

John Harker 16 September 1872

Remarkably enough, another six appeared in 1873, three of them in the same month:

T. G. Moule 28 January 1873



Thomas Beken 5 April 1873

Henry H. Hind 8 April 1873

J. D. Davis 25 April 1873

E. Duckworth 6 October 1873

John Anderson 31 October 1873

The first mention of a hearse in Christchurch appears in April 1874. John Anderson's premises were in Victoria Street, opposite the Trolloy Carriage Works, and he may have ordered a proper hearse from them. He advertised that he was now able to execute funerals in town or country 'on most reasonable terms'. He was also prepared to supply other undertakers with funeral requisites, and to hire them his hearse.<sup>225</sup> Anderson advertised heavily in the *Globe*, the evening paper produced by the *Press* in competition with the *Star*, the evening version of the *Lyttelton Times*. His ads appeared almost daily for many years.

Competition must have been fierce, with so many undertakers in the business, and advertisements proliferated during 1874 for Anderson, Beken, Davis, Dethier, Fuhrmann, Harker, Herbertson, Jennings, Moule, Neville, Osborn, Scrimshaw and Walters. By this time Hale and Hester had either given up or were no longer advertising. Three more undertakers appeared in Christchurch during 1875: F. G. Kroule, W. W. Stevens, and R. J. Woodford.<sup>226</sup>

A name that was to appear prominently among Christchurch undertakers for half a century first appears at Leeston in 1877. George Barrell was a cabinet maker and upholsterer who also took care of funerals.<sup>227</sup> In 1880 he added a hearse to his business.<sup>228</sup> His nearest rival from 1878 was Daniel Petrie in Southbridge.<sup>229</sup> Thomas McKeown set up in Rangiora in 1876 but sold his business to the Gulliver brothers in 1878.<sup>230</sup> R. Herbertson had previously moved to Rangiora but his shop and dwelling were advertised to let in 1877.<sup>231</sup> W. H. Reid appears to have taken his place, with a furnishing warehouse, and he advertised heavily as an undertaker throughout 1877.<sup>232</sup> Further south, Ashburton was now a growing country town and attracted George Parkyn and Thomas Gates as undertakers.<sup>233</sup> In North Canterbury, Alexander Greig appeared in Amberley in 1879.<sup>234</sup>

Nine new undertakers appeared in Christchurch in 1878-80:

G. Keats 29 November 1878

D. Foster 3 April 1879

Thomas Bates 17 September 1879

F. Priest 8 March 1880

George Richardson 30 April 1880

John Hasker 20 July 1880

A. Bluett 1 September 1880

Edward Jeffery set up in business in Lyttelton in September 1880, but a rival appeared in 1881 in the person of W. Radcliffe.<sup>235</sup>

Shipping companies had long used engravings of ships with their advertisements, but the 1880s saw increased use of illustrations by all sorts of other businesses. In January 1880 Henry Scrimshaw was the first in Christchurch to show a horse-drawn mourners' carriage as part of his advertisement.<sup>236</sup>

Another name that was to become prominent in the Christchurch funeral business first appeared in 1880, though he later claimed to have started as an undertaker in 1878. James Lamb inserted an ad with an engraving of a horse and hearse in the *Globe* in October 1880. This advertisement was repeated almost daily for the next year and a half, when the *Globe* was merged with the *Telegraph*. Lamb then inserted a simple four-line advertisement almost every day in the *Lyttelton Times*, and did so for over a decade.

James Lamb (1822-95) had an interesting career before settling down to become one of Christchurch's leading funeral directors. Born in 1822 at Sherborne, Dorset, he joined the Royal Navy at the age of 13 and spent the next 13 years at sea. He left the navy to marry Mary Goddard and started a large family of six sons and five daughters. He joined the Australian gold rush in 1848 and had some success on the Victorian fields over the next three years. He took his profits to Auckland in 1851 but found no openings and went back to Australia. Then he came back to New Zealand for the Thames gold-rush. Having made some capital he set up as an hotelier but went bankrupt and had to sell his house at Karaka. He started again in Auckland as a corn and grain merchant, but in 1872 his premises were wrecked by a boiler explosion which also injured several workers. They sued him for damages, and he was once again ruined. He then started a cab and coach business, but that went bust in 1874. He briefly dealt in coal and firewood, with as little success, and in 1875 moved south to make a fresh start in Christchurch as a cab and coach proprietor. This business prospered, and he added undertaking as a sideline, presumably because he had horses and coaches available. In later life he became a well-known temperance lecturer. He died in 1895.<sup>237</sup>

In August 1881 James Lamb handled the funeral of the unfortunate Dr Donald Campbell and his family, who had been drowned in the wreck of the *Tararua* on the Southland coast in May 1881.<sup>238</sup> (They had been buried at Waipapa Point but were later exhumed and brought to Christchurch.) The cortege from St Paul's Presbyterian Church to Addington Cemetery was one of the largest seen to that date in the city.<sup>239</sup>

However, a month before that funeral an advertisement had appeared in the *Times* from one W. S. Lamb, undertaker. He repeated the advertisement in September 1881.<sup>240</sup> It is not known what relationship, if any, he had with James Lamb. In Otago and Southland there was an extended Lamb clan of Scottish origin (and more than one James Lamb).

William S. Lamb was a cabinetmaker in Worcester Street, near the Christchurch Club, and continued to advertise occasionally as an undertaker until he declared bankruptcy in 1887. His trustees auctioned off his furniture and stocks of seasoned wood.<sup>241</sup> But he carried on as an undertaker, with an illustrated advertisement in the *Star* in August 1887 which had the mirror-image of James Lamb's horses and hearse, facing in the opposite direction.<sup>242</sup> However, this also failed, and in January 1888 Mrs W. S. Lamb was forced to auction off 'the whole of her high-class furniture and effects' (most of the furniture made by her husband) and this branch of the Lamb family disappears from the newspapers.<sup>243</sup>

James Lamb advertised in January 1887 that he had 'No connection with any other firm in Christchurch', suggesting not only that they were business rivals but probably unrelated.<sup>244</sup>

Christchurch's leading funeral directors faced competition in 1882 from newcomers G. D. Murchie, John Scrimgeour, Thomas Dyer and Walter Langford, but Langford was the only one to last into the following century.<sup>245</sup> He bought an empty paddock in Bingsland (now Richmond) where the North and East Belts met, then built stables and a large workshop alongside his house. He must have had some capital to start with, as he advertised in 1883 that he had purchased 'the most recent and improved Hearse and Mourning Coach'. Langford also managed to secure a monopoly of funerals for the Oddfellows' lodges. He was the first to advertise his fees: adult funerals from £3 10s and children from £1 10s. He copied James Lamb's promise: 'Country orders will receive prompt attention'.<sup>246</sup>

Walter Langford was the son of New Zealand's first undertaker. His father had come out to New Zealand on the *Aurora* in 1840 and soon after started his business in Auckland. In 1842 he arranged the funeral for Captain Hobson, New Zealand's first Governor. Walter was born in Auckland in 1849 and was sent to school in Nelson, where he later served an apprenticeship as a builder. He started his own business, but when his first wife died he sold up and travelled for some years. His second wife was a Miss Rippen, and they were to have one son and four daughters. They came to Christchurch in 1880.<sup>247</sup>

Three more undertakers appeared in 1883 and 1884: Joseph Lough, John Lord and W. W. Stevens.<sup>248</sup> Competition must have been fierce, for Henry Scrimshaw declared bankruptcy in November 1883. F. C. Tabart the auctioneer advertised the sale by private contract of 'The whole of the working plant of an Undertaker', namely, two superior hearses, two mourning coaches, two black geldings, harness, black feathers, etc.<sup>249</sup>

By the 1880s funerals had become distinctive Victorian rituals, with black hearse and black mourners' carriages drawn by black horses. On the horses' heads were tall black plumes (often dyed peacock feathers) which nodded as the horses nodded their heads, while similar plumes decorated the hearse, with black crêpe drapery and ribbons. The undertakers wore shiny black top hats with black ribbons dangling behind from the brim. They wore long black frock coats and normally walked ahead of the hearse. It was customary for people on the footpath to stand still and bow their heads as a mark of

respect for the departed as the cortege passed by. Men would, of course, remove their hats or caps.

