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Bedggood Buildings, Te Waimate, Bay of Islands: Excavations on the Site of the Blacksmith's Shop, 1986

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ABSTRACT

Archaeological excavations carried out at the blacksmith's shop on the Bedggood Buildings property, Te Waimate, Bay of Islands, are described. The building was erected some time after 1845 and collapsed in 1979. The excavations were necessary in preparation for its reconstruction, to recover evidence to be destroyed in the rebuilding process and to provide information to enable the rebuilding to be accurate. Blacksmithing sites and tools of the early nineteenth century in the Bay of Islands, and archaeological evidence of other blacksmithing sites in New Zealand and Australia are discussed.

Keywords: HISTORICAL ARCHAEOLOGY, BUILDINGS CONSERVATION, BLACKSMITH'S SHOP, BLACKSMITHING TOOLS, WAIMATE NORTH, BEDGGOOD.

HISTORICAL INTRODUCTION

Under the leadership of the Rev. Samuel Marsden, the son of a blacksmith and small farmer, the Church Missionary Society in the early nineteenth century sought to pave the way for Christianity amongst the Maori through the introduction of the English agricultural tradition (Morrell 1973: 3). Marsden intended that the mission settlers in the Bay of Islands should be artisans of the kind who practised in every English village (Binney 1968: 9). Self-sufficiency in the blacksmith's trade was vital for the development of early European communities in New Zealand. The blacksmith made and repaired tools and fittings for ships, farms, households and other craftsmen, and was skilled in farriery, facilitating the use of the horse as a means of power and transport. For the first missionary settlers, the blacksmith was also found to be the key to their survival. The iron tools which he made purchased essential provisions from the Maori, and his activity created a focus for their attention. Thomas Kendall wrote in 1815:

All the natives who have come to our settlement for axes and other iron tools have been supplied. We have suffered none to go away disappointed. The smith is constantly at work. He has more work upon his hands than any settler. We could not do without a smith. He is in my opinion under Divine Providence a great means of our protection (Elder 1934: 85).

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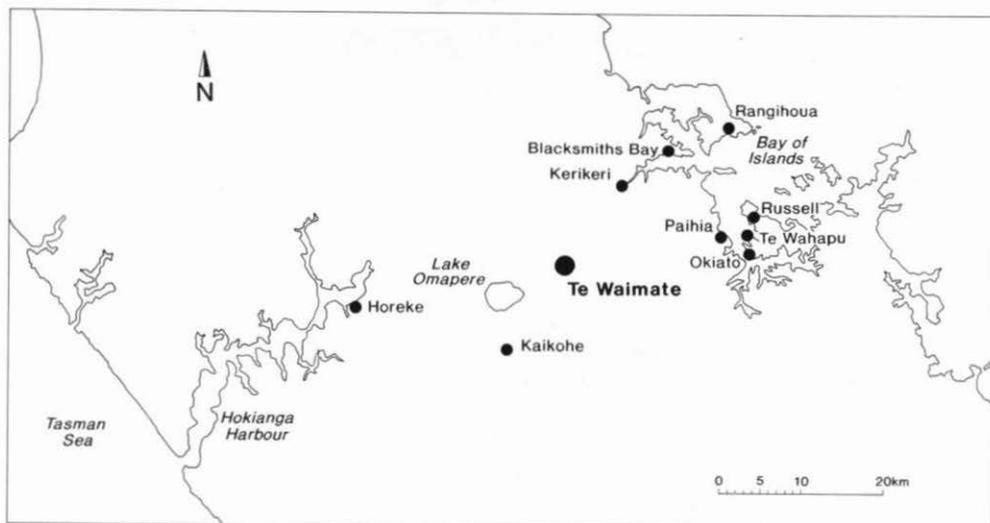


Figure 1: The location of Te Waimate (Waimate North), Bay of Islands, North Island, New Zealand.

This description was of Rangihoua, the first Church Missionary Society station. (See Fig. 1 for settlement locations.) Within a week of the missionaries' arrival there in December 1814, the decision was taken to erect a blacksmith's shop (Elder 1932: 94). At the second station, established at Kerikeri in 1819, a blacksmith's shop 6.4 x 4.6 m, raupo thatched and unlined, was the first building in the settlement and stood until the late 1830s. In 1832 a new blacksmith's shop was built behind the Mission House (now the Kemp House). It survived until the mid-twentieth century (Easdale 1991: 28, 117, 132). The third Church Missionary Society station, at Paihia from 1823, also had a blacksmith's shop. In it the ironwork was forged for the mission vessel, the *Herald*, built in 1824–26 (Clarke 1947: 15).

Blacksmithing was quickly established as a component of commercial ship maintenance and repair in the Bay of Islands. There was a forge at Kororareka (Russell) in 1827 (Dillon 1829: 192), and blacksmiths operated at various ship servicing establishments nearby in the 1830s, notably at Te Wahapu (Adams 1987: 10), and at Okiato where a blacksmith's shop 12 x 7 m was recorded in 1840 (Ross 1946: 38). The familiar English pattern of a blacksmith's shop in almost every settlement came to be repeated in the early European occupation of the Bay of Islands. The impact of blacksmithing on the Maori at Kororareka was described by Augustus Earle:

Here the smith has erected his forge, and his sooty mansion is crowded by curious natives, who voluntarily perform the hardest and most dirty work, and consider themselves fully recompensed by a sight of his mysterious labours, every portion of which fills them with astonishment (Earle 1909: 48).

The first inland station of the Church Missionary Society, established at Te Waimate (later known as Waimate North) in 1830, required a wide variety of equipment and fittings (Harris 1984: 54–62; for general description of the station see also Standish 1962). Although much was imported, it was boasted that “all the blacksmith-work necessary in a farming establishment, for carts, waggons, drays, ploughs, harrows”, was carried out at the settlement (Yate 1835: 198). Those involved in the mission blacksmithing included George Clarke (at Te Waimate 1830–40), Richard Davis (1830–45), James Preece (1831–33), William Puckey (1832–33), George Hull (1833–35), and John Bedggood (from 1836). A blacksmith's shop and a stable (one building 12 x 5.2 m) was built in 1832, and a new blacksmith's shop in 1840. The sites of these buildings have not yet been relocated. After 1836, John Bedggood built his own house, blacksmith's shop and wheelwright's shop at the eastern end of the settlement adjacent to a stream. These are marked on a plan of Te Waimate dated 1843 and illustrated in a sketch dated 1844 (Cotton 1841–48; plan reproduced here, Fig. 2; sketch reproduced here, Fig. 3). The blacksmith's shop is seen to have been a simple rectangular building with a gabled roof, and possibly with vertical exterior timber cladding and a door in the east end (site number P5/606).

