

# The Archaeology of the Historic Copper Industry on Kawau Island 1843–1855, 1899–1901

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*Kawau Island features the physical remains of copper mining and smelting dating to the 1840s. This evidence is augmented by a substantial quantity of documentary source material. Like so many colonial enterprises, the industry failed as the venture could not overcome problems of distance, the poor quality of ore and the lack of local support.*

The nineteenth-century colonisation of Australasia was for the most part in the hands of the entrepreneurs and missionaries, a search for seals and souls. Initially it was whaling, sealing and timber which attracted the attention of the Old World, and eventually after settlement the variety of resources exploited greatly increased. Like the origins of these early ventures, their outcome, success or failure, was firmly rooted in Europe.

This is particularly true of extractive metallurgy, as the success of mining activities was tied to Europe not only economically, but also legally and politically. During the middle decades of the nineteenth century many of the legal decisions which played an influential role in the life and times of these industries were in the hands of the British Parliament and Law Lords. The copper industry, for example, was dependent on the European economy, in particular the market prices of copper and beyond that the stability of the market.

The 1850s to 1860s were a time of economic depression in the European copper industry and many of the forces that led to the migration of Cornish miners and others across the globe, when whole families and often communities were thrown out of work, were also those that condemned or at least jeopardized their efforts in the 'promised land'.<sup>1</sup>

The industry on Kawau Island and the twists and turns in its history were no exception. In fact, its history is testimony to the often crippling influence of the British legal system.

## THE COPPER INDUSTRY ON KAWAU

Mining on Kawau began in the early 1840s and continued erratically under various mine managers for approximately fifteen years. There was an attempt to reopen the workings about 1900 under the mine manager Captain Holgate, but this too failed to be profitable.

The study of the copper industry on Kawau Island provides an opportunity to approach every aspect of an industry (labour, management, technology, settlement, mine and smelter) and to blend both archival and archaeological data into a unique understanding of an historic industry.<sup>2</sup> Unlike some of the European exploits in New Zealand, there is a great deal of documentary evidence available regarding many aspects of the venture. Though largely concerned with a lengthy legal debate over ownership of the mineral resources, archival material covers such information as dates of operation and changes in operating techniques, aspects of social life and

personnel. Winkelmann's photographs made at the turn of the century also provide unique coverage of the attempt to re-open the mine.<sup>3</sup>

Kawau Island was the centre of one of New Zealand's earliest historic industries with substantial remains extant. At times between 1844 and 1855 over 200 people were engaged in the mining and smelting of copper, and remains of various aspects of the industry are still to be found at several locations on the island: Smelting House Bay, Miners Bay (South Cove), and Mansion House Bay. Although the industry finally failed because of legal, technical and economic problems, it played a significant part in the history of the island and of New Zealand's industries.

Copper mining began in 1844 after samples of the ore had been sent to Britain for assessment. It was intended to ship the ores to smelting and casting facilities in Wales. However, this became complicated by the sulphidic nature of the ore, in that, like many sulphides, it had a tendency towards spontaneous combustion, a problem in the hold of a ship.<sup>4</sup> This, plus the costs of shipping, influenced the decision to construct a smelter on the island. Initially there was a 'Welsh' system with batteries of roasting furnaces. This proved not to be cost-effective: the Welsh works manager (a Mr Jones) was discharged and a German, Mr Berger, took charge, doing away with many of the existing furnaces and introducing a simpler technique based on a German system. Such modification and adaptation were common features in newly established industries in the colonies, with adjustments taking into account the new environment where related industries, transport and trade were still in their infancy. By the mid-1850s the mining venture had failed and Berger had returned to Europe, leaving a small team operating the smelter.

The demise of the copper industry on Kawau cannot be seen only in technical terms of depleted or poor quality raw materials, as both technical and social factors played significant parts in bringing the industry to a halt. Labour was a problem, with losses to the goldfields of Australia and California, and from the early documents pertaining to the copper venture it is evident that shady deals and a decade-long bitter struggle for ownership between the two main protagonists, Taylor and Whitaker, played a major role in condemning the venture to failure.<sup>5</sup> Also, in a broader context, part of the problem initially was the attempt to establish an industry in a region devoid of the necessary backup facilities – in this case smelting and

casting technology – thus incurring prohibitive transport costs and problems.

