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EXCAVATION OF A MINER'S HUT (S143/226) IN THE OLD MAN RANGE

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Site S143/226 is located on a small tributary of the upper Fraser River (Fig.1) at an altitude of approximately 1480m. The site was originally recorded during a site survey in January 1992 of mining sites in the Fraser River and Campbell's Creek (Bristow 1992:23). The site consists of piles of amorphous tailings, derived from ground sluicing, that extend along both sides of the creek for 300 - 400m and associated sluice faces and water races. The bulk of the tailings occur at the southern or upstream end of the site. Three probable dwellings are also present at this end of the site. Two stone chimneys were present on the true left of the creek. On the opposite side of the creek was an area about 3.5m by 2.5m that had been dug into the toe of a gentle hill slope (Fig.2).

It was assumed that the stone chimneys, or to be more accurate chimney bases or fireplaces indicated tent sites. The dugout area similarly was initially assumed to have been excavated by miners to provide shelter for a tent. A correspondent for the *Otago Witness* (a weekly Dunedin newspaper) noted that miners at Campbell's Creek had cut out places at the foot of hills for tents (*Otago Witness* 26.9.1863:6) and John Mouat, an early miner at Gabriel's Gully, stated that cuttings were made in the hillside during the winter to prevent the tents being blown away (Pyke 1962:64).

An excavation of the dugout was carried out at this site during the 4th-5th February 1993 (New Zealand Historic Places Trust permit 1993/1).

THE EXCAVATION

An 5 x 6m excavation grid was set up over the dugout, although ultimately only the interior of the feature as defined by the walls and the area immediately outside the door way were excavated. Prior to excavation the surface of the dug out was well vegetated with tussock. Close examination of the feature revealed that the western wall, which was about 0.5m high, was neatly faced with stone. The southern third of this wall was free standing and extended approximately one metre beyond the main floor of the hut which indicated the presence of a fireplace. The north wall of the dugout had been faced with large irregular pieces of schist which had partially collapsed into the dugout. The eastern wall was about 1.5m high and was formed by the natural surface of the cut away hill slope. The southern wall was partially unfaced and partially faced with stone and was free standing where it extended around the presumed fire place. Externally the dugout is surrounded by natural slopes except in the