Undertakers rarely appeared in the court reports, except when they declared bankruptcy, but Langford was involved in a case that caused much amusement in 1884. A man named Roberts hired a horse, van and harness from Langford for 12s a week on the understanding that he would drive the horse at funerals for Langford at 4s a time. However, in the general election of 1883 Langford supported Mr Ruddenklau and Roberts supported Mr Reece. Langford was upset that Roberts carried placards supporting Reece on the sides of his own van. He accosted Roberts and told him the van should not be for Reece: Roberts retorted 'I say it shall!' Langford then removed his van from Roberts's stable and refused to return it. Roberts lost money from failed contracts, and sued Langford to recover his losses. Langford filed a set-off for unpaid hire fees, and accused Roberts of using abusive language to him. After hearing both parties and a number of witnesses, the Magistrate decided in favour of Roberts and ordered Langford to pay him £3 16s 3d and costs.<sup>250</sup>

Another source of amusement for the citizens of Christchurch was the city council's attempt to break into the funeral business in 1886. As we have seen, John Brightling built a new tramway line for the council from Latimer Square to the Linwood cemetery reserve, with a branch line taking night-soil to the Bromley sandhills. It was opened officially in April 1886. The council ordered a tramway hearse from William Moor and Son costing £300. The idea was to provide Christchurch's poorer inhabitants with low-cost council funerals. This was a kindly gesture in the depths of the 1880s depression. The tramway hearse was a strikingly different example of a funeral carriage. Perched on a four-wheel bogie it had elliptical plate-glass windows and polished black wood panelling. It was designed to carry four coffins at a time. There were railings on the roof to hold floral tributes.<sup>251</sup>

Unfortunately the poor of Christchurch refused to have anything to do with the council's tramcar hearse and it never carried a coffin, let alone a body. They much preferred the black horses with black plumes, and were content to walk behind the hearse if they could not afford a mourners' carriage. In 1887 a city councillor declared the tramcar hearse a useless extravagance which might as well be used as a dust cart. It was suggested that it might be converted into a proper tramcar, but the cost was too much for the council to contemplate. It remained gathering dust in the council yard on Oxford Terrace (now the site of the Scott statue) until it was sold off in 1901 for just £3. Its subsequent fate is unknown.

The new undertakers of the 1880s were mostly appearing in the country towns, though Sutton and Weastell started a new business in Lyttelton in May 1886.<sup>252</sup> R. Evans started up in Windmill Road, Sydenham (now Antigua Street), and P. B. Petrie in Spreydon, to cater for these growing suburbs.<sup>253</sup> Petrie was driving his mourning coach along Lincoln Road near the Sunnyside Asylum in October 1886 when two young men in a trap passed them. Their horses took fright at the nodding black plumes and bolted. The trap grazed the coach, damaging one panel and 'greatly alarming the passengers'.<sup>254</sup>

E. Duckworth appears as an undertaker in Riccarton in 1887, as does A. Harris in Papanui.<sup>255</sup> John Bennett and W. H. Lockwood were rival undertakers in Leeston in the later 1880s.<sup>256</sup>

James Lamb suffered a setback in 1888 when his Lichfield Street premises caught fire. It started in the hay loft of the stables, and his men quickly formed a bucket brigade to stop it from spreading. The alarm was given from the electric box in front of Dr Townend's residence opposite and the fire engines at the Lichfield Street station were pushed into the street but they had to wait for some minutes for the horses, which as usual were scattered about the city pulling council carts. It was fully ten minutes before they left the station. The upper floor of the stables was destroyed, and the lower part was damaged beyond repair, but the fire did not spread to the residence next door. Lamb had the stables insured for £300 and the hay for £50. Despite this blow, he was still advertising as a funeral director as usual almost every day.<sup>257</sup> He must have been irritated that Langford's ads now looked very similar to his. After all, imitation is the sincerest form of flattery.

Anderson, Lamb and Langford now became the most regular funeral advertisers in the Christchurch papers, but they were soon to be joined by George Barrell, who had moved into town from Leeston to manufacture his patent steam laundry machines. (See Part 2, Laundry.) After occupying premises in Manchester and Victoria Streets he opened his funeral parlour at 62 Colombo Street, Sydenham in September 1891. By January 1892 he had moved to the corner of Durham and St Asaph streets, where he would have been opposite Scrimshaw's funeral parlour.<sup>258</sup> Scrimshaw had managed to resume his funeral business despite his bankruptcy in 1883 and had won the contract for hospital funerals. He was still operating from this address in 1903, but his main business was his cabinet-making factory in Victoria Street.

George Barrell's arrival meant serious competition for the older established funeral directors. He was a shrewd businessman and an energetic self-promoter. He offered to supply his rivals with 'every requisite', including high-class polished adult coffins from £4 10s.<sup>259</sup> In 1892 he started advertising with the bold heading 'FUNERAL REFORM', offering 'concessions in cases of genuine distress'. He claimed 20 years' experience in England and New Zealand, and hoped that this would be 'sufficient guarantee that orders entrusted to his care [would] be faithfully carried out'.<sup>260</sup>

In March 1892 Barrell announced that he had acquired a new mourning coach 'which differs from the usual style'. It could seat ten passengers and had room for the coffin to slide in underneath, so a hearse was not needed if that expense had to be avoided. It was upholstered in blue silk tabarette, and had 'a more cheerful appearance' than other such carriages.<sup>261</sup> Barrell was also one of the first Christchurch funeral directors to be connected to the telephone. (His number was 531, 'day or night'.)<sup>262</sup>

Barrell and Langford now became the heaviest funeral advertisers. James Lamb had switched from the *Times* to the *Press*, and was still a regular advertiser, but seems to

have relied on the appearance of his name on numerous funeral notices to serve as free advertisements. Free for him, that is: the bereaved families paid for the advertisements.