THE BEDGGOOD BUILDINGS

John Bedggood separated from the Church Missionary Society in 1841, and commenced business on his own account (Burnett 1983: 20–21). He continued to occupy his first set of buildings until 1845 when, during the War in the North, while British troops occupied the mission station, the house was accidentally destroyed by fire. Soon after this, he moved his operations 250 m to the west to a new site adjacent to the road, where there had previously been Maori houses. (For relative locations, see Figs 2 and 4.) A house, a wheelwright's shop and a blacksmith's shop were again built. These three later came to be known as the Bedggood Buildings (site number P5/515). It is likely that structural materials and equipment from Bedggood's first workshops were re-used on the new site.

The house on the Bedggood Buildings property was a two-storeyed weatherboard structure with a shingled gabled roof, a veranda on the north front and a shed to the rear (New Zealand Historic Places Trust 1986: photographs). The wheelwright's shop (6.4 x 4.6 m) was vertically sheathed with a variety of timbers. It had a small lean-to on the south-west side (2 x 1.5 m). The blacksmith's shop (7.6 x 4.6 m) was a similar rectangular gabled structure. For approaching 100 years, members of the Bedggood family practised general engineering, carpentry and vehicle and machinery manufacture and repair in the workshops.

The New Zealand Historic Places Trust acquired the Bedggood Buildings property in 1977, because of the antiquity of the buildings and their significance as remnants of early rural industry. Their proximity and relatedness to Te Waimate Mission House (location (b), Fig. 2), already owned by the Trust, was an added factor. The Bedggood Buildings had fallen into serious disrepair over the 50 years prior to New Zealand Historic Places Trust acquisition. Part of the house survived as a ruin, but the wheelwright's shop collapsed some time after 1966. The blacksmith's shop collapsed in 1979. In 1983 the positions of its corners were marked with pegs, and surviving structural materials were taken into storage.

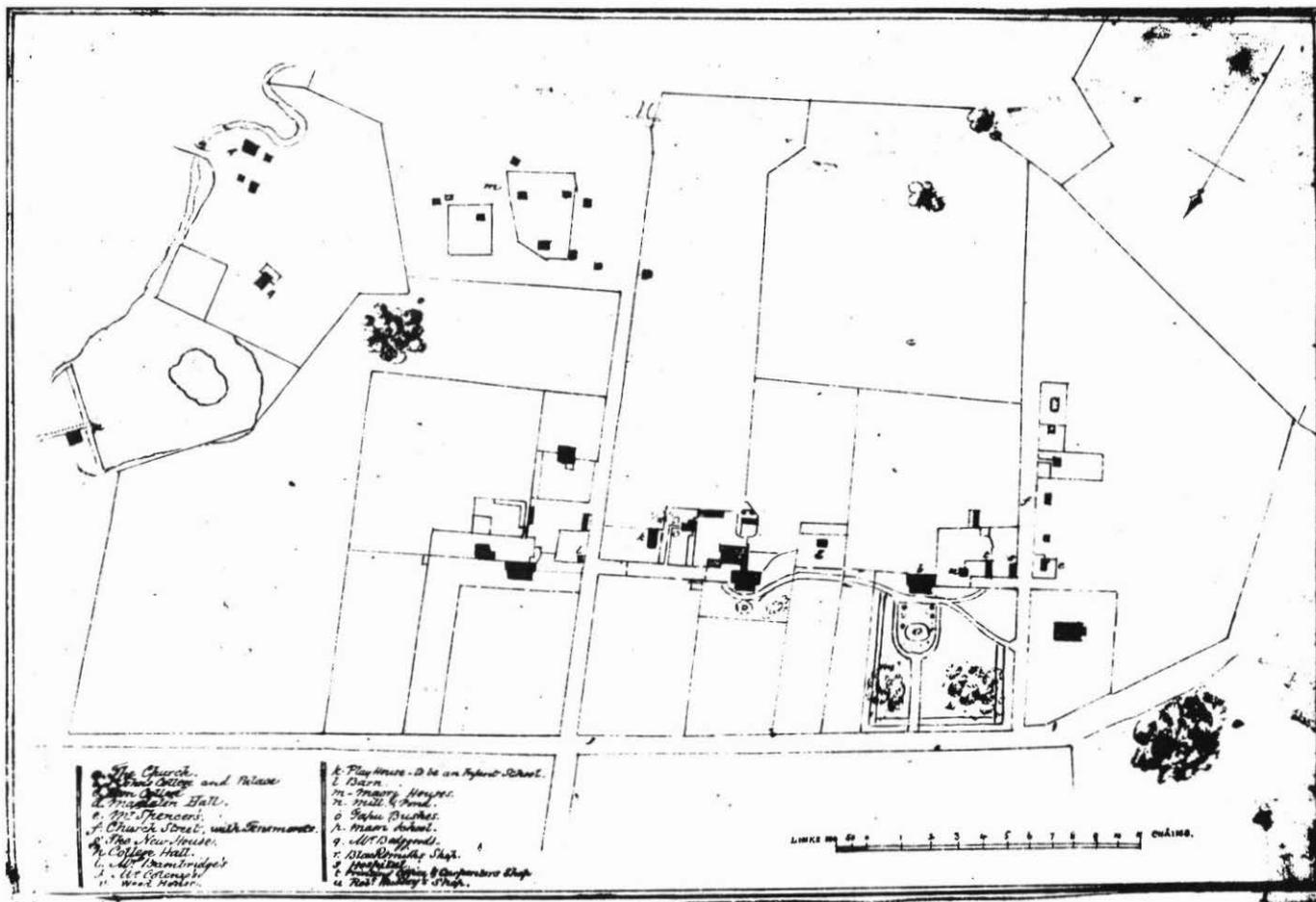


Figure 2: A plan of Te Waimate, 1843, by W. Bambridge, from the Journal of the Rev. W. C. Cotton (Cotton 1841–48: vol. IV f.106B, D.L. ref. MS 36). Reproduced with the permission of the Dixon Library, State Library of New South Wales. Note 'Mr Bedggood's' house (q), 'Blacksmith's Shop' (r), and 'Maori Houses' (m).

THE BLACKSMITH'S SHOP

Rebuilding of the blacksmith's shop was undertaken in 1986 as a project to commemorate the 150th anniversary of the arrival of John and Eliza Bedggood in New Zealand. Archaeological excavations were carried out on the site in January 1986, to provide information to assist accurate rebuilding, and to record evidence which would be destroyed in the rebuilding process. The rebuilding of the blacksmith's shop, on its original site and as far as possible using original materials, was justifiable for a range of reasons: generally to replace a significant recently-lost feature of the historic landscape of Te Waimate, more specifically to re-use the surviving split totara wall cladding for public appreciation of a historic rural architectural form, and also to protect the hearth and floor area of the shop from the weather. In the absence of project funding, the rebuilding was made possible by the provision of professional building skills and labour by members of the Bedggood family, and by the free availability of kauri shingles and large dimension totara timber, already held in storage by the New Zealand Historic Places Trust.