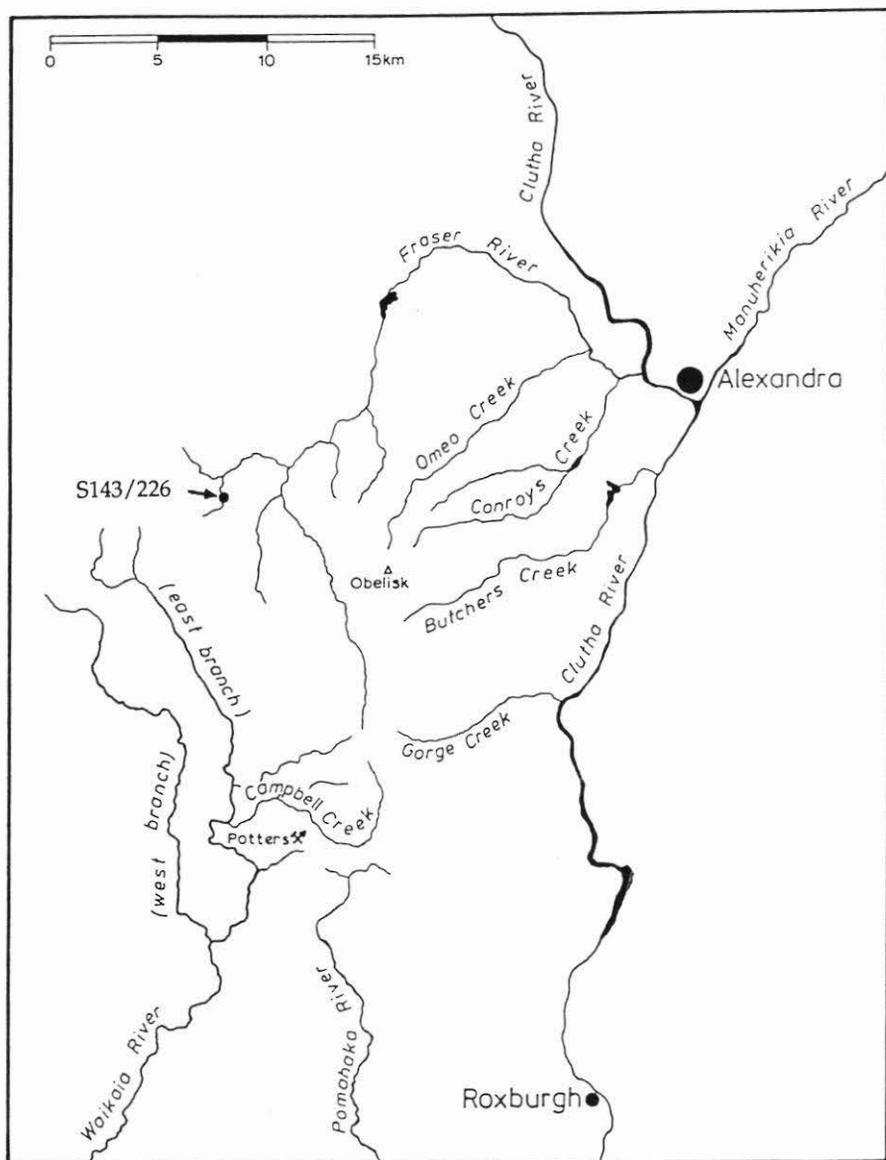


Figure 1. Site location .

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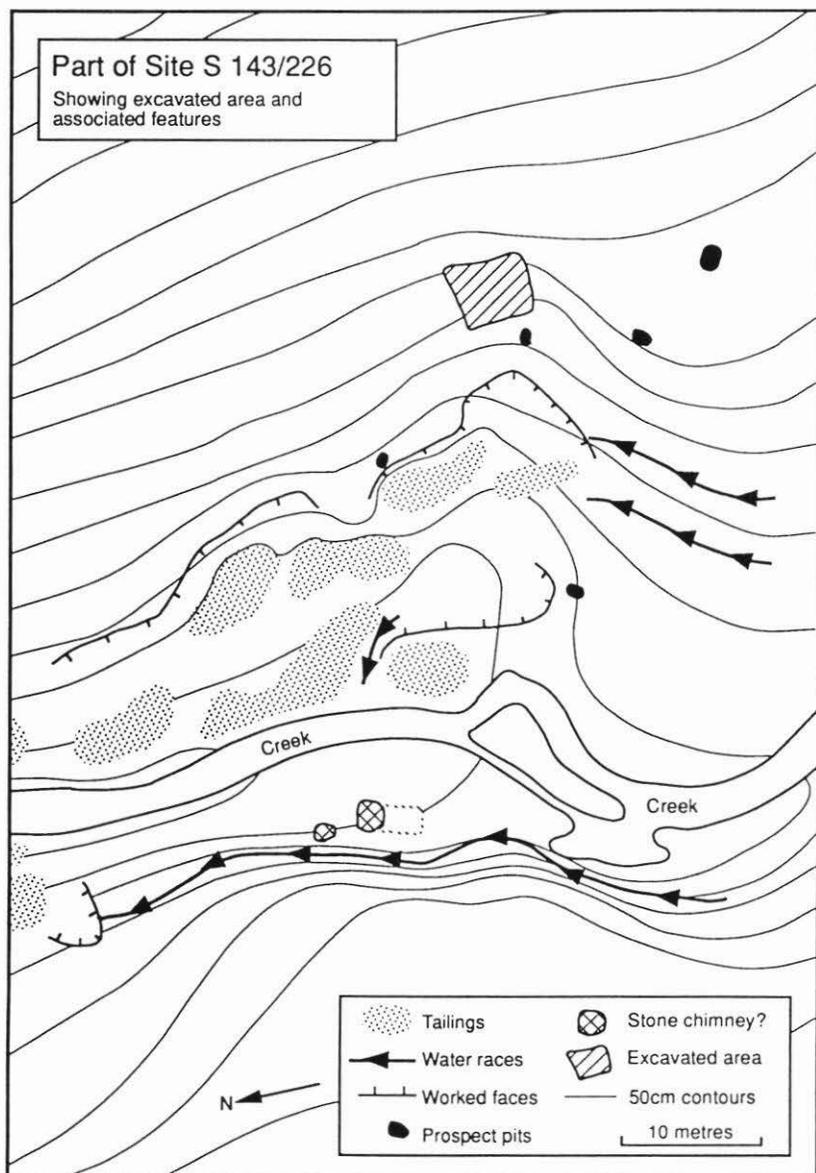


