

3. 1840s–1870s: Extraction and exploitation

3.1 LANDSCAPE MODIFICATION

3.1.1 Pastoral farming

Historical geographer Kenneth