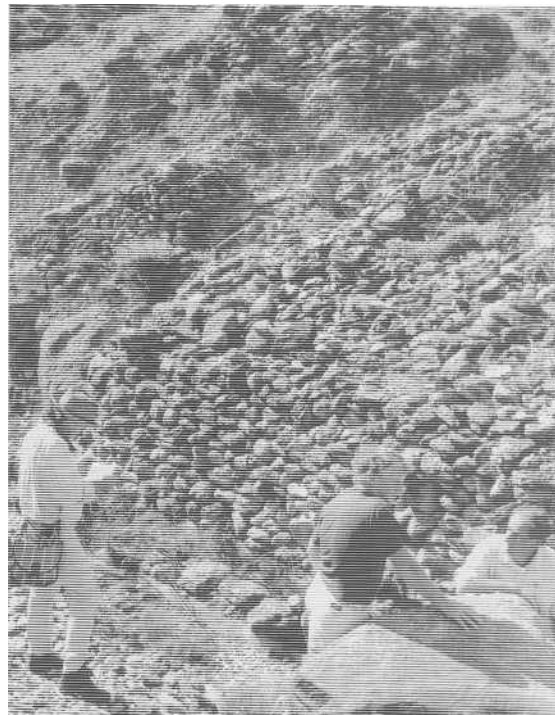




27(a)



27(b)

**Figure 27(a), (b) Kawarau Goldmining Centre, tailings area. (a) Raised wheelbarrow track used as part of the interpretative trail. The modern trail will split open the original revetting unless it is reinforced. (b) Revetted wall above 1920s sluice race, collapsing at top left and left. Revetting such as this requires a sound footing and interlocking flat-faced stones. It is probably a "lost cause" and will need re-construction.**

Wild animals (rabbits, possums) should be intensively controlled and the impacts of domestic stock (horses and sheep) closely monitored.

Tracking through the site complex entails the use of a single loop trail, generally well formed and not contributing to erosion or deterioration. In some places, more installation of steps and stabilisation of tracks is needed. In the tailings areas, north of the tearooms, visitors may walk on most surfaces, including narrow ridges of tailings, which are threatening to erode as a result (Fig. 27(a)). These could be stabilised by laying down a filter cloth and dressing the surface with coarse gravels. The filter cloth will allow drainage and, at the same time, bind the surface. Figure 26(b) shows an area of stone revetting holding the sides of one of the principal (later) tail races. The historic revetting generally is quite poor. As the finer gravels behind the stone face erode, the revetting can become unstable. Poor footings may contribute. Protection of head of the revetting by shrubs may shed some water, but inevitably casually made revetting will fail, and will have to be re-constructed if desired. Mr Egerton stressed to us the fragility of the remaining areas of the "Queen's Chain" south of the visitor centre, and only infrequent guided walks are taken to this area.

## 4.2 Bendigo Goldfield and Welshtown, G41 GR 233792 and vicinity (S124/230-363).

Bendigo is on the west-facing slopes of the north-western Dunstan Mountains. The locality includes the archaeological site of Bendigo township itself, by the Bendigo Road, the mining towns of Logantown and Welshtown (the latter comprising ruined stone buildings architecturally stabilised in recent years), and the shafts, open leads, mullock heaps and industrial building foundations (including stampers) of the quartz mining complex (Fig. 28). The main gold-bearing lodes are the Cromwell Reef and the south and north lodes. These run for some 200-300 m in a generally east-west direction. Their enclosing quartz strata have also shaped the line of the crest of the hill slope on which Welshtown lies (Park, 1908: 49). The many associated shafts and open leads are dangerous and only one is fenced. Signs indicating the danger are at the road entrance. There are also some roads and other lengthy archaeological sites such as water races. We were accompanied to the site by Mary Wallace, Alexandra Field Centre manager.