Figure 3: Ink sketch, 'Waimate Stag Hunt', 1844, by T. B. Hutton, from the Journal of the Rev. W. C. Cotton (Cotton 1841-48: vol. VII f.64A, D.L. ref. MS 39). Reproduced with the permission of the Dixson Library, State Library of New South Wales. In comparison with Figure 2, note 'Wheelwright's shop and forge' to the left, 'Bedggood's dwelling house' to the right, and Maori houses to the rear.

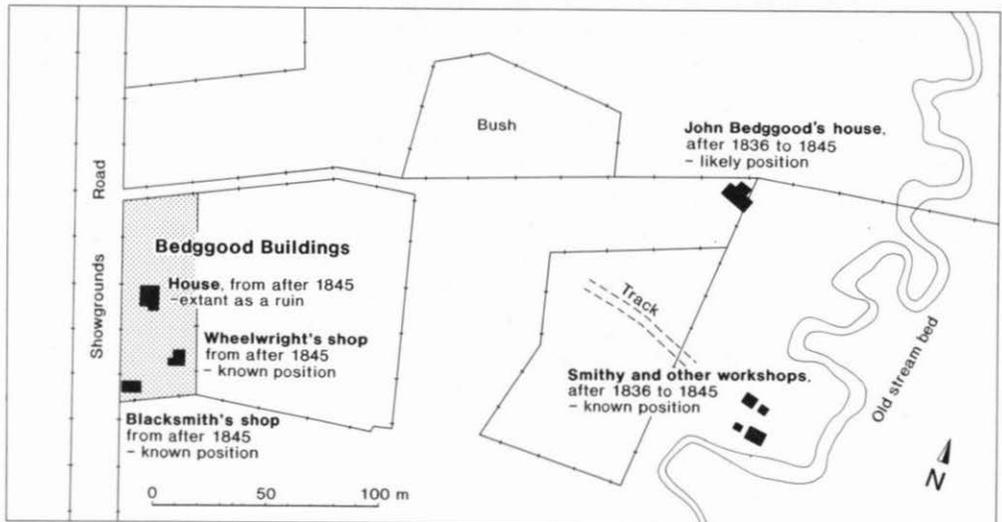


Figure 4: The residences and workshops of John Bedggood, Te Waimate. The Bedggood Buildings property acquired by the New Zealand Historic Places Trust in 1977 is shaded.

It was decided that the reconstruction should have minimum impact on the archaeological site. Accordingly, the expedient of continuous concrete foundations along the outside walls, hitherto common in restoration projects nationwide (for example, at Te Waimate Mission House), was avoided. A structure based on major foundation posts was decided upon, partly because the original structure was so designed, and partly to minimise archaeological disturbance. Excavation was therefore limited to the holes necessary for the new posts, which were to be placed in concrete foundations 450 x 450 mm in plan. There was no intention of recreating a functioning smithy or establishing a display inside the reconstructed building. It was considered to constitute an inadequate temperature and humidity regime and an insufficiently safe environment for the curation and display of historic artefact material. (The historic anvil illustrated in Figure 7 had earlier gone missing from the site, and had been retrieved for the New Zealand Historic Places Trust only with some difficulty.) It was therefore not necessary to clear the floor area, so full prior archaeological excavation was not undertaken, and the majority of the site was left undisturbed.

Many details of the construction of the blacksmith's shop are apparent in a photograph of the building taken in about 1910 (see Fig. 10) and in others taken in the 1950s and 1960s (Te Waimate Mission House collection, New Zealand Historic Places Trust collection at Antrim House, Wellington, and Mr Fenwick Barrett's collection; see Fig. 5). Further information has been derived from inspection of the collapsed and surviving fabric since 1983. The building was rectangular, and should have been supported by a series of major posts sunk into the ground. The wall cladding was of massive split totara slabs 100 to 300 mm wide and 2.0 to 2.2 m long, which were nailed to a top plate. There were doorways in the north and west sides. A bench was situated beneath a window in the north wall. South

of the bench was a substantial post for a drill press. The gabled roof had a rise of 2.0 m and was originally of large shingles.

The form of the hearth and chimney, located towards the south side, is clearly evident in a photograph taken in 1966 (Fig. 5). The stone hearth survives but the brick chimney, which originally stood to a height of about 4.8 m, had been demolished before 1977. The fragments of hand-made bricks which remain are commonly 210 x 100 x 60 mm and orange in colour, frequently with a single 60 x 30 mm centrally-impressed diamond shape or frog, or rarely with thumb prints in diagonally opposite corners. The hearth stones are of light blue-grey partially vesiculated basaltic rock, thought to be of local origin. Brick and iron structures are visible in the hearth surface but have not been investigated. The tuyère hole approached from the west end. The bellows, seen in Figure 5, have unfortunately not survived.

The blacksmith's shop is sited on a gentle slope downwards from north to south. There is build-up of material against the outside of the north wall (60 to 100 mm) except approaching the doorway, and build-up in the interior, particularly on the south side. Abutting the western end of the south wall on the exterior is a terrace approximately 3 m square (see Fig. 6), built out over the natural downward slope. Its proximity to the building and its orientation suggest that this terrace provided the levelled floor of a lean-to. Practical handling of long pieces of iron on the hearth would have necessitated some such arrangement, as uninterrupted cladding of the south wall abutting the hearth would have created an obstruction and would have been vulnerable to fire. It is therefore assumed that there would have been a lean-to extending southwards over the terrace during the smithy operation, but there is no local memory or above-ground structural remnant of it. The lean-to may have been removed and the western part of the south wall cladded in at a stage when the hearth was no longer used. There is evidence that the vertical cladding of this section was of different character from the remainder, probably a sawn finish (Stacpoole 1966).

THE EXCAVATIONS

Square excavations, initially 450 x 450 mm, were dug in the structural post positions measured from the collapsed building (Fig. 6): at the four pegged corner positions (A-D) and at the places measured for four door posts (E-H), two window posts (I-J), and two additional posts (K-L). In all positions, unequivocal evidence of former posts was encountered. The excavation squares were extended where necessary to centre upon the relevant structural posts, as it was intended that the new posts on the wall lines should be erected in concrete in exactly the original positions.

Stratigraphy on the wall lines generally consisted of a top layer of about 100 mm of loose debris and turf, with fragments of fallen bricks from the chimney, very corroded waste and scrap iron fragments, coal, slag, scale and ash. Beneath this was a 300 to 400 mm layer of soil containing a small amount of fragmentary ash, coal, slag and scale. There were occasional lenses of denser coal or ash (north section of square B; north section of square C; south, east and west sections of square D). Except in two cases (posts 26 and 27), posthole fills were relatively clean, and were not composed of shop floor debris. (The fill around post 26 was too small in extent to show on Figure 6.)

