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## WHERE THERE'S GOLD THERE'S MUD BRICKS

### Paul Jaquin

eZED, Queenstown, New Zealand  
pauljaquin@gmail.com

#### Abstract

The Gold Rush Era of the late 19th century began in California around 1848, with miners and mining techniques moving to the New South Wales (Australia) gold rush of 1851, and then to the Central Otago (New Zealand) gold rush of 1861. In many cases the miners took their building techniques with them as well, and as a result the mud brick architecture across each of these regions is similar.

This paper explores the simple mud brick constructions of the gold rush era and assesses whether it was simply gold miners, or construction and building techniques as well, which travelled the world in search of their fortunes.

#### The gold rush in New Zealand

Gold has been a lure since ancient times. The European exploration of the western United States, Australia, and New Zealand in the later part of the 19<sup>th</sup> Century found untouched gold reserves in those distant and remote areas of the globe.

Gold was first discovered in California in 1842, and later in 1848. In 1849 a gold rush ignited, brought about by the Miner “forty-niners”, a collective name for those 90,000 odd Americans and Europeans who travelled across the newly forming United States, by ship around the Cape Horn, or by ship then on land across Panama, and then north to California to seek their fortunes.

Gold flecks were discovered in Bathurst, New South Wales, Australia in February 1851, which led to a similar gold rush in Australia, and within a year over half a million ‘diggers’ made their way to seek their fortunes.

Ten years later in Otago on the South Island of New Zealand, gold was discovered in May 1861, by Gabriel Read, an Australian prospector and veteran of both the California and Australian gold rushes. The population at the newly named Gabriel’s Gully swelled to 14,000 by Christmas, increasing the population of New Zealand from just under 100,000 people in 1861, to around quarter of a million in 1871.



**Figure 1.** Sketch of prospectors cutting sod for house walls.

The prospectors travelled across the country exploring every gully and outcrop, living in the open, pitching tents and camping at claim sites. Claims were quickly explored and if nothing was found, camp was struck and the next site investigated. The prospectors lived in tents, moving quickly and never creating enduring buildings. However, where rich pickings were found, more permanent settlements soon developed in the Otago area, such as Arrowtown, Macetown, Sefferstown and St Bathans.

### **Architecture of the Gold rush**

The architecture of the Gold Rush is many and varied, and ranges from the rough cotton sheets used for makeshift tents, to the grandest monumental buildings of goldrush cites.

The prospectors were those who could afford enough to travel across the country (or the world) and were typically an ingenious and resourceful bunch. But by necessity they also travelled light, moved fast and travelled between claims if nothing was found.

Calico (cotton) tents were the most straightforward accommodation for the prospectors, carried on their backs or by horse, and pitched close to the claim site. These tents used timber poles, and sometimes double skinned cotton walls with vegetation (tussock) as insulation between the double skins. If prospectors settled for periods of time, a more permanent structure was desired. These structures were created by installing earth sod walls up to the eaves of the tent. These sod walls could be easily cut using the shovels the prospectors carried, meaning no specialist equipment was required build these structures.

At successful claims, large, tented settlements became towns, with the associated hostelries, stores and everything else a prospector might need. The store holders were happy to take the prospectors' money and develop their buildings, sometimes with timber store fronts, and other times with mud brick or stone walls, and corrugated walls and roofs. Sod was used for walls before tin and timber could be brought to the settlement. If tin and timber were available, these were typically used for the shop frontages primarily, with many shops looking the part, but with a timber frontage, cotton tents and sod walls behind.

To keep warm in the cold Central Otago winters, sod and cob chimneys were built, sometimes as a back wall to the tents, sometimes externally, and other times as part of an earth walled house.



**Figure 2.** Sod house, Mitchells Flat, Otago.



**Figure 3.** Sod chimneys outside tented settlements, central Otago.

### **Surviving earthen architecture**

Examples of surviving earthen architecture range from the sod walls at the Lindis Pass hotel, and the cob walls of the Welsh Harp hotel at Cambrians (Figure 4), to the mud brick town hall and hotel at St Bathans (Figure 6) and the hotel in Naseby as well as many privately owned houses in the district.

Earth construction techniques existed in New Zealand before the gold rushes, and there were guides and books available to the early settlers discussing construction techniques such as sod and cob. Where settlements became more developed, mud brick (adobe) monumental buildings were constructed.