In 1895 a rather cosy deal between the hospital's Secretary, Walter Morley Miller, and the undertaker Henry Scrimshaw, was revealed during the Hospital Inquiry of that year. For nine years Scrimshaw had been the contractor for pauper funerals at the hospital, but had lost the contract to Barrell in 1892. Before then the Secretary would ring up and ask what he should charge, and Scrimshaw would say £5 or £5 10s as the case might be. He generally added £1 for the Secretary, who had to do the paperwork. Sometimes the blank was filled in for £7 or £7 10s, but Scrimshaw only ever saw £5 or £5 10s. In December 1892 he had buried a pauper named Smyth and the Sexton had said there was some trouble over the fees. The bill was made out for £6 or £7. Scrimshaw went to see Miller who gave him £1 for the fees, and said 'There, you have had the lot on Smyth's funeral. I'll wash my hands on having anything to do with funerals'. He never sent Scrimshaw another order and Scrimshaw had done no hospital work since then. Scrimshaw maintained to the inquiry that he lost about 10s on every pauper funeral, and as he did about 20 a year he lost about £10 a year. He added that Miller had once insinuated that he had been the source for the infamous 'severed hand' insurance fraud of 1885.<sup>263</sup>

Miller denied ever having had any benefit from the pauper funerals contract, and said that what Scrimshaw had told the inquiry was 'utter fabrication'. But Scrimshaw explained that paupers had a simple well-made coffin covered in black cloth with a painted name-plate. He used rimu or white pine, and the lid was always screwed down, not nailed. He paid the grave fees and asked the Hospital Board for reimbursement, but he always lost about 10s on each pauper funeral, and had no way to recoup this except from taking ordinary funerals for the hospital. In one case where the wife had given the funeral to Scrimshaw, Miller had rung to tell him not to proceed, when Langford had already had the name-plate painted, because he had made an arrangement with another undertaker.<sup>264</sup> Miller remained secretary until 1909.

Langford reported in September 1895 that he had built an open funeral car to take the place of an ordinary hearse when required. This suited the needs of the various lodges and societies who objected to the enclosed hearse. The *Times* editor commended this addition to Langford's 'already replete funeral plant'.<sup>265</sup> Later that year Langford advertised adult funerals with polished coffin, silver mounted, and attendance with hearse and coach complete, from £8. Children's funerals started at £2 10s.<sup>266</sup>

James Lamb became treasurer of the Gospel Temperance Mission in 1890, and left the running of his funeral business to his son Herbert Lamb (1871-1906) while he travelled the country giving temperance lectures. From 1893 the business was renamed J. Lamb and Son, the name it retained until it was taken over by Bell and Trotter in the 1980s.<sup>267</sup>

Lamb's eldest son Robert had shown no interest in undertaking, but chose rather to help the living, and after studying science at Canterbury College (he won a College Exhibition in 1883 and graduated with first class honours in 1886) went to Edinburgh to study medicine. There he gained a first prize in midwifery and diseases of women, and

a high mark in public health on the way to his MB and ChB degrees in 1891. He also took a Bachelor of Divinity and did philanthropic work for children.<sup>268</sup> After visiting his family in Christchurch he became medical superintendent at the New Hebrides Mission Hospital, and then practised in New South Wales, where he died in 1907 at the age of 44.<sup>269</sup>

Langford often claimed to have the oldest undertaking firm in New Zealand, based on his father's business, but this ignored the gap between their two businesses. He claimed another first, however, in 1896 when he came back from a trip to Sydney with the first embalming certificate awarded to a New Zealander. Embalming was the new fashion of the 1890s. In this process the veins of the deceased were injected and filled with arsenic or some similar powerful poison which killed off all the bacteria of decay. The body remained quite lifelike for up to three months, and above all this saved the cost of a lead-lined coffin when bodies needed to be transported to another town or country.

Langford advertised himself as a 'Sanitary Undertaker', and 'the only certified embalmer in Christchurch'. He even claimed that embalming prevented contagion from infectious diseases.<sup>270</sup> But Herbert Lamb was also interested in this latest fashion, and found someone willing to teach him, so that J. Lamb and Son advertised themselves as 'Undertakers and Embalmers' from October 1896.<sup>271</sup>

Langford responded by including in his advertisements 'University Certified Embalmer'. He also offered to remove bodies to all parts of the world 'looking quite life-like. No expensive leaden coffins and positively no mutilation of the body'.<sup>272</sup>

By 1899 Christchurch had seven leading funeral directors who advertised regularly in the newspapers, some with several hearses and mourning coaches available. They were Barrell, Duckworth, Eggleston, Lamb, Langford, Scrimshaw and Sykes. However, there were probably a number of smaller firms that never advertised, relying on word of mouth and family connections for their custom. Between them all they were dealing with about 400 funerals a year.

Monumental masons were also advertising regularly in the 1890s. Hunter and Company was the leading firm, on the corner of Colombo Street and the South Belt (now Moorhouse Avenue). They manufactured 'to any design' monuments, tombs, crosses, tablets, baptismal fonts, water fountains, garden vases and pedestals. In 1897 they advertised 'new patterns in iron railings' and concrete kerbing around graves.<sup>273</sup>

## CEMETERIES

Where were the bodies of the dead finally laid to rest? Akaroa has the province's oldest European cemetery, but no headstones earlier than the 1860s. Most early graves would have had a simple wooden cross, long since rotted away, like the coffin and body beneath.

Lyttelton's first burial was that of the unfortunate John Williams. Aged 41, he was a former baker from Dunfermline in Scotland, and had emigrated as a steerage passenger in the *Randolph*, with his wife Isabella and six young children. They arrived on the same day as the *Charlotte Jane*, 16 December 1850, first of the 'first four ships' of the Canterbury settlement. The family came ashore on 18 December and found they had been allocated Room 2 in Barrack B of the Immigration Barracks erected by Captain Thomas and his small army of carpenters and labourers. Next day John decided to climb the steep Bridle Path to take a look at the future site of Christchurch. He collapsed, and was found dead near the summit on 20 December. His was the first burial in what became the Anglican Cemetery at Lyttelton.<sup>274</sup>

Lyttelton has two cemeteries. The Anglican Cemetery is at the top of Oxford Street, and runs through to Canterbury Street. The cemetery for Catholics and Dissenters is on the sunny eastern slope of town, above Reserve Terrace.

Christchurch's oldest cemetery straddles Barbadoes Street north of the Avon River on Cambridge Terrace. The first burials here took place in 1851. The eastern side was reserved for burials according to Anglican rites, and the smaller western part was for Catholics and Dissenters. Many of the city's most notable early residents lie in the Barbadoes Street Cemetery. Some of the family headstones indicate the high rate of infant mortality in early Christchurch.

St Paul's Anglican Church in Papanui has the city's second oldest cemetery. Its first burial was that of its Vicar-Elect, George Dunnage, who died on 19 May 1853. Like most of Christchurch's cemeteries, many of the headstones have been damaged by vandals.

Avonside Churchyard was consecrated for burials in 1857 by Bishop Selwyn, and most of the graveyard has survived the earthquake of 2011 which destroyed the church.

Burials also started in 1857 at St Peter's, Upper Riccarton. This graveyard has another cluster of notable early pioneers. The church and the most historic headstones have been restored since the earthquakes.

Addington has the city's fifth oldest cemetery, which started in 1858 as the Scotch cemetery of St Andrew's Presbyterian Church, but became the first public cemetery, as it was thrown open to all denominations. The tall obelisk erected by public subscription to Dr Campbell and his family in 1881 was toppled by the earthquake of 2011. Earthquake-damaged headstones await restoration.

Woolston Cemetery in Rutherford Street was opened in 1866 and was a fashionable cemetery until it became surrounded by industry. A chapel was erected in 1888 which later fell into disrepair and was moved to the Jubilee Home in 1949.

Burwood Cemetery opened in 1877 and its burials included a number from early families in the district.