Some samples from excavated post remains were submitted for professional identification to confirm on-site identifications and to indicate the range of timbers used. Results of



Figure 5: Photograph of the interior of the blacksmith's shop, Bedgood Buildings, Te Waimate, 1966 (Fenwick Barrett's collection: F. Barrett, Court House Lane, Waimate North).

identifications are noted in Table 1. Puriri and totara were dominant and kauri was also used. These materials would have been readily available in the locality.

The two southern corner posts (3 and 4) were present, sawn off at ground level. Fragments of the two northern corner posts (1 and 2) remained in their holes. These four posts were of variable dimensions but similar initial strength. A piece of iron which may have been part of a ploughshare was found at the bottom of the packing of post 3. The building measured approximately 7.6 x 4.6 m. The corner angles were not quite square. In 1983, when the collapsed structure was removed from the site, some posts still standing securely had been sawn off at ground level (e.g., corner posts 3 and 4).

Of the posts for the western door, the southern (5) had completely disintegrated and was encountered as a void space, and the northern (6) remained below ground. The base of the southern post (5) was inclined to the south, and gudgeon fragments and strap-hinge nails were recovered around it, indicating that the door had been hinged on the south side. The north door appeared to have been hinged on the west post (7), which remained below ground level. Corroded iron fragments thought to be two used ploughshares and two pieces of a broken hafted iron tool, possibly a slasher, were present in the packing. The east post (8) was slighter and shallower, had rotted away and was seen as a stain. Abutting to the east of it was a post (15) remaining 450 mm above the surface, roughly adzed, presumably

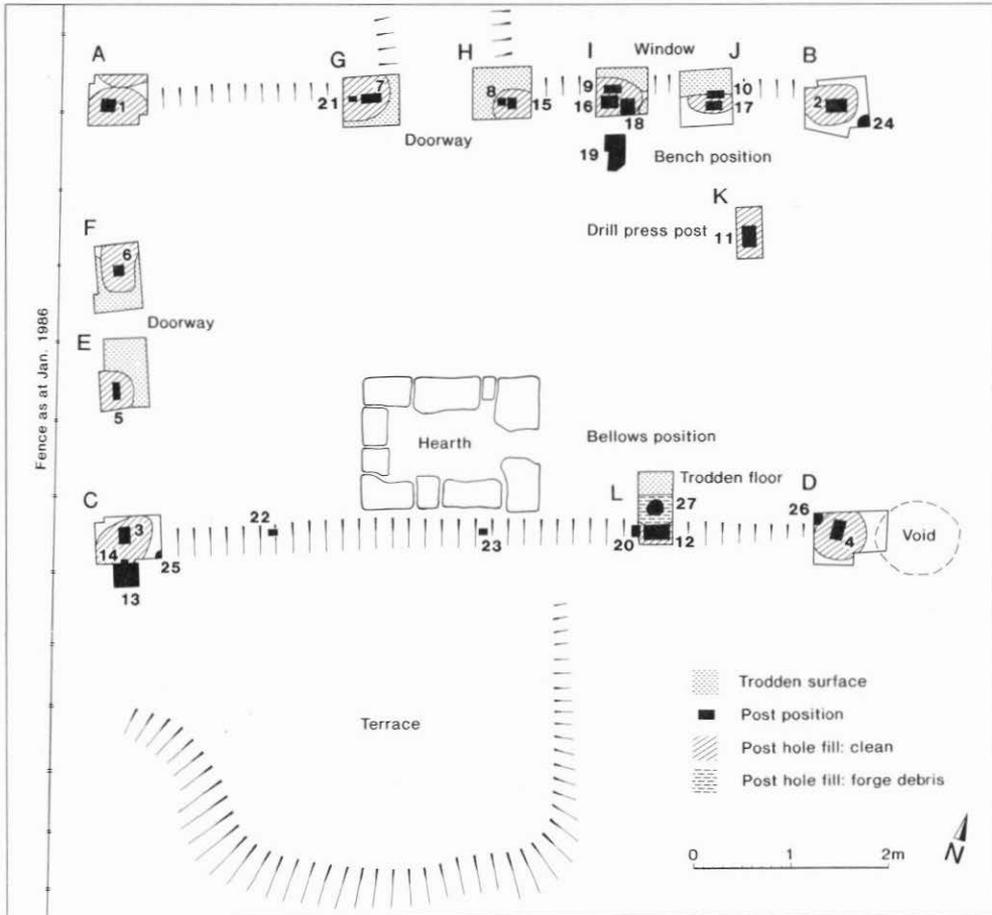


Figure 6: The blacksmith's shop, Bedggood Buildings, Te Waimate. Plan of excavations, 11–14 January 1986.

placed as a support after its neighbour had rotted at ground level. Trodden doorway floors, of packed earth, stones, slag, scale and small scrap iron fragments, lay 50 to 70 mm below the surface between the posts of both doors.

The western window post (9), like the door post immediately to the west (8), had rotted away and was abuted by a support post still protruding 440 mm high (16). The eastern window post (10), of which fragments remained in the hole, had been replaced by another (17), set very shallow, of which nothing remained. Outside the window, a trampled litter of waste materials including many very corroded discarded iron offcuts and scrap, presumably thrown out of the window or discarded against the wall while the building was in use, had partly covered the location of the earlier eastern post (10). The door and window posts on both the north and the west walls were not in precise line between the corner posts.

A heavy structural post (12), surviving below ground, was located on the south wall, at a safe distance from the hearth. The discovery of remains of smaller posts on the wall lines (20 and 21, the latter with small iron fragments in the packing) suggested to the excavator that there could be many more. Subsequent close examination of nail marks on the surviving top plates of the building led to the location of two other small wall-line posts surviving in the surface of the ground on the south wall line (22, sawn off at ground level, and 23). They were not excavated. These small wall-line posts on the south wall may represent light framing for the cladding-in of a section of the south wall, after regular use of the hearth had ceased and the lean-to occupying the adjacent terrace had been removed (as discussed previously).

TABLE 1
EXCAVATED POSTS/POSTHOLES

A	B	C	D	E
1	North-west corner	150 x 150	1,200	puriri
2	North-east corner	200 x 100	1,150	
3	South-west corner	180 x 130	900	totara
4	South-east corner	200 x 120	900	totara
5	West door, south post	150 x 65	750	
6	West door, north post	110 x 100	750	puriri
7	North door, west post	190 x 110	850	puriri
8	North door, east post	70 x 60	600	
9	Window, west post	130 x 80	500	
10	Window, east post, earlier	130 x 50	600	kauri
11	Drill press post	245 x 180	900	totara
12	South wall post	240 x 150	800	puriri
13	South-west corner fence post	230 x 200	1,000	
14	Small post abutting 13	60 x 40	400	
15	Support for east post, north door (8)	110 x 65	360	
16	Support for west post of window (9)	170 x 150	370	
17	Window, east post, later	160 x 100	80	
18	Bench support, north-west	160 x 110	460	totara
20	Wall line, south	120 x ?	330	
21	Wall line, north	65 x 35	530	totara
27	Bellows support, south	150 x 150	700	kauri

Posts 19, 22, and 23: unexcavated.