Investigation of the industry was prompted by the deteriorating condition of the smelting installation. It had been constructed of a soft local (Maharangi) sandstone which had weathered extensively resulting in partial collapse of the structure and concern about the safety of the remainder. As part of the conservation process it was necessary to excavate the areas which would be affected by the shoring, and in doing so to assess the potential for a more extensive excavation. Even from limited test squares the potential of further excavation was evident. A casting floor of fine sand was revealed, as were large slag blocks and pieces of *matte* (a sulphidic product of the roasting processes). Analysis of these will enable detailed reconstruction of the process and metallurgical evaluation of its efficacy. In addition, many of the bricks found at the smelter and mine were Australian imports and many of the firebricks, with the stamp of 'COWEN', were imported from England, most probably manufactured at Stourbridge, thus providing information about sources of construction materials.<sup>6</sup>

Subsequently, the decision was taken not to limit excavation to the smelting site, but to approach the industry as a whole and investigate all aspects: the smelter, mine (and associated technology), and mining village (about which the information is variable in its quality), and to integrate this information with the documentary evidence to gain a more complete picture of this industry. The documentary evidence provided in part some conflicting and tantalising information which could be tested archaeologically. In addition, the excavations have provided insights not available from the archives.

## EXCAVATIONS 1990

In February 1990 further test trenches and excavation were carried out in various parts of the industrial complex by a joint University of Auckland and Department of Conservation team. It was not possible to continue investigation within the Smelting House itself, as stabilising work on the structure was incomplete and such work would have been dangerous.

Three areas were investigated: Miners Bay (R9/500), a whim (remains of a winching device) near one of the main shafts of the mine (R9/632), and the area behind the smelting house (R9/642). Most effort was concentrated in Miners Bay, the primary settlement of the miners a few minutes walk south of the mine entrance and pumphouse. The whim was partially excavated revealing remains of machinery and a gravel horse/pony path, while test trenches were excavated to the rear of the smelting house itself.

## MINERS BAY

Excavation here was influenced by the results of a resistivity survey, the 1848 map of Captain Ninnis (one of the mine managers in charge of the mid-nineteenth century mining industry on Kawau) (Fig. 1), probing and surface morphology. No structures could be detected above the surface.

Probing and subsequent excavation revealed three significant remains of stone and brick structures in Miners Bay. One was the remains of a large hearth constructed of Maharangi sandstone and brick, with associated iron firebars, hooks and grids. Also in and surrounding the hearth was a considerable quantity of cultural debris (glass, china and many objects of metal, including coins, silverware, fine pins, clips, etc.) which appeared on preliminary examination to be of mid nineteenth-century

date and therefore to relate to the Ninnis period of mining. Of particular interest was a corroded but complete military hat badge, which with X-ray and conservation proved to be an 'other ranks' badge of the Royal Regiment of Artillery. The badge was worn on an Albert Shako type hat by non-commissioned officers and interestingly was only used between 1846 and 1855, coinciding almost exactly with the period of the early mining activities. It was possible that the archival search that followed would provide a name of a discharged soldier engaged in some capacity in the mining venture on Kawau. However, owing to the patchy nature of the archival material prior to the 1850s (jury lists, electoral rolls, police census, etc.) this has proved unsuccessful.<sup>7</sup>

The second was a foundation/retaining wall of a large rectangular structure with more solid foundations and postholes at the north and western sides of the building. The latter were interpreted as the base of the entrance and hearth of a small building. A hard burnt area overlay them and contained large chunks of concrete with a coarse water-rolled pebble hardcore and pieces of ribbed plate window glass of the type normally associated with bathrooms. It was immediately apparent that this material did not relate to the mid nineteenth-century and that we were dealing with traces of the attempt by Captain Holgate to rework the mine about 1900. Early photographs by Winkelmann capture many aspects of this attempt including one of the bay with a wooden building and tents to the rear (Fig. 2). The retaining wall most likely belonged to this building, although it is probable that the miners from the 1900 attempt reused many of the materials left from the earlier venture.