In some places, such as St Bathans and Naseby, the surviving monumental mud brick buildings of the town (the town halls and the hotels) suggest that there was a small mud brick industry, or at least a mason able to build fine mud brick structures. These buildings have survived the test of time, and the settlements in which they reside have not been abandoned, meaning the buildings have been kept up and the mud bricks have survived.

While the settlements of St Bathans and Naseby have survived, smaller settlements such as Mace-town, Cambrians and Sefferstown have almost disappeared, with the standing mud brick architecture left open to the elements, now subject to decay. In other more successful towns, such as Arrowtown and Queenstown, the original mud brick buildings are likely to have been removed over time and replaced by stone or timber structures.

Mud brick and sod construction were present in New Zealand well before the gold rush, and they were utilized by the prospectors as useful construction techniques where necessary. During the gold rush there was a huge increase in population in a very short period of time, creating population pressure, initially addressed by using tents, but soon made more comfortable with sod walls. After the gold rush finished, mud bricks continued to be used for construction.

The gold rushes do not appear to have really developed any specific earthen construction techniques, but the melting pot of cultures and technologies allowed a transfer of techniques from across the world, and perhaps the 49-ers from California brought their knowledge of adobe and mixed with the cob traditions of Cornish and Welsh prospectors, to provide the most suitable construction techniques required.



Figure 4. Welsh Harp Hotel, Cambrians - cob wall.



Figure 5. Mud brick chimneys and buildings at St Bathans, 1869.



Figure 6. Mud brick hotel - St Bathans, present day.

The speed of the gold rushes, and the temporary nature of the structures meant that the prospectors invested just as much effort on their lodgings as was necessary to keep them comfortable, with the majority of the effort being focused on finding gold. Only when monumental buildings were constructed on the back of gold finds, was more effort invested into such buildings. In cities such as Dunedin and Oamaru, cut stone was used to create imposing Greek and Romanesque architecture. In other places, where only earth was available, hotels and banks were built to the same style in unfired mud brick, and many still stand today.

Earth does tend to be used when other building materials are not available, making it the material of least choice. Where timber, and easily cut stone are available, those tend to be used instead. Where tin sheeting can be transported to a settlement, that is used for roofing, and sometimes walls too. Mud is the best thing, except if anything else is available.

## Conclusion

The aim of this paper was to investigate whether the gold rushes of California and Australia influenced earthen architecture in gold rush New Zealand. Whilst earthen architecture was used, during this time, it was also present in the pre-goldrush era, and continued after. The temporary nature of prospecting meant that permanent settlements were not realised in the first instance because claims were worked, closed and prospectors moved on. The more permanent structures arose when an in-

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dustry grew to provide prospectors with services – banks, hotels, and goods. Those buildings were made of earth when timber and tin were not available. Some of those buildings still stand and serve as a reminder of the gold rush heritage and how that has shaped and influenced the development of towns and cities in New Zealand today.

### **Image references**

Figure 1 Sketch of prospectors cutting sod for house walls - Five years in New Zealand (1859 to 1864) Robert B. Booth, London : J.G. Hammond, 1912

Figure 2 Sod house, Mitchells Flat, Otago - Reverend Alexander Don and an unidentified Chinese miner outside a sod house, Mitchells Flat, Otago. McNeur Collection : Photographs of Chinese goldminers who worked in Otago and Southland gold fields. Ref: 1/2-019163-F. Alexander Turnbull Library, Wellington, New Zealand. /records/22914298

Figure 3 Sod chimneys outside tented settlements, central Otago – RW Murray collection, National Library of New Zealand

Figure 4 Welsh Harp Hotel, Cambrians - cob wall – Gold Fields of Otago, an Illustrated History, John Hall-Jones. Pg 152

Figure 5 Mud brick chimneys and buildings at St Bathans, 1869 - Gold Fields of Otago, an Illustrated History, John Hall-Jones. Pg 153

Figure 6 Mud brick hotel - St Bathans, present day – author’s own photo

***Paul Jaquin** is a structural and geotechnical engineer in Queenstown for eZED, working on Sustainable Building projects around Otago, Southland and wider New Zealand. Paul is also a highly cited academic, with specific expertise in rammed earth construction and unsaturated soil mechanics, and has published a number of books and papers relating to earth construction.*