### *Site condition* (Fig. 29(a), (b))

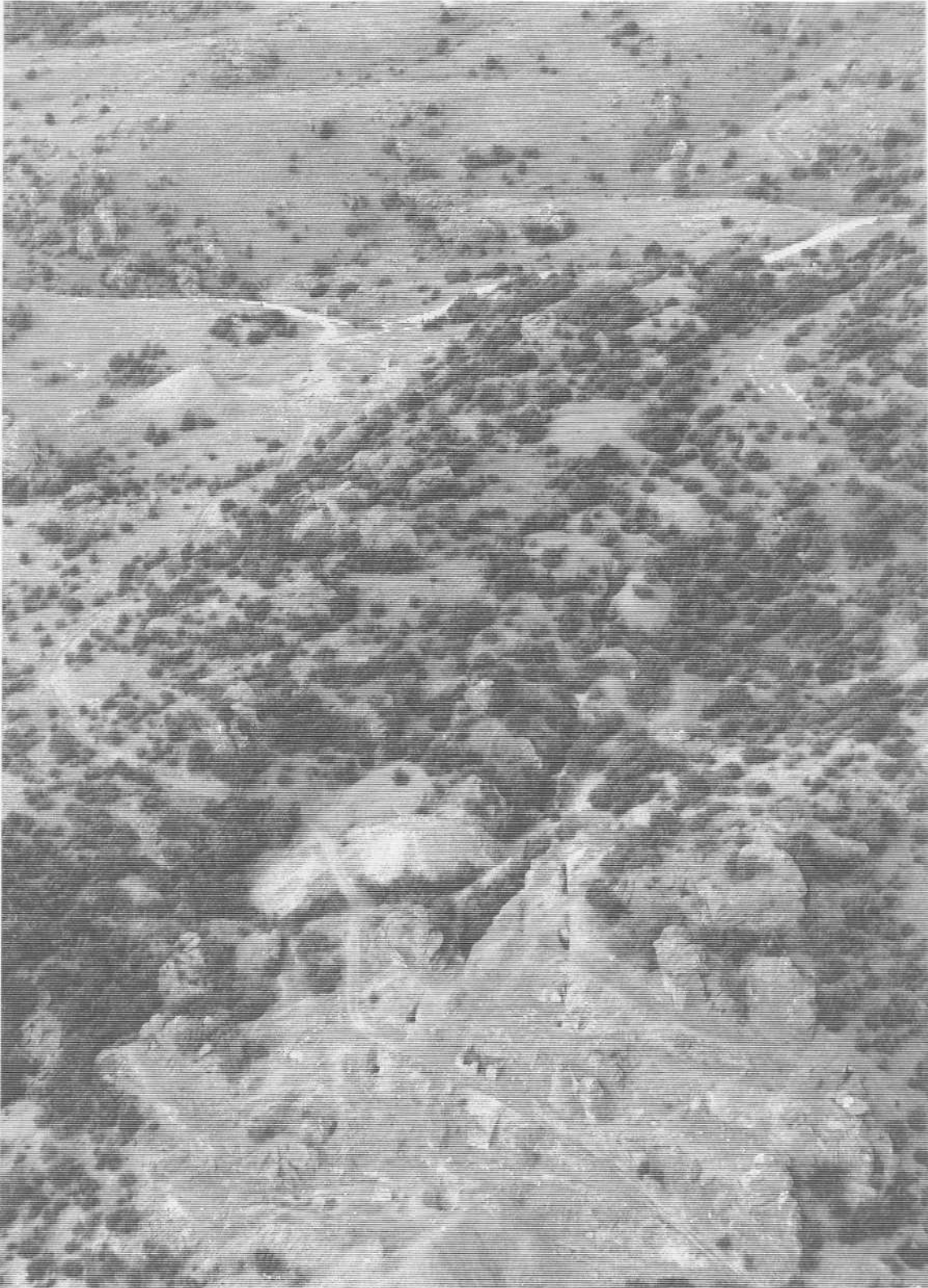
As part of the architectural stabilisation, all shrub vegetation has been removed from standing structures, including features such as placed-stone retaining walls. At the base of some retaining walls, kanuka up to 10 cm d.b.h. has been cut (Fig. 28(a)); the strength of the walls is such that they should settle in a stable fashion (if at all) as the stumps rot out. *Kānuka* has been more generally cut to expose the archaeological features to view. This has also made the sites more accessible to public walking and close inspection. The cutting of vegetation also means that dangerous shafts and falls are readily visible.

The main shaft and other shafts in the vicinity of the western part of the lodes have been used for search and rescue practice in the past, and have conspicuous rounded lips with little vegetation in the upper reaches of the shaft. Although rescue practice is not inappropriate, this should either cease or be on an irregular basis with the sole aim of familiarising face-rescue squads with shaft-type conditions.

A general feature of the faces and old roads on the northern and western faces of the site complex is a low to moderate degree of sheet erosion. Slopes are generally moderate (no more than 20°) and, given their exposure under sparse vegetation cover, they have eroded little. Low rain fall and winter snow fall is probably the reason why both vegetation and erosion are so restricted. However, all unmaintained tracks or road beds have a distinct fill of eroded gravel and soil on their uphill side indicating a gradual downslope movement of surface material. Further notes on stabilising open slopes are in the following section.

### *Vegetation*

Today *kānuka* is the dominant tree in this arid country (mean annual rainfall at Tarras is 472 mm; New Zealand Meteorological Service records). Although the land surface was undoubtedly partly forested by Hall's totara in pre-Polynesian time, the last thousand years has probably seen a dominance of silver tussock in this area. European



**Figure 28** Oblique aerial view (August 1992) of Bendigo from the west, showing the line of the Cromwell Reef (centre bottom to top right) and North Lode (lower left to top right). The photograph was taken in 1992, not long after *kānuka* had been trimmed or removed from parts of the site area (e.g., the building ruins in foreground).