Figure 2. Part of site S143/226 showing excavated area and associated features.

south-west corner where the fireplace was situated. A half metre wide and two metre long cut extended into the natural slope immediately behind the fireplace. From this preliminary examination it was clear that this was not a simple dugout for a tent but a hut site that had been excavated into the hillside. The natural earth walls produced would lessen the need for free standing sod or stone walls which would have been less stable.

The removal of the tussock and turf layer, which varied between 5 and 20 cm in depth, revealed a floor paved with small flat schist stones at the northern end of the hut (Fig.3). This paving extended to the north under the partial wall collapse. These collapsed rocks were not removed but, based on the relative position of the northern end of the west wall, the paving probably originally extended another 30 - 40 cm. The paved area was approximately 1.5m wide and stretched across the full width of the hut floor although it was incomplete in the north-east corner. On the southern edge of the paving, in the middle of the floor, were two large flat schist slabs. These may have been laid as edging for the paving although this seems unlikely as there were only the two slabs that were definitely *in situ* (there were other slabs lying on the floor against the

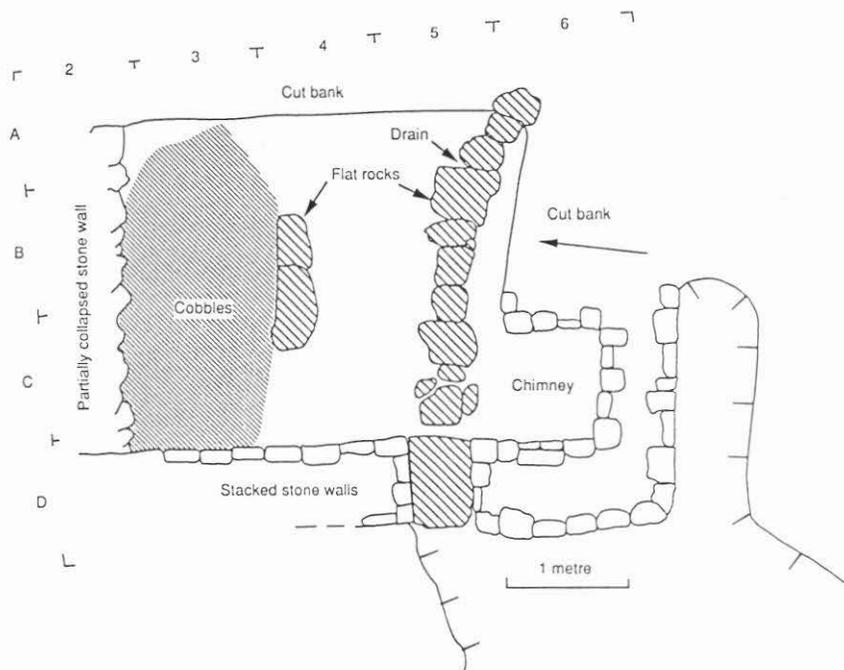


Figure 3. Plan of miner's hut.