Linwood Cemetery was opened in 1884 as the city's main cemetery, after the Barbadoes and Addington cemeteries had filled almost to capacity. It has a separate Jewish section, and many of the city's victims of the 1918 influenza pandemic rest here.

Yaldhurst Cemetery was opened in 1887 on the western rural outskirts of Christchurch, and has a number of early gravestones.

The large Sydenham Cemetery at the end of Simeon Street was opened in 1896, also in response to the filling of the Addington Cemetery.

Belfast gained its own cemetery in 1904 which is still operational.

Waimairi Cemetery in Grahams Road had its first burial in 1911, when it was known as either the Papanui or Fendalton cemetery. Confusion was resolved in 1917 when it was renamed the Waimairi Public Cemetery.

Bromley Cemetery opened in 1913, as an overflow from Linwood, and land nearby was earmarked for another cemetery which opened in 1941 as the Ruru Lawn Cemetery, with flat plaques instead of headstones to facilitate grass mowing. Ruru has the memorial to victims of the Ballantynes fire disaster of 1947 and a large military section.

These are the main cemeteries of historic Christchurch, not counting the more recent Harewood Crematorium or Avonhead Park Cemetery.

Among websites with more information, the Christchurch City Council's cemeteries website is fundamental, while the Christchurch City Library's Heritage website gives access to the highly-informative cemetery tours originated by former librarian Richard Greenaway. An increasing number of headstones have been photographed and may be seen on the Findagrave website.

## CREMATION

The modern cremation movement in England started with a plea from the surgeon Sir Henry Thompson in 1874 that cremation was a more rational and economical way to dispose of the dead than the traditional Christian burial. He also argued that, as the population grew, cemeteries used up valuable land and created a public health risk from the leaching of corruption into the ground water. He noted that Italian experts such as Dr Brunetti and Professor Gorini had devised much more efficient furnaces which did not burn the bodily remains but vapourised them, bones and all, to a small pile of white powder.<sup>275</sup> The *Lyttelton Times* published a supportive editorial in June 1874.<sup>276</sup>

This sparked a public debate in Christchurch. Prominent landowner and politician Sir John Cracroft Wilson, who had been a magistrate in India, said he had always favoured cremation as a more rational and humane way to dispose of the dead.<sup>277</sup> However, cremation was strongly opposed by church leaders, who defended burial as the Christian way. The Bishop of Lincoln denounced cremation, as an interference with the

doctrine of the Resurrection, but the Bishop of Manchester could not see the logic of this attitude, as buried bodies also turned to dust in time.<sup>278</sup>

Some Christchurch churchmen supported cremation. Dean Jacobs called for the formation of a Funeral Reform Association and chaired a large public meeting in December 1874, at which Sir John Cracroft Wilson again expressed his support for cremation. He had seen the bodies of soldiers buried after battle being dug up by jackals, and thought the Indian practice of cremation far more sensible than burial. However, the main thrust of this meeting was to reduce the cost of funerals for poor families by cutting back on expensive caskets, hearses and the trappings of black horses and plumes. Dean Jacobs noted that Adelaide and Dunedin already had funeral reform associations. A committee was formed with George Gordon as secretary, and the Reverend Charles Fraser and other local worthies as members.<sup>279</sup> But after another general meeting, and several public debates during 1875, this movement petered out, defeated by a popular prejudice against having one's body burnt after death.<sup>280</sup>

Over the next decade the cremation movement gathered strength in Europe and the USA. A crematorium in Gotha, Germany, performed 100 cremations over the next four years, but Italy led the way with 362 creations in Milan by 1884, using two Gorini furnaces.<sup>281</sup> England's first Necropolis opened at Woking in 1887, but very few cremations were performed at first.<sup>282</sup> The Catholic Church strongly opposed creation, and the Pope warned all French bishops against the practice in 1888.<sup>283</sup> In 1890 he issued a formal interdict condemning cremation.<sup>284</sup>

However, the medical profession increasingly supported cremation on public health and sanitary grounds. An International Congress of Hygiene and Demography held in London in 1891 expressed strong support, and Sir Henry Thompson even suggested that all deaths from zymotic causes or from epidemics should be cremated. His motion was carried by a large majority.<sup>285</sup>

Medical support gave a boost to the funeral reform movement in New Zealand, and Wellington took the lead. Cremation had been technically legal in New Zealand since 1882, but the amendment to the Cemeteries Act had omitted to authorise trustees of cemeteries to erect buildings and furnaces. The Mayor of Wellington and local MHR, Francis H. D. ('Harry') Bell, corrected this omission with an amendment passed by the New Zealand Parliament in July 1895. He then led the movement for a crematorium in Wellington.<sup>286</sup>

This prompted a revival of the cremation movement in Christchurch, led by the Reverend J. O'Bryan Hoare. He immediately faced opposition from letter-writers who insisted, 'let us be buried when we die as our forefathers were',<sup>287</sup> and from the undertaker Walter Langford, who promoted embalming as an alternative to cremation. He admitted that cremation might be a sanitary measure, but many people still regarded it as 'repugnant' and their wishes needed to be respected. He claimed that embalming was just as hygienic as cremation, and it avoided 'the horrors that attend cremation'.<sup>288</sup> (Some might say the embalming process was even more horrific.)

Hoare responded sharply: was it not more repulsive to leave our loved ones in earth – to rot! He claimed the large city cemeteries were ‘a sweltering mass of corruption’ and a danger to public health. Prejudice, not sentiment, was the real obstacle to cremation, and theological prejudice was the strongest. He ridiculed the opinion of the late Bishop of Lincoln on resurrection as ‘fossilised’, and strongly supported the formation of a cremation society in Christchurch.<sup>289</sup>

This sparked a letter-writing debate, with as many voices in favour of cremation as against. One ‘Anxious Mother’ pointed out that while the city debated cremation and embalming, a glaring threat to public health persisted in the use of night-carts. She had witnessed from a tram the emptying of a night-cart in broad daylight on private land near Buxton’s nursery, and saw two girls running past, holding their noses against the ‘sickening’ stench.<sup>290</sup> Christchurch had miles of deep sewers but many houses were still not connected because of the cost and the lack of a high pressure water system.

In June 1897 the Canterbury Women’s Institute unanimously adopted a resolution proposed by Miss Sherriff-Bain in support of cremation.<sup>291</sup> Dr James Irving, in his retiring speech after three years as president of the Canterbury Medical Association, repeated the arguments of Sir Henry Thompson in favour of cremation, and was warmly supported by the medical men present.<sup>292</sup> The Socialist Church and the Society for Social Ethics also expressed their support for a crematorium in Christchurch.<sup>293</sup> The Reverend O’Byran Hoare claimed to have the names of sixty supporters, but felt he needed hundreds to have any impact on the city council.<sup>294</sup>

Meanwhile, the cremation movement in Wellington was forging ahead, and a ratepayers’ poll approved the idea of a crematorium at Karori Cemetery in 1898.<sup>295</sup> Fund-raising was led by George Robertson and Miss Florence Studholme, an English-trained nurse and daughter of the South Canterbury pioneer runholder John Studholme. She herself donated £400.<sup>296</sup> The Karori Crematorium was finally completed in September 1909.<sup>297</sup>

Wellington’s crematorium campaign effectively pulled the rug from beneath the Christchurch movement. People who wanted to be cremated were told that they could be sent to Karori. When Dr Charles Russell died in Christchurch in 1915, he had directed that his body be cremated in the city’s municipal destructor. The city council balked at this, and said he should be sent to Karori. But Russell’s trustees apparently balked at the expense, and he was finally buried in the Linwood Cemetery.<sup>298</sup>

Christchurch was thus the last main centre to acquire a crematorium. The Linwood Crematorium and lawn cemetery in Linwood Avenue opened as a private venture in 1936.