Posts 24, 25, and 26: holes only; partially excavated.

A = Post/posthole number

B = Location

C = Cross-section dimensions of post in mm

D = Base depth below surface in mm

E = Timber where present and identified

In the interior, supports for the western end of the bench (18 and 19) remained standing. The drill-press post (11) was located, surviving below ground level. A post (27) thought because of its position to have been one of two supports for massive horizontally mounted bellows (seen in Fig. 5) was located east of the forge, close to the large south wall post (12). Its hole (27) had a black fill with coal, ash, scale, slag and iron fragments, as if the hole had been repeatedly dug in the floor of a working shop and the successive posts packed with floor debris. This contrasted with the fill of other postholes excavated, which was relatively clean (with the exception of posthole 26). Adjacent to the bellows support post, the heavily trodden floor of the shop was encountered: a compacted 100 mm layer of ash, coal, scale, slag and iron fragments 100 mm beneath the surface. Posthole 26, in the north-west section of square D, contained coal fragments in the fill, and appeared to post-date the adjacent corner post (4). It may have been associated with workshop benches, shelving or other structures along the east wall.

Two features outside the wall line at the western end of the building appear to remain from strainer posts of a north-south fence in line with the building's western side: first, the massive post 13 on the south side of square C, rotted off below ground level, its base inclined to the north from taking the strain of wire; and second, the margin of a hole and chocking for a large post, thought to be later than the corner post 1, encountered in the north side of square A. (The chocking was of heavy iron items and tin cans and was left in position.) This post and wire fence is apparent in the photograph of c. 1910 (Fig. 10).

In square D, on the southern side, were the remains of a coal heap. The location of this coal heap, at the external south-east corner of the building at the greatest distance from an existing doorway, is considered the most unlikely position for coal storage, unless there were other doorways when the hearth was in use. The possibility that there was a doorway in a lean-to on the south side is supported by the evidence of this coal heap. The eastern section of square D cut into an open void 330 mm below the surface and 300 mm deep containing decomposing fragments of neatly squared 50 x 50 mm timber, thought to remain from a stack of timber materials.

Two postholes (24 and 25) with clean loose fill, beyond the wall line in the corners of squares B and C, appeared different from others encountered during the excavations. Postholes associated with the blacksmith's shop were found to be irregularly dug oval holes about 600 mm across, within which posts had been placed; earth had then been rammed around the posts, so that the posthole packings and the post remnants or the post positions were all clearly and separately identifiable by excavation. However, postholes 24 and 25 were encountered as the positions of completely decayed posts only, without identifiable wider dug holes or packings, indicating that the postholes were of different origin and may have been of greater antiquity. It is suggested that they are unrelated to the smithy and that they indicate earlier structures on the site, possibly Maori houses (location (m) on Fig. 2; seen in the background on Fig. 3).

The comparatively clean posthole fillings of the corner (1-4), door (5-8), window (9-10), south wall (12) and drill-press (11) posts of the blacksmith's shop suggest that these posts remain from the structure as erected after 1845 by John Bedgood. Post fragments remained in all these holes, excepting 5, 8, and 9. A variety of timber was used. Remnants of iron in the packings of posts 3 and 7 indicate that small quantities of scrap machinery were available at the time of construction, consistent with there having been over a decade of agricultural endeavour in the vicinity. The building was not quite square, suggesting unconcern with finer detail during construction. The north wall was longer than the south, and the west wall longer than the east. The door and window posts were not in line between

the corners. However, the depth and dimensions of the main posts indicate that the structure was initially strong.

Although puriri posts provide outstanding durability in the ground, like the less resistant totara and kauri they eventually rot. It appears from the remains of the posts that in most cases serious deterioration had occurred. In three situations, rotted posts had been replaced or supported by new ones placed more shallowly beside them (8 with 15, 9 with 16, 10 with 17). Apart from this, any repairs to the building appear from the evidence available to have been above ground. The building is likely to have subsided gently and differentially as various of its main posts rotted in the ground, so that the totara slab wall cladding sank sufficiently to carry much of the structural load.

Several structural issues are raised by these excavations and remain unresolved: additional wall line and interior structures, the nature of any structure built on the terrace to the south, and the presence and nature of pre-smithy, possibly pre-European structures. The majority of the site, remaining undisturbed, is accessible for future investigations of these and other problems.

ARTEFACTS

No items of blacksmithing equipment or artefacts other than pieces of brick and highly corroded iron fragments, scrap and offcuts were recovered from the excavations. However, an anvil stood in the blacksmith's shop prior to acquisition by the Historic Places Trust (partly visible on the bottom margin of Fig. 5; see also Fig. 7). This anvil is part of the Bedgood Museum Collection (Stacpoole 1971: 29), now accessioned in the collection at Te Waimate Mission House. It is said to have been previously associated with the Kerikeri Church Missionary Society (Barrett and Lee 1976: item 67). The form of the anvil is consistent with a mission period origin. It is a large example (423 lb, 192 kg) of London type without a maker's mark. Handling holes are present at both ends of the waist and in the base. The feet have been grooved by heavy attachment to a timber post when in use. The table and face are much used, but have not been abused, and show some concavity and well-rounded edges. There appears to be a deliberately manufactured pig's snout at the end of the horn. (For terminology, see Bealer 1984: 66-67.)

The Bedgood Museum Collection at Te Waimate Mission House contains a very significant range of machinery and tools, many dating from the mission period (Fitzgerald 1984), including flour milling machinery, a large turner's lathe with its 'great wheel' (hand-cranked driving wheel), implements for textile manufacture, and various blacksmithing tools. Production of a fully illustrated guide catalogue is warranted. Meanwhile, some of the hand-forged blacksmithing tools merit discussion in the context of this paper, being indicative of early nineteenth century technology in the Bay of Islands. A large single-cut file or 'float' (Fig. 8B) bears four broad arrows on each side. This is said to be a War Office mark, so the file could have been Napoleonic War surplus purchased by the Church Missionary Society, or could have been left behind by British troops at Te Waimate in 1845 (Fitzgerald 1984: 3). Also marked with arrows are blacksmith's tongs (Fig. 9B) said to have come from Blacksmiths Bay, Kerikeri Inlet, where armourers from the brig of war HMS *Osprey* set up a forge to repair the ship's ironwork in 1845 (Barrett and Lee 1976: item 71; Foster 1982: 56; site number P5/615).