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western wall but these all appeared to come from the wall itself). The paving is replaced by an earth floor of a pale grey silt with some fine gravel content and natural 'rust' stains over the rest of the hut. Similar stone paving or cobbling was also present in a Chinese miner's hut (S143/200) recorded in the upper Fraser river during the site survey (Bristow 1992: plate 8). The location of this paving, in both cases, opposite the fire place and at the end away from the door suggests that this may have been where the miner's bed was located. It is probable that there was only the one bed even if the hut was occupied by more than one miner. The Reverend Don, a Presbyterian minister to the Chinese miners, on one occasion slept with five Chinese miners in one bed when they were prevented by rain from leaving a meeting he had held in a hut in the head of the Fraser (Don 1892:203).

A line of schist slabs was encountered crossing the floor of the hut from the south-east corner to an area of the west wall that was partially collapsed and ultimately proved to be the doorway (Fig.3). When two of the slabs were lifted a drain was revealed. The drain was 12 - 14 cm wide and 10 - 12 cm deep with edges lined with stones to support the overlying slabs. The bottom was unlined. The floor of the doorway consisted of two large schist slabs elevated about 12 cm above the level of the floor and under which the drain passed. The removal of the turf layer immediately outside the door failed to find any trace of an exit to the drain. The drain was built, presumably, to control seepage of ground water or run off into the hut. It is unlikely that the drain would have been made at the time of hut construction as drainage problems would only become evident after completion at which point the choice of an exit was limited to the doorway.

Approximately 40 cm depth of soil filled the fireplace. Lying across this fill was a long narrow schist slab that was almost certainly the lintel stone in the fireplace. The fill was found to be loose compacted brown earth which was remarkably free of stones. This was unusual as the ground surrounding the hut contains large amounts of schist gravel. One explanation for this fill is that it is derived from a sod chimney that was built on a stacked stone base, although the source of gravel-free sods is not obvious. The removal of this fill exposed two schist slabs set on edge about 12 - 15 cm apart. Between them was an area of charcoal and ash. The removal of the stones showed that this layer was definitely contained within the two stones. Why such a small fire should have been built within a fireplace approximately a metre wide is unclear. The two stones may have been used as supports for a grate or cooking vessel, or the lack of available fuel may have enforced economical fires (see below). This layer of ash and charcoal was 5 cm thick at the rear and lensed out towards the front of the fireplace. Under this was a 4 - 5 cm thick layer of yellow brown silty clay which was derived from the mortar between the stone slabs of the fireplace. Beneath this was a second charcoal layer that was 1 - 2 cm thick that filled almost the full width of the rear half of the fireplace. The presence

of two clearly separated charcoal layers indicates two different occupations. These two occupations may represent the use of the hut over two consecutive spring/summer seasons with abandonment over one winter or a longer period.

ARTEFACTS

Few artefacts were recovered during the excavation of the hut. Three tin matchboxes were found: one on the floor of the hut under collapsed stone from the west wall, a second immediately outside the doorway and the lid of a third box in the upper layer of the fireplace. Also in the fireplace either in or immediately above the upper layer were five nails, a badly corroded iron spike and the head of a pick. The presence of the nails in the fireplace suggests that boards from wooden boxes were being burned. On the floor of the hut in square C5 a small (approximately 1cm in diameter) metal ball, cast in two pieces of copper or brass, with an eyelet or shank brazed on was found (Fig.4). This is almost certainly a traditional Chinese button used on garments of Chinese manufacture (Cameron 1985: 47 & 154, plates 3,4 & 5).



Figure 4. Chinese button. 4.5x

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The area surrounding the hut was probed in the hope of locating buried rubbish pits or midden scatter. None were located and only a broken spirit bottle and a wornout shovel were found on the surface. A similar lack of rubbish pits was also noted by Ritchie during excavations of miner's dwellings in the Clutha and Kawarau valleys (Ritchie 1986:156). Much of the artefactual material recovered during these excavations was found as scatters on the slopes below or in front of the dwellings (*ibid.*).