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## CONCLUSION

As noted at the start, this booklet was written to provide general context or background for a series of studies of medical men in nineteenth century Christchurch, 1850-1900. It has been a voyage of discovery for the author, who knew very little about soap manufacturing, or night-soil collection, or even embalming, before he began. Much more could be said about all of the topics covered, but the author chose not to share too many gruesome details of the embalming process out of consideration for readers' sensitivities.

The social history of medicine, as the discipline has evolved over the past thirty years or so, differs from traditional medical history in several ways, but one of its main thrusts has been to emphasise that public health is as much influenced by environmental and societal change as by medical intervention. Modern science-based medicine has achieved many remarkable advances, and can claim to have saved innumerable lives and prolonged others. Vaccination has eliminated smallpox and should have eliminated polio by now. Illness is much better understood than it was 150 years ago, and specific remedies have become much more effective.

But the past is a foreign country, as L. P. Hartley first observed, and David Lowenthal made popular with his book of that title. If we are to understand the past we must approach it on its own terms, and not carry present-day assumptions back to a time when they did things differently, and had different beliefs. We may now see some of the latter as mistaken, in the light of our superior knowledge, but people in the past had their own reasons for doing things as they did, and for believing as they did. The historian has to try to view their choices and decisions through their eyes, not his or her own prejudices.

Medical men of the 1860s and 1870s knew that they had very few sure cures in their doctor's bag. Most medicine was palliative, to ease the patient's pain and suffering. Surgical interventions were extremely limited before the advent of Listerian antiseptic surgery, and even then were not always successful. But things were changing, and doctors of the late nineteenth century lived through an extraordinary revolution in thought and practice, as the bacteriological revolution changed their views of disease causation and treatment.

This small study of Christchurch is only one part of a much larger picture. Public health improved as diseases such as typhoid were brought under control by improved sanitation and personal hygiene. Infant mortality eased, as the environment for diseases such as diphtheria and scarlet fever changed. The old 'filth' diseases receded as cities became cleaner and water supplies were filtered. Yet improvements in life expectancy and general health also had much to do with improved nutrition, and this study has not explored that field at all. Thomas McKeown famously argued that the population

increase of the late nineteenth century was entirely due to improved nutrition and living conditions, and downplayed the role of the sanitarians.<sup>299</sup> In fact we need both elements in any satisfactory explanation of the nineteenth century population increase in Britain. Historians are much less likely now to argue for one single factor of causation above another: most big changes result from a combination of many different causes. Identifying them all and weighing their respective contributions to change remains a challenge for historians – and much of the fascination of doing history.

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## ENDNOTES

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- <sup>1</sup> Pamela Wood, *Dirt: filth and decay in a new world arcadia* (Auckland University Press, 2005).
- <sup>2</sup> G. W. Rice, *Lyttelton: Port and Town: an illustrated history* (Canterbury University Press, 2004), p.13.
- <sup>3</sup> *The Natural History of Canterbury*, Third Edition, eds. M. Winterbourn, G. Knox, C. Burrows, I. Marsden (Canterbury University Press, 2008), p.34.
- <sup>4</sup> *Lyttelton Times* (hereafter *LT*), 1 March 1862, p.4.
- <sup>5</sup> See Rice, *Lyttelton*, p.34 for rainwater tanks.
- <sup>6</sup> See Gordon Ogilvie, *Pioneers of the Plains: the Deans of Canterbury* (Christchurch, Shoal Bay Press, 1996).
- <sup>7</sup> Colin Amodeo, *Forgotten Forty-Niners: being an account of the men and women who paved the way in 1849 for the Canterbury Pilgrims in 1850* (Christchurch, Caxton Press, 2003), p.155.
- <sup>8</sup> Colin Amodeo, *Tracking Captain Thomas: a journey in search of the unacknowledged founder of Canterbury* (Christchurch, Caxton Press, 2013).
- <sup>9</sup> G. W. Rice, *Christchurch Changing: an illustrated history* (Christchurch, Canterbury University Press, second edition, 2008), pp.18-21.
- <sup>10</sup> See Rice, *Christchurch Changing*, pp.24-5.
- <sup>11</sup> *LT*, 13 February 1858, p.5, from the *Canterbury Standard*.
- <sup>12</sup> *LT*, 5 July 1862, p.4.
- <sup>13</sup> *LT*, 13 September 1862, p.5.
- <sup>14</sup> *LT*, 14 February 1863, p.4.
- <sup>15</sup> *LT*, 11 July 1863, p.5.
- <sup>16</sup> *LT*, 26 August 1863, p.4.
- <sup>17</sup> *LT*, 17 October 1863, p.6.
- <sup>18</sup> *Press*, 11 February 1864, p.2; *LT*, 11 February 1864, p.4.
- <sup>19</sup> *Press*, 27 February 1864, p.2.
- <sup>20</sup> *Press*, 23 March 1864, p.2.
- <sup>21</sup> *LT*, 29 March 1864, p.4.
- <sup>22</sup> John Cookson, unpublished lecture based on work in city council archives.
- <sup>23</sup> John Cookson, 'Pilgrims' Progress: Image, Identity and Myth in Christchurch', in *Southern Capital: Christchurch: Towards a City Biography*, eds. John Cookson & Graeme Dunstall (Canterbury University Press, 2000), p.30.
- <sup>24</sup> Wikipedia.
- <sup>25</sup> Claire Le Couteur, *Camphor for the Collywobblers: Ship's Surgeon Dr Augustus Florance's Voyages, 1857-1862* (Christchurch, The Cotter Medical History Trust, 2019), p.98.
- <sup>26</sup> Samuel Butler, *A First Year in Canterbury Settlement*, eds. A. C. Brassington & P. B. Maling (Auckland, Blackwood & Janet Paul, 1964), p.36.
- <sup>27</sup> *LT*, 11 January 1851, p.1.
- <sup>28</sup> *LT*, 18 January 1851, p.1.
- <sup>29</sup> *LT*, 1 February 1851, p.1.
- <sup>30</sup> *LT*, 30 August 1851, p.1; 10 January 1852, p.10 Supplement.
- <sup>31</sup> *LT*, 24 January 1852, p.4; 21 February 1852, p.5.
- <sup>32</sup> *LT*, 20 March 1852, p.12 Supplement.
- <sup>33</sup> *LT*, 3 April 1852, p.8; 29 May 1852, p.1.
- <sup>34</sup> *LT*, 24 July 1852, p.3; 10 December 1853, p.2.
- <sup>35</sup> *LT*, 15 January 1853, p.2.