The third structure was a rectangular pit containing a large deposit of mineral water bottles (53 in four types) also relating to the last years of the century. The majority of the bottles were broken (probably to extract the marbles which were missing), although nine were intact. Some 43 were GREY AND SONS AUCKLAND glass stoppered bottles of the Codd square-shouldered patent type.<sup>8</sup> Within ten years of its introduction in 1872 this type of aerated water bottle was the most popular and widely used.<sup>9</sup> Around 1902 J. Grey and Sons merged to become Grey and Menzies, thus putting a terminal date on their manufacture. A further four were NICHOLLS REGISTERED TRADEMARK bottles with black synthetic stoppers (ebonite) and would have originated from Cyprian Nicholls, Ponsonby Road, Auckland, 1891-1906. There were three rare Codd pictorial bottles: NATIVE MINERAL & AERATED WATER CO AUCKLAND with a depiction of what is probably a tattooed Maori head. According to Rusden the Native Mineral Water Co. was using these bottles between 1899 and 1903.<sup>10</sup> There was single example of a WILKIE TRADEMARK REGISTERED AUCKLAND and a wide-mouthed pickle bottle.

The production dates for the aerated water bottles found in the rectangular pit place their deposition squarely at the turn of the century, and, although they do not provide a date for the rectangular pit, they undoubtedly relate to the period of Holgate's miners.

Excavation of another area in Miners Bay, marked as stables on the Ninnis map, revealed the remains of postholes and timber structures (timber planking with nails) and structural iron-work (large bolts, nails, and horseshoes), along with some china and glass, although the latter was confined in its distribution. The area displayed a sequence of construction, burning, subsequent collapse and rebuilding. Many burnt nails were located where the burning planks had collapsed, with the charcoal still attached. The horseshoes indicated that both large

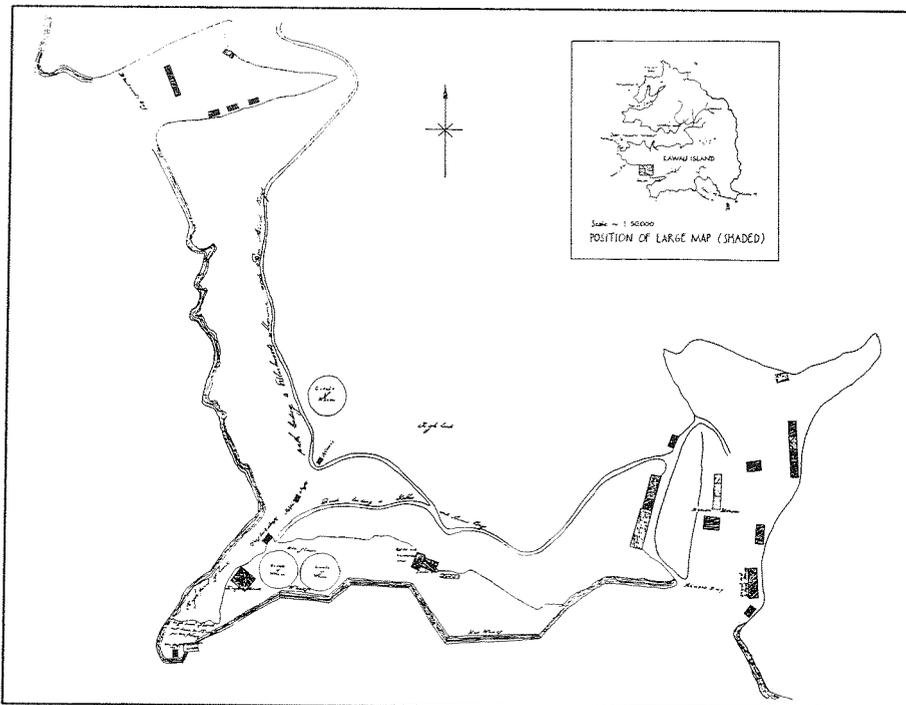
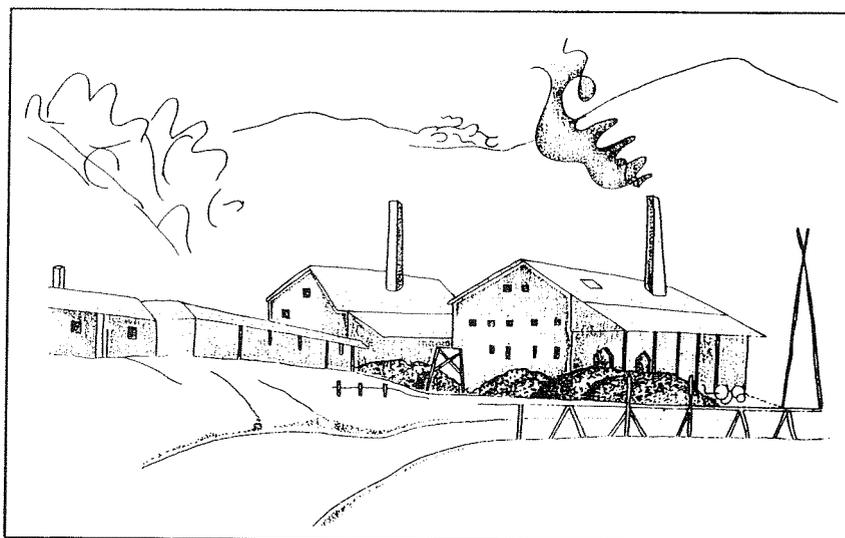