Two other blacksmithing tools in the Bedgood Museum Collection at Te Waimate Mission House are listed as being of Church Missionary Society connection (Barrett and Lee

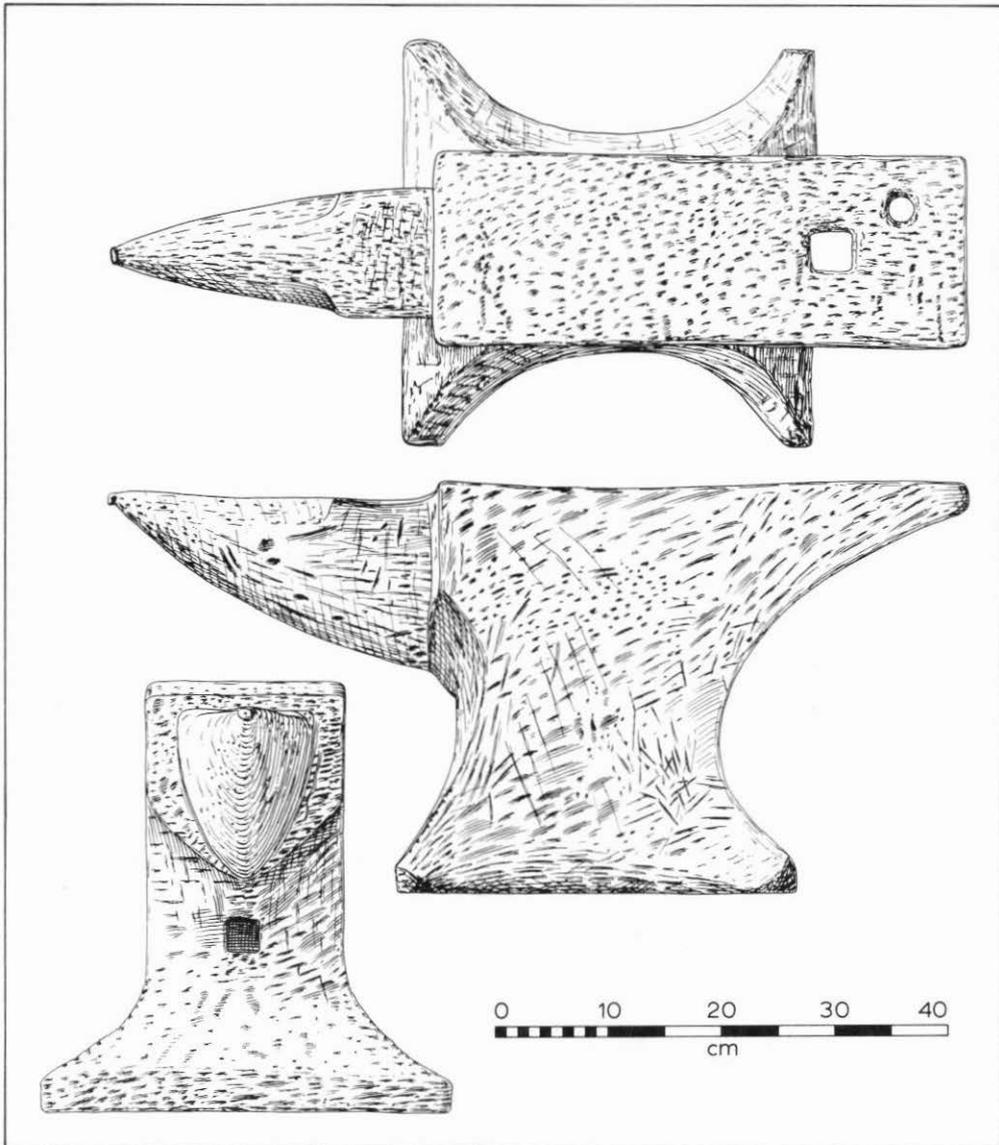


Figure 7: Anvil. XWM 982. For Figures 7, 8 and 9, XWM denotes an accession number at Te Waimate Mission House, XSS at the Stone Store, Kerikeri, and C98A (Figure 9C) at the Conservation Laboratory, Department of Anthropology, University of Auckland. All artefacts are owned by the New Zealand Historic Places Trust.