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- <sup>36</sup> *LT*, 8 November 1856, p.8.
- <sup>37</sup> *LT*, 21 July 1858, p.5; 4 September 1858, p.7.
- <sup>38</sup> *LT*, 12 February 1859, p.3.
- <sup>39</sup> *LT*, 19 December 1860, p.8.
- <sup>40</sup> *LT*, 24 April 1861, p.8.
- <sup>41</sup> *LT*, 15 May 1861, p.6.
- <sup>42</sup> *LT*, 31 August 1861, p.4.
- <sup>43</sup> *LT*, 4 December 1858, p.6.
- <sup>44</sup> *LT*, 9 July 1864, p.6.
- <sup>45</sup> *LT*, 31 January 1868, p.4; 14 December 1868, p.3.
- <sup>46</sup> *LT*, 4 April 1866, p.2.
- <sup>47</sup> *LT*, 12 October 1868, p.3.
- <sup>48</sup> *LT*, 19 September & 12 October 1868, both p.3.
- <sup>49</sup> *LT*, 28 September 1869, p.2.
- <sup>50</sup> *LT*, 21 September 1869, p.3.
- <sup>51</sup> *LT*, 23 September 1879, p.3.
- <sup>52</sup> *Appendices to the Journal of the House of Representatives*, 1870, B-04, p.3; 1875, H-07, pp.3-5; 1881, H-05, p.6; 1886, H-02, pp.5-7.
- <sup>53</sup> *LT*, 26 February 1870, p.3.
- <sup>54</sup> *LT*, 27 July 1870, p.1; 2 September 1870, p.1.
- <sup>55</sup> *LT*, 123 November 1869, p.3; 18 February 1871, p.2.
- <sup>56</sup> *LT*, 11 November 1872, p.2.
- <sup>57</sup> *LT*, 28 May 1872, p.4.
- <sup>58</sup> *LT*, 15 December 1873, p.4.
- <sup>59</sup> *LT*, 10 May 1872, p.1.
- <sup>60</sup> *LT*, 13 June 1877, p.2.
- <sup>61</sup> *LT*, 16 October 1877, p.3.
- <sup>62</sup> *LT*, 19 January 1882, p.1.
- <sup>63</sup> *LT*, 18 August 1882, p.4.
- <sup>64</sup> *LT*, 28 July 1884, p.2.
- <sup>65</sup> *LT*, 28 July 1885, p.2.
- <sup>66</sup> *LT*, 12 March 1886, p.1.
- <sup>67</sup> *LT*, 19 October 1895, p.3.
- <sup>68</sup> Virginia Smith, *Clean* (2007), pp.288-9.
- <sup>69</sup> *Star*, 26 October 1883, p.3.
- <sup>70</sup> *LT*, 6 December 1851, p.4.
- <sup>71</sup> *LT*, 1 September 1868, p.3.
- <sup>72</sup> *LT*, 10 February 1872, p.4.
- <sup>73</sup> *LT*, 28 July 1874, p.4.
- <sup>74</sup> *LT*, 21 June 1878, p.4.
- <sup>75</sup> *LT*, 24 December 1879, p.8.
- <sup>76</sup> *LT*, 20 August 1887, p.8.
- <sup>77</sup> *LT*, 6 March 1890, p.8.
- <sup>78</sup> *LT*, 12 August 1880, p.2 Supplement.
- <sup>79</sup> *Colonist* (Wellington), 6 December 1859, p.3; 21 August 1860, p.3; *Daily Southern Cross*, 5 January 1863, p.3.
- <sup>80</sup> *Nelson Examiner*, 15 February 1868, quoting from the *British Medical Journal*.
- <sup>81</sup> *LT*, 23 October 1871, p.3.
- <sup>82</sup> *Grey River Argus*, 27 June 1871, p.3.
- <sup>83</sup> *Auckland Star*, 29 November 1873, p.2; *NZ Herald*, 12 & 23 January 1874, both p.2.

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- <sup>84</sup> *Otago Daily Times*, 5 February 1874, p.3.
- <sup>85</sup> *LT*, 1 January 1875, p.3.
- <sup>86</sup> *LT*, 8 February 1877, p.1.
- <sup>87</sup> *LT*, 3 January 1878, p.2.
- <sup>88</sup> *LT*, 13 February 1878, p.1.
- <sup>89</sup> *Star*, 7 November 1878, p.2.
- <sup>90</sup> *Star*, 20 April 1878, p.4.
- <sup>91</sup> *LT*, 19 February 1881, p.1.
- <sup>92</sup> Rex Wright-St Clair, *Historia Nunc Vivat* (2003), p.372.
- <sup>93</sup> *LT*, 4 March 1881, p.5.
- <sup>94</sup> *LT*, 11 June 1881, p.1.
- <sup>95</sup> *LT*, 10 April 1882, p.5.
- <sup>96</sup> *LT*, 19 May 1883, p.5.
- <sup>97</sup> *LT*, 1 August 1883, p.8.
- <sup>98</sup> *LT*, 15 August 1884, p.6.
- <sup>99</sup> *LT*, 22 October 1884, p.5.
- <sup>100</sup> *LT*, 3 January 1885, p.7.
- <sup>101</sup> *LT*, 9 February 1885, p.1.
- <sup>102</sup> *LT*, 1 July 1885, p.1.
- <sup>103</sup> *LT*, 8 June 1886, p.1.
- <sup>104</sup> *LT*, 15 July 1889, p.5.
- <sup>105</sup> *LT*, 27 July 1889, p.1.
- <sup>106</sup> *LT*, 16 November 1889, p.2.
- <sup>107</sup> *LT*, 26 November 1889, p.3.
- <sup>108</sup> *LT*, 16 August 1890, p.7.
- <sup>109</sup> *LT*, 12 June 1891, p.6; 18 May 1893, p.1.
- <sup>110</sup> *LT*, 25 July 1894, p.1.
- <sup>111</sup> *LT*, 12 May 1908, p.8.
- <sup>112</sup> *LT*, 26 August 1880, p.1.
- <sup>113</sup> *LT*, 25 November 1880, p.6.
- <sup>114</sup> *LT*, 21 December 1880, p.6.
- <sup>115</sup> *LT*, 2 July 1881, p.1.
- <sup>116</sup> *LT*, 19 July 1881, p.1.
- <sup>117</sup> *LT*, 19 May 1881, p.6.
- <sup>118</sup> *LT*, 22 July 1881, p.1.
- <sup>119</sup> *LT*, 7 September 1881, p.1.
- <sup>120</sup> *LT*, 19 October 1881, p.1.
- <sup>121</sup> *LT*, 27 September 1882, p.8.
- <sup>122</sup> *LT*, 5 March 1887, p.8.
- <sup>123</sup> *LT*, 19 October 1886, p.1.
- <sup>124</sup> *LT*, 10 January 1887, p.2.
- <sup>125</sup> *Star*, 3 March 1887, p.2.
- <sup>126</sup> *Press*, 29 April 1887, p.4.
- <sup>127</sup> *Press*, 4 July 1887, p.4.
- <sup>128</sup> *Star*, 2 August 1887, p.2.
- <sup>129</sup> *Press*, 14 February 1888, p.1.
- <sup>130</sup> Vanessa Sue, Lisa Wong et. al., *Chinese of Christchurch* (Christchurch, 1982), pp.13-14,
- <sup>131</sup> *LT*, 30 December 1872, p.4.
- <sup>132</sup> *LT*, 26 January 1875, p.2.
- <sup>133</sup> *Press*, 28 March 1876, p.2.