Fig. 1: Ninnis map of mine and settlement on Kawau Island in 1848 (National Archives).



Fig. 2: Hut in Miners Bay, by Winkelman about 1900 (Auckland Institute and Museum C23046).

Fig. 3: Smelting House after Heaphy sketch 1850s (Heaphy sketch books, Auckland Institute and Museum).



(Clydesdale?) and small animals (pit ponies?) were employed in operating in and around the mines.

## CERAMICS

In all, some 2,280 sherds were recovered during the 1990 field season, comprising earthenware, stoneware and clay pipes). All but a few sherds came from Miners' Bay where over 93 per cent were of earthenware, predominantly tableware (plates, cups and saucers, etc.) with various designs and design techniques characteristic of the mid-nineteenth century. Transfer printed ware (in blue, black, brown, green and red) predominated (68 per cent). 'Willow pattern' was the most common with 'Fibre', 'Medina', 'Marine', 'Genevise', 'Broseley', and other patterns represented. Makers' marks (Copeland Late Spode, Davenport, W. Ridgeway and others) were all from Staffordshire potteries operating during the early and middle part of the century, and thus compatible with the period of mining on Kawau.<sup>11</sup> In general these were the household wares of settled families and communities rather than the tin cup of the itinerant miner.

## SMELTING HOUSE BAY ('LITTLE SWANSEA')

Further investigation of the smelting installation in Smelting House Bay ('Little Swansea') was limited on this occasion owing to problems of stability, and only limited test trenching on the landward side of the smelter was carried out. Apart from a 20-30cm thick deposit of broken brick and burnt rubble (a destruction layer) solid brick floors and low walls were revealed. Many of the bricks indicated fire damage which suggests that we are dealing with furnace installations, possibly those known to have gone out of use on the arrival of Mr Berger who introduced more efficient smelting techniques during the early 1850s. The small area tested indicated that considerable detail of the smelting installation and processes will be recovered in future investigations. Of particular interest is the Heaphy sketch<sup>12</sup> which relates to the extant remains of the smelter and the surrounding area (Fig. 3). It reveals not only the location of small cottages/offices, but also a large building of similar size to, and immediately behind, the smelting house. There is no mention of such a structure in the archives and it is possible that it was used to house the battery of roasting furnaces demolished on the arrival of Mr Berger.

## THE MINE AND SURROUNDS

Near the mine itself, the excavation of the whim with part of the winching apparatus remaining is suggestive of the considerable amount of mining (technical) information which is still available in the environs of the mine. Such information is not available through the documentary record, and will enable us to achieve a more detailed reconstruction of the Cornish mining techniques applied on Kawau. It is also essential for interpretation and presentation of the industry.

## CONCLUSIONS

The excavation of the Kawau copper industry provides us with a unique opportunity to analyse and interpret the remains of an historic industry in all its aspects for eventual public presentation. A picture of everyday life in this mining community is beginning to emerge from analysis of the ceramics and other artefacts, while other finds enable us to reconstruct building, mining and smelting techniques applied in this nineteenth-century industry, and some of the modifications to a traditional

technology in a new environment. A management plan and funding for continued conservation of the smelting house are currently being dealt with as is the restoration of Mansion House by the Department of Conservation. However, some of the Miners Bay settlement is under serious threat from erosion, particularly gully slump which could conceivably destroy the large hearth within the near future.

## NOTES

1. Binney et al. 1990
2. Clough 1988.
3. Negatives are held at both the Auckland Public Library and Auckland Institute and Museum Library.
4. Hector 1869.
5. Wright 1984; Whitaker file.
6. Jack Diamond, personal communication.
7. Urry 1990.
8. Rusden 1979.
9. Tasker 1989.
10. Rusden, personal communication.
11. England & Grouden 1990.
12. Heaphy sketchbooks, Auckland Institute and Museum.

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