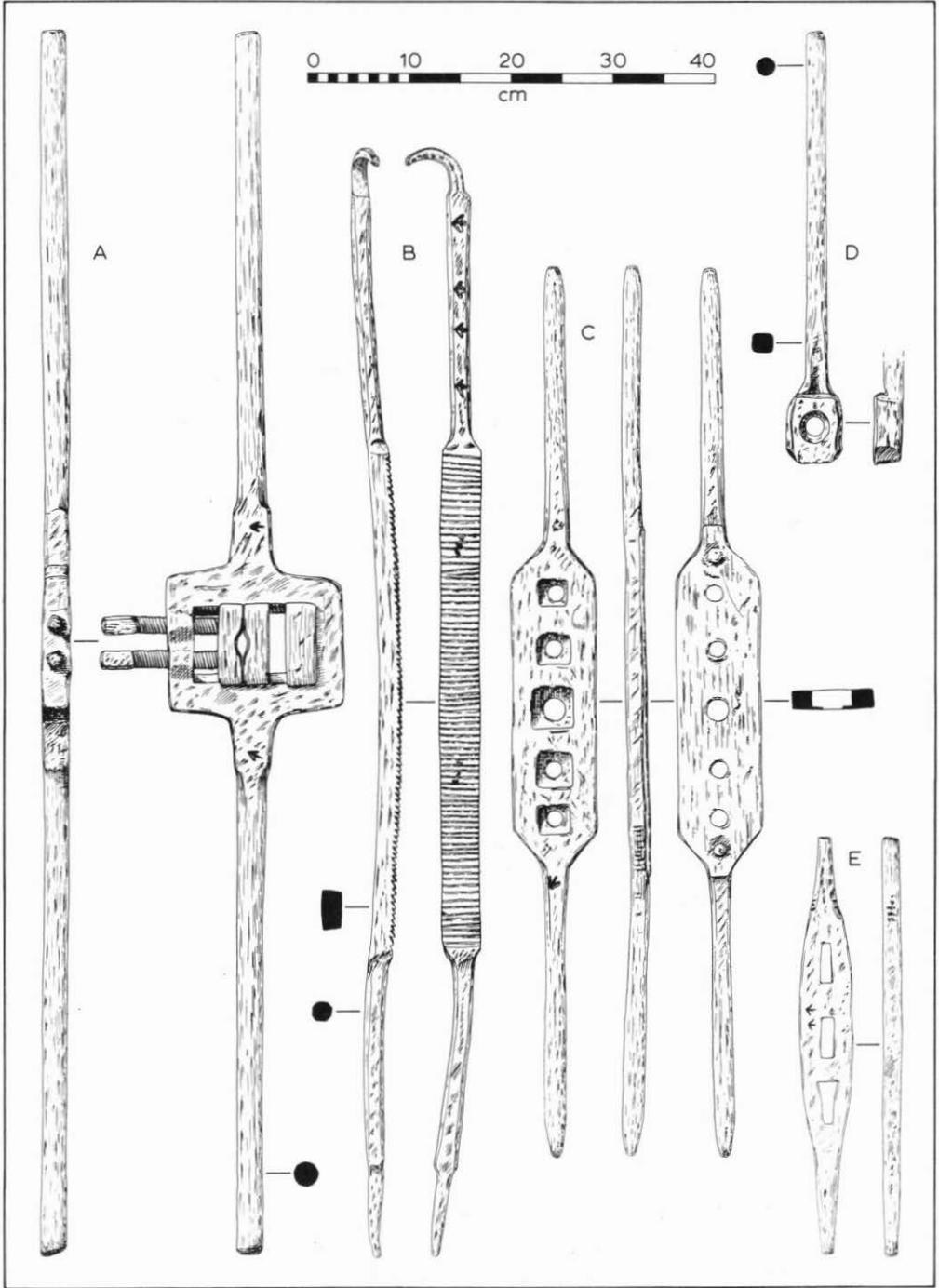


Figure 8: Blacksmithing tools. A, Die-stock, XSS 120; B, File, XWM 972; C, Bolt-header, XSS 402; D, Bolt-header, XWM 936; E, Bar-twister, XSS 403.

1976: items 73 and 62): a bolt header (Fig. 8D) and a large drilling brace (Fig. 9A). The brace is designed for use in a beam drill or press, with pressure being applied by a lever attached to an upright post. Post 11 of the Bedgood Buildings blacksmith's shop (Fig. 6) was used in this way (cf. Bealer 1984: 103).

In the Historic Places Trust's collection at the Stone Store, Kerikeri, are further blacksmithing tools marked with arrows, which may have missionary connections. These include a bolt header (Fig. 8C), a die-stock used for cutting threads in bolts and screws (Fig. 8A), and a tool for twisting iron bars of various cross-sections (Fig. 8E).

In 1985, blacksmith's or household tongs were found exposed in the surface of the first Bedgood blacksmith's shop site, scuffed by cattle (Fig. 2, location (r); see also Fig. 4). These tongs (Fig. 9C) are of the round-nosed type (Bealer 1984: 85), and are thought to pre-date 1845, given that the site was abandoned at that time. The similarity of the tongs to others in the Bedgood Museum Collection at Te Waimate Mission House is striking (Fig. 9D). Their discovery demonstrates the potential of this site, and other mission-related sites in the Bay of Islands, for the archaeology of early nineteenth century technology in New Zealand.

COMPARATIVE ARCHAEOLOGY

Fifteen other small-scale blacksmiths' shops or forges have been recorded in the New Zealand Archaeological Association site recording scheme. Of these 15, 5 appear to be rural smithies but there is no structural information in the files (T22/4, Mangaweka; Q7/902, Whangarei, associated with Gilbert Mair; and I44/94-96, Otago Peninsula). Another is a corrugated iron building at Millers Flat, Clutha Valley (G44/28). To these examples can be added a variety of standing blacksmiths' shops throughout New Zealand (not recorded in the site recording scheme) dating from the 1860s to 1880s, in masonry, timber weatherboards or corrugated iron, located on early farm stations where isolation necessitated self-sufficiency in machinery repair and farriery (Thornton 1986: 207-210).

The other archaeologically recorded small-scale forges in the site record files are associated with gold mining: one in the Kaimai-Mamaku Forest Park (T13/295) and others in Central Otago (F41/103, 354, 389, 409; G41/187, 254, 355; G42/74). The Otago forge sites are characteristically partly enclosed shelters or rectangular huts of stacked schist construction. Hut sizes range from 3 x 3.5 to 6 x 4 m, with fireboxes 0.5 to 1.5 m across, located either in a corner or along one wall. Two sites have been excavated: Kawarau Mining Forge (F41/409; Bedford 1982), a stone walled building with timber roof framing, where a portable forge was used in the 1930s, and The Rapids (F41/103; Ritchie 1986: 131) where an unroofed forge was associated with a probably canvas-clad hut dated after 1870. Forges were evidently common on the goldfields and were an important component of the mining industry generally. As on isolated farms, it was more convenient to establish a cottage operation or to employ a smith than to take the work to an established business in town (Ritchie 1988).

The recorded New Zealand evidence of blacksmiths' shops provides no detail readily comparable in age with the Bedgood sites. In these respects some published evidence from Australia is of interest. At the convict settlement at Corinella, Western Port, Victoria (1826-28), a blacksmith produced and repaired a wide variety of domestic and construction hardware, tools and vehicles. A small, rectangular, thatched and possibly wattled building was superseded by a slabbed shed 14.6 x 7.3 m with a hipped shingled roof (Coutts 1983:

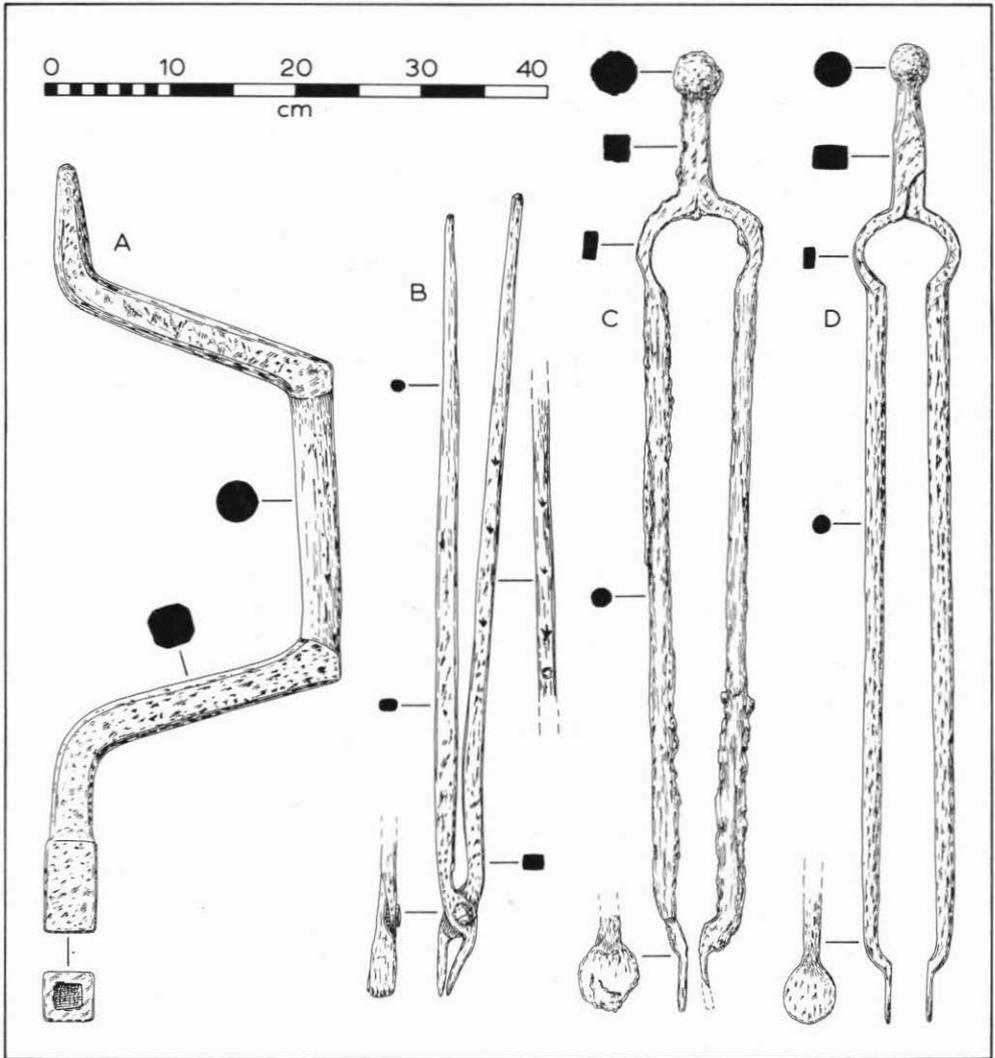


Figure 9: Blacksmithing tools. A, Drill brace, XWM 976; B, Tongs, XWM 933; C, Tongs, C98A; D, Tongs, XWM 932.

111). The site has been located but not investigated (Coultts 1985: 22). The slabbed shed, the general output of the blacksmith, and the context in a new settlement of up to 50 buildings, are closely comparable with the Bedgood situation. Vertical slab construction was common in early nineteenth century rural settlement in Victoria and New South Wales (e.g., out-buildings at Rouse Hill House, managed by the Historic Houses Trust of New South Wales).



Figure 10: Photograph of the blacksmith's shop, Bedgood Buildings, Te Waimate, c. 1910 (Douglas Bedgood's collection: D. O. Bedgood, P.O. Box 82, Paihia).



Figure 11: Photograph of the blacksmith's shop as rebuilt, 1991 (Aidan Challis).

Other published Australian evidence relates to more specialised industrial operations. At Port Arthur, Tasmania, evidence of a shipyard smithy which operated from 1841 has been investigated beneath a later dockyard cottage named Lithend (McGowan 1985). A rectangular fireplace of sandstone rocks lay towards one end of a rectangular stone building 9.2 x 7.7 m. Activity included copper and bronze working, a brass foundry, and a wide range of ironwork manufacture related to ship and boat building. A foundry constructed some time after 1846 by Royal Marines at the military outpost of Victoria, Port Essington, Northern Territory, was a rectangular building 6.5 x 4.5 m of dressed masonry and bricks (Allen 1967). The output including specialised castings. At the North British Mine, Maldon, Victoria, where gold was mined for 70 years until the 1920s, the remains of a blacksmith's shop have been partly cleared (Davey 1986). The stone building was located close to the quartz mine shaft for ready repair of items such as drill steels. Although not closely comparable with the Bedgood site, these examples emphasise the range, archaeological potential and historic significance of nineteenth century forge sites.

CONCLUDING DISCUSSION

The Bedgood Buildings blacksmith's shop is a type of site rarely recorded or investigated in New Zealand: a general rural smithy relating to European farming settlement from 1845 onwards. John Bedgood's first blacksmith's shop 250 m to the east is the only positively located example of the three Church Missionary Society blacksmiths' shops documented at Te Waimate. Their precursors on Church Missionary Society settlements at Rangihoua and Paihia have not been relocated, and those at Kerikeri may not have survived. It is suggested that both the Bedgood sites are of outstanding potential importance in the archaeology of nineteenth century New Zealand technology, in addition to their significance in the history of the locality and the Bedgood family. They merit vigilant protection and, in due course, more detailed investigation. The same approach would be appropriate for any of the other early missionary and commercial blacksmithing sites in the Bay of Islands, if they are found to survive.

The results of the limited excavations described in this paper were predictable in that, through careful preparation and good fortune, structural posts were discovered where they were sought. Major posts separate from the rectangular plan of the building can be securely interpreted as internal structures (11 drill press; 18-19 bench supports; 27 bellows support) and an external fence (13, and the posthole cut by the north section of square A). Under these circumstances, the skeptic might question whether this type of excavation prior to building reconstruction need be undertaken, given that answers to major structural questions were known beforehand from photographs and surviving fabric. In principle, it is insisted that restoration or reconstruction activity on archaeological sites must be preceded by archaeological excavation, for two reasons: first, to recover evidence to be destroyed or rendered inaccessible by the activity; and second, to provide data essential to decisions about the restoration or reconstruction. In this case, both objectives were met. The archaeological account of aspects of the structure, presented here, is more detailed and informative than could have been imagined on the basis of collapsed above-ground evidence, despite the limited extent of the investigations.

In the event, however, the rebuilding did not follow the evidence of the original in all respects. Although precise post positions were determined, so that the building could be reconstructed authentically skewed, the members of the Bedgood family who voluntarily

undertook the rebuilding constructed the new frame with precision, symmetrical and straight in line and level, in continuity with the Bedggood tradition of excellent trade skills. The original shingles were 2½ times the size of those available to be used in the reconstruction and presented a very different appearance (compare Figs 10 and 11). Some other details such as roof pitch and nail design and usage are not as originally built. On the other hand, the community objective relating to the Bedggood family 150th anniversary, the severe financial constraints of the project, and the intention to re-use the split totara cladding were successfully accommodated. The distinction between historic materials and new construction is appropriately apparent on close inspection (cf. ICOMOS New Zealand 1992: paragraph 17). Furthermore, the project should be given credit for avoiding archaeological disasters. The chimney was not reconstructed, so that the surviving hearth was not disturbed. No display was created in the interior, so that the majority of the archaeological site remains intact.

The Bedggood Buildings property, including the rebuilt blacksmith's shop (Fig. 11), is open to the public. It is adjacent to Showgrounds Road, Waimate North, 300 m south of the Old Store. An interpretative leaflet is available on the site (New Zealand Historic Places Trust 1986). Some of the artefacts illustrated in this paper are on public display at Te Waimate Mission House.

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