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- <sup>134</sup> See Wikipedia, 'Dry Toilet', for examples.
- <sup>135</sup> *Press*, 5 March 1877, p.3.
- <sup>136</sup> *Press*, 7 July 1877, p.4 Supplement.
- <sup>137</sup> *LT*, 13 April 1878, p.2.
- <sup>138</sup> *Press*, 28 May 1878, p.2.
- <sup>139</sup> *Press*, 29 May 1878, p.3.
- <sup>140</sup> *Press*, 10 August 1878, p.4.
- <sup>141</sup> *LT*, 25 February 1879, p.5.
- <sup>142</sup> *LT*, 8 April 1879, p.5.
- <sup>143</sup> *Press*, 29 April 1879, p.2.
- <sup>144</sup> *LT*, 14 October 1879, p.3.
- <sup>145</sup> *Press*, 2 December 1879, p.3; *LT*, 9 December 1879, p.5.
- <sup>146</sup> *LT*, 3 April 1880, p.4.
- <sup>147</sup> *LT*, 11 May 1880, p.3.
- <sup>148</sup> *Press*, 15 June 1880, p.3; 6 July 1880, p.2.
- <sup>149</sup> *Press*, 28 September 1880, p.3.
- <sup>150</sup> *Press*, 2 August 1881, p.3.
- <sup>151</sup> *LT*, 9 August 1881, p.6.
- <sup>152</sup> *Press*, 16 August 1881, p.2.
- <sup>153</sup> *Press*, 6 June 1882, p.2.
- <sup>154</sup> *Press*, 3 August 1882, p.4; *LT*, 11 August 1882, p.4.
- <sup>155</sup> *Press*, 23 September 1882, p.3; *LT*, 21 October 1882, p.6.
- <sup>156</sup> *LT*, 9 April 1884, p.6.
- <sup>157</sup> *Press*, 16 January 1884, p.3.
- <sup>158</sup> *Press*, 9 May 1883, p.3; *LT*, 12 January 1885, p.4.
- <sup>159</sup> *LT*, 25 March 1885, p.6; *Press*, 25 June 1885, p.2.
- <sup>160</sup> Mark Alexander, *Rails in the Roads: the steam and horse tram era in Christchurch* (Christchurch Transport Board and Tramway Historical Society, 1985), p.11.
- <sup>161</sup> *LT*, 26 February 1886, p.4.
- <sup>162</sup> *Press*, 27 June 1889, p.3.
- <sup>163</sup> *Press*, 24 July 1928, p.12.
- <sup>164</sup> *LT*, 25 April 1863, p.4.
- <sup>165</sup> *LT*, 29 August 1863, p.4; 2 October 1867, p.2.
- <sup>166</sup> *LT*, 12 May 1868, p.2.
- <sup>167</sup> *Press*, 30 June 1868, p.2.
- <sup>168</sup> *LT*, 6 October 1868, p.2; *Press*, 12 November 1868, p.3.
- <sup>169</sup> *Press*, 17 November 1868, p.2.
- <sup>170</sup> *LT*, 24 November 1868, p.2.
- <sup>171</sup> *LT*, 31 August 1869, p.2.
- <sup>172</sup> *LT*, 11 January 1870, p.2.
- <sup>173</sup> *LT*, 22 March 1870, p.2.
- <sup>174</sup> *Press*, 4 & 25 October 1870, pp.2 & 3.
- <sup>175</sup> *LT*, 31 October 1871, p.2; *Press*, 14 November 1871, p.3; *Press*, 16 January 1872, p.3.
- <sup>176</sup> *Press*, 28 November 1871, p.3.
- <sup>177</sup> *LT*, 26 October 1872, p.2.
- <sup>178</sup> *Press*, 16 June 1874, p.2.
- <sup>179</sup> *LT*, 6 February 1878, p.2.
- <sup>180</sup> *Press*, 27 March 1877, p.3; 20 June 1877, p.3; *LT*, 6 February 1878, p.2.
- <sup>181</sup> *Press*, 6 June 1877, p.3.
- <sup>182</sup> *LT*, 4 November 1879, p.6; 9 February 1880, p.6.

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- <sup>183</sup> *LT*, 16 March 1880, p.4.
- <sup>184</sup> *LT*, 9 March 1880, p.5.
- <sup>185</sup> *Press*, 23 March 1880, p.2.
- <sup>186</sup> *LT*, 6 March 1883, p.6.
- <sup>187</sup> *LT*, 9 August 1883, p.1; *Press*, 29 July 1884, p.1.
- <sup>188</sup> *Press*, 29 December 1883, p.3.
- <sup>189</sup> *LT*, 6 May 1884, p.3.R
- <sup>190</sup> *Press*, 17 June 1884, p.2.
- <sup>191</sup> *Press*, 12 August 1884, p.2.
- <sup>192</sup> *LT*, 10 September 1884, p.6.
- <sup>193</sup> *Press*, 13 January 1884, p.3; *LT*, 19 May 1885, p.6; 14 July 1885, p.5.
- <sup>194</sup> *Press*, 17 November 1887, p.7.
- <sup>195</sup> *Press*, 20 March 1888, p.6; 22 May 1888, p.6.
- <sup>196</sup> See G. W. Rice, *Victoria Square: Cradle of Christchurch* (Canterbury University Press, 2014), pp.31-2 for Crosbie Ward's witty verses about this excavation.
- <sup>197</sup> See G. W. Rice, *All Fall Down: Christchurch's Lost Chimneys* (Canterbury University Press, 2012).
- <sup>198</sup> Jock Phillips, 'Smoking', in Te Ara, the online encyclopedia of New Zealand: <https://www.TeAra.govt.nz/en/smoking>
- <sup>199</sup> *LT*, 3 April 1852, p.6.
- <sup>200</sup> G. W. Rice, *A Scientific Welsh Eye Surgeon: the short life of Llewellyn Powell MD (1843-79), Christchurch's First Public Health Medical Officer* (Christchurch, Hawthorne Press with the Cotter Medical History Trust, 2020), pp.40-45.
- <sup>201</sup> *Colonial Gazette*, 15 May 1848.
- <sup>202</sup> *LT*, 14 June 1851, p.6.
- <sup>203</sup> *LT*, 3 January 1851, p.9 Supplement.
- <sup>204</sup> *LT*, 14 January 1854, p.4.
- <sup>205</sup> *LT*, 15 March 1856, p.1.
- <sup>206</sup> Canterbury Museum, Macdonald Dictionary of Canterbury Biographies, C747.
- <sup>207</sup> *LT*, 2 August 1856, p.1.
- <sup>208</sup> *LT*, 4 October 1865, p.4.
- <sup>209</sup> *LT*, 18 September 1858, p.6; 3 November 1858, p.5.
- <sup>210</sup> *LT*, 19 March 1859, p.1.
- <sup>211</sup> *LT*, 11 May 1859, p.5.
- <sup>212</sup> *LT*, 15 January 1862, p.1.
- <sup>213</sup> *LT*, 7 September 1867, p.3.
- <sup>214</sup> *LT*, 24 September 1862, p.5; 20 December 1862, p.5.
- <sup>215</sup> *LT*, 8 July 1863, p.6.
- <sup>216</sup> *LT*, 2 May 1863, p.6.
- <sup>217</sup> *LT*, 14 September 1865, p.7.
- <sup>218</sup> *LT*, 4 October 1865, p.4; 19 January 1866, p.3.
- <sup>219</sup> *LT*, 27 April 1866, p.3; 7 February 1867, p.3.
- <sup>220</sup> *LT*, 26 June 1867, p.3.
- <sup>221</sup> *LT*, 27 March 1868, p.3; 21 July 1868, p.4.
- <sup>222</sup> *LT*, 20 March 1868, p.3.
- <sup>223</sup> *LT*, 26 June 1868, p.3.
- <sup>224</sup> *LT*, 29 January 1869, p.3; 13 February 1869, p.3; 31 March 1869, p.3; 25 May 1869, p.3.
- <sup>225</sup> *LT*, 27 April 1874, p.1.
- <sup>226</sup> *LT*, 20 February 1875; 17 June 1875, p.1; 29 November 1875, p.1.
- <sup>227</sup> *LT*, 24 April 1877, p.1.