CHRONOLOGY

One of the aims of the excavation was to establish dates for the occupation of the site. The recovery of tin matchboxes enabled approximate dates to be determined using Anson's (1983) dating system. The matchbox found by the doorway of the hut was heavily corroded and broken into several pieces but had an embossed lid on which a bell could still be discerned. This, along with a plain base (without a recessed striking area) and an overlapping side junction at the right rear of the box, identified it as an example of Anson's type 2 (or type 1c using Bedford's (1985:46) revised typology), a Bell and Black box manufactured in London (Anson 1983:128). These have been found in other sites in New Zealand dating to the early to mid 1870s (Anson 1983:134). The matchbox from under the wall collapse was complete, although partially crushed, and less corroded than the previous example. The lid was unembossed and hinged on multiple pivots, the base had a recessed striking area, and the crimped side closure occurred on the left rear corner of the box. These features identified it as Anson's type 12 (Bedford (1985:53) type 8d), an R. Bell & Co. of London matchbox (Anson 1983:128). The matchbox lid recovered from the upper layer in the fireplace also appeared to be of this type. There are no absolute dates for the occurrence of these matchboxes in New Zealand but seriation analysis carried out by Anson combined with other archaeological information indicates that these boxes were used during the period from the late 1880s up to the turn of the century.

The evidence of the matchboxes indicates that this site was occupied in the period 1870 - 1900, either continuously or as separate occupations, one early, circa 1875, and a later occupation probably in the 1890s. The presence of two discrete layers of charcoal in the fireplace lends weight to the theory that the hut was occupied for two separate periods, at least one of which was an occupation by Chinese miners.

CONCLUSIONS

It was soon apparent that this dwelling was not a tent site but a hut that had been partially dug into the surrounding slope to make use of the resulting

earth walls. Only the chimney was freestanding. The walls appear on the basis of the archaeological evidence to have only been as high as the surrounding ground surface. The rear wall was about 1.5m high but the front or west wall was only 0.5m high. There was no evidence of this wall being supplemented by the addition of sods. This height differential between the front and rear walls along with the presence of the door in the front wall indicates that additional walling, probably of canvas or sacking carried on a light wooden frame, must have been employed to maximise the internal headroom and render the doorway functional. By digging the hut into the toe of the hill a problem with water seeping into the hut arose. This was remedied by the construction of an internal stone-lined drain.

The hut was occupied on at least two separate occasions producing two discrete layers of ash and charcoal in the fireplace. The second occupant(s) used only a small part of the fireplace perhaps due to the paucity of locally available fuel. At least one of the occupations was by Chinese miners. The Tuapeka Times noted in 1873 that a considerable number of Chinese were migrating to the head of the Earnscliffe (Fraser) River (Tuapeka Times 30.10.1873:6). This influx of Chinese miners to the general area of the site coincides approximately with the inferred date for the initial occupation of the site.

CHARCOAL ANALYSIS

Life in a treeless environment must have caused problems for the miners in the valleys along the top of the Old Man Range. The tussock covered hills provided almost nothing in the way of fuel except for the dried flower stalks of the spear grass (*Aciphylla sp.*) which would have been of very limited use. Peat deposits did exist in some areas and packers carried in supplies of kerosene (Chandler 1984:191). Several small coal mines were opened up throughout Central Otago during the 1860s and the presence of clinker in a site in the main branch of the upper Fraser River indicates that some coal (or perhaps coke) was making its way up into the range (Bristow 1992:13). But coal was heavy and both it and kerosene would have incurred packing costs in addition to the purchase price (e.g. in the 1880s packing charges were one penny per pound from Roxburgh to Campbell's Creek (Chandler 1984:191). The presence of charcoal in the fireplace of the hut indicates that wood from some source was being burnt.