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- <sup>228</sup> *LT*, 2 July 1880, p.1.
- <sup>229</sup> *LT*, 22 March 1878, p.1.
- <sup>230</sup> *LT*, 9 May 1876, p.1; 19 November 1878, p.1.
- <sup>231</sup> *LT*, 7 February 1877, p.4.
- <sup>232</sup> *LT*, 10 July 1877, p.1.
- <sup>233</sup> *LT*, 21 July 1877, p.1; 23 September 1879, p.1.
- <sup>234</sup> *LT*, 13 May 1879, p.1.
- <sup>235</sup> *LT*, 14 September 1880, p.1; 12 September 1881, p.1.
- <sup>236</sup> *Globe*, 9 January 1880, p.1.
- <sup>237</sup> *Daily Southern Cross*, 26 May & 14 June 1870, both p.2; *Auckland Star*, 12 June 1874, p.3; *NZ Herald*, 26 March 1875, p.4; 8 May 1875, p.2; 3 June 1875, p.3; *Cyclopedia of New Zealand*, Vol. III, Canterbury (Christchurch, 1903), p.305.
- <sup>238</sup> *LT*, 30 August 1881, p.1.
- <sup>239</sup> G. W. Rice, *The Unfortunate Dr Campbell of Lyttelton and Christchurch* (Christchurch, Hawthorne Press with The Cotter Medical History Trust, 2021), p.55.
- <sup>240</sup> *LT*, 30 July 1881, p.1; 12 September 1881, p.1.
- <sup>241</sup> *LT*, 16 June 1887, p.8.
- <sup>242</sup> *Star*, 15 August 1887, p.4.
- <sup>243</sup> *Press*, 13 January 1888, p.8.
- <sup>244</sup> *LT*, 27 January 1887, p.1.
- <sup>245</sup> *LT*, 31 March 1882, p.1; 5 April 1882, p.1; 11 August 1882, p.1; 16 August 1882, p.1.
- <sup>246</sup> *LT*, 4 September 1883, p.2.
- <sup>247</sup> *Cyclopedia of New Zealand*, Vol.III, Canterbury (Christchurch, 1903), p.306.
- <sup>248</sup> *LT*, 24 October 1883, p.1; 23 January 1884, p.1; 27 March 1884, p.1.
- <sup>249</sup> *LT*, 5 November 1883, p.8.
- <sup>250</sup> *LT*, 20 August 1884, p.3.
- <sup>251</sup> Mark Alexander, *Rails in the Roads: the steam and horse tram era in Christchurch* (Christchurch Transport Board & Tramway Historical Society, 1985), p.11.
- <sup>252</sup> *LT*, 21 May 1886, p.1.
- <sup>253</sup> *LT*, 9 July 1886, p.1.
- <sup>254</sup> *LT*, 5 October 1886, p.5.
- <sup>255</sup> *LT*, 30 September 1887, p.1; 8 November 1887, p.1.
- <sup>256</sup> *LT*, 29 December 1886, p.1; 23 April 1888, p.1.
- <sup>257</sup> *LT*, 17 October 1888, p.5.
- <sup>258</sup> *LT*, 15 September 1891, p.1; 19 January 1892, p.1.
- <sup>259</sup> *LT*, 5 September 1891, p.1.
- <sup>260</sup> *LT*, 10 February 1892, p.1.
- <sup>261</sup> *LT*, 23 March 1892, p.4.
- <sup>262</sup> *LT*, 21 June 1892, p.8.
- <sup>263</sup> *LT*, 12 June 1895, p.2; on the ‘severed hand mystery’ see Rice, *Christchurch Crimes and Scandals, 1876-99* (Canterbury University Press, 2013), pp.125-43.
- <sup>264</sup> *LT*, 22 June 1895, p.3.
- <sup>265</sup> *LT*, 14 September 1895, p.4.
- <sup>266</sup> *LT*, 5 October 1895, p.3.
- <sup>267</sup> *Press*, 30 March 1893, p.8.
- <sup>268</sup> *Press*, 15 September 1890, p.4.
- <sup>269</sup> Rex Wright-St Clair, *Historia Nunc Vivat* (2003), p.219.
- <sup>270</sup> *Press*, 4 January 1897, p.8.
- <sup>271</sup> *Press*, 6 October 1896, p.8.
- <sup>272</sup> *Press*, 4 March 1898, p.8.

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- <sup>273</sup> *Press*, 21 June 1897, p.8.
- <sup>274</sup> Colin Amodeo, *The Summer Ships* (Christchurch, Caxton Press, 2000), p.174.
- <sup>275</sup> *LT*, 18 May 1874, p.3.
- <sup>276</sup> *LT*, 8 June 1874, p.2.
- <sup>277</sup> *Press*, 26 June 1874, p.2.
- <sup>278</sup> *LT*, 7 December 1874, p.2.
- <sup>279</sup> *LT*, 12 December 1874, p.2.
- <sup>280</sup> *LT*, 4 October 1875, p.2.
- <sup>281</sup> *LT*, 24 March 1883, p.6; *Press*, 3 May 1884, p.2.
- <sup>282</sup> *Press*, 23 February 1888, p.5.
- <sup>283</sup> *Press*, 12 November 1888, p.5.
- <sup>284</sup> *LT*, 7 March 1890, p.5.
- <sup>285</sup> *Press*, 5 October 1891, p.4.
- <sup>286</sup> *Press*, 11 August 1894, p.5; 9 July 1895, p.4; 27 July 1895, p.9.
- <sup>287</sup> *LT*, 25 September 1896, p.2.
- <sup>288</sup> *LT*, 19 September 1896, p.2.
- <sup>289</sup> *LT*, 2 October 1896, p.2.
- <sup>290</sup> *LT*, 24 October 1896, p.2.
- <sup>291</sup> *Press*, 28 June 1897, p.4.
- <sup>292</sup> *LT*, 21 January 1898, p.2.
- <sup>293</sup> *LT*, 22 January 1898, p.5; *Press*, 19 March 1898, p.7.
- <sup>294</sup> *LT*, 7 May 1897, p.3.
- <sup>295</sup> *Evening Post*, 7 April 1898, p.2.
- <sup>296</sup> *Evening Post*, 30 July 1906, p.4.
- <sup>297</sup> *Evening Post*, 8 September 1909, p.2.
- <sup>298</sup> G. W. Rice, *The Notorious Dr Russell of Tristram House* (Christchurch, Hawthorne Press with The Cotter Medical History Trust, 2020), p.61.
- <sup>299</sup> Thomas McKeown, *The Modern Rise of Population* (London, 1976). But see also Simon Szreter, 'The Importance of Social Intervention in Britain's Mortality Decline, c.1850-1914: a Re-interpretation of the Role of Public Health', *Social History of Medicine*, 1 (1988), pp. 1-37.

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