Samples were taken during the excavation from the two distinct charcoal layers in the fireplace. The upper layer (layer 1), while being confined to a small part of the fireplace, contained a lot of individual charcoal pieces, primarily twigs. Layer 2, which covered a much wider area of the fire place, contained comparatively few pieces of charcoal, the bulk of the layer comprising fine

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charcoal, charcoal-stained soil and ash. One piece of partially burned, dressed timber and some fibrous material from a grass-like plant, possibly spear grass were recovered from layer 2.

It was initially assumed that the wood may have been derived from the subalpine shrublands on the lower slopes of the range as this is, currently, the closest source of wood to the site. The predominance of twig charcoal reinforced this assumption. The wood was presumably gathered during special wood cutting trips or during trips into the nearest towns (Clyde or Alexandra) for supplies. Modern samples were taken of the three main native scrub species present in the area, *Discaria toumatou* (matagouri, family *Rhamnaceae*), *Carmichaelia arborea* (South Island broom, family *Papilionaceae*) (Salmon 1989:234,206) and *Melicytus alpina* (porcupine bush, family *Violaceae* formerly *Hymenanthera alpina*) (Moore & Irwin 1978:42). A fourth sample was taken from *Dracophyllum muscoides* (family *Epacridaceae*) which is a moss-like plant that grows in open areas in the alpine zone but is actually a shrub which has adapted to conditions above the tree line and possesses a woody trunk 1-1.5cm in thickness (Mark & Adams 1973:118). This species was included as it is the only woody plant that grows in the general area of the site and the "trunk" may have provided kindling.

The comparative samples along with the excavated material was forwarded to Dr. Rod Wallace of the Auckland University Department of Anthropology for identification. Sixty pieces of charcoal were identified, 48 from layer 1 and 12 from layer 2 of the fireplace (see Table 1).

These results confirm the hypothesis that firewood was being gathered from a subalpine shrubland. However the shrubland being exploited was dominated by a *hebe* species which now appears to be absent from the area. The comparative rarity of matagouri (*Discaria toumatou*) in the fireplace is unusual as it is the dominant shrub species in the present day flora and produces a sizeable trunk which would have made good firewood. The only *Dracophyllum* present in the area today is the small moss-like *Dracopyllum muscoides* (although other *Dracophyllum* species are much larger). The Hall's Totara (*Podocarpus hallii*) and the *Nothofagus* (beech) may be derived from individual trees that had survived the fires of prehistory or from log remains which occur in much of the mountainous regions of Central Otago (Mark 1965:70-71). The nearest exotic forest is the Waikaia Bush, approximately 25km over quite mountainous terrain to the south. The presence of the exotic conifer is almost certainly due to the burning of boxes, as indicated by the presence of nails in the fireplace.

These results suggest that fuel for cooking and heating must have been a problem for the miners. This scarcity was not just restricted to the high altitude areas. The generally treeless nature of Central Otago caused fuel

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shortages elsewhere. By 1876 the Warden at Arrowtown reported that domestic fuel was locally unavailable. Chinese miners had cleared away all the scrub for several miles and the local peat supply was almost exhausted. In the absence of other fuel sources, miners were resorting to the burning dried spear grass (AJHR 1876 H3:3). The contents of the hut's fireplace are almost a direct reflection of these comments, a reliance on scrub species supplemented by spear grass and wooden boxes.

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Table 1: Identified Charcoal from Hut Fireplace.

Layer 1.	No. of fragments identified n=48	Percentage
<i>Hebe sp.</i>	35	72.9%
<i>Dracophyllum sp.</i>	4	8.3%
<i>Carmichaelia sp.</i>	3	6.25%
<i>Podocarpus halli</i>	3	6.25%
<i>Nothofagus sp.</i>	1	2%
Exotic conifer	1	2%
 Layer 2.	 n=12	
<i>Hebe sp.</i>	5	41.7%
<i>Dracophyllum sp.</i>	7	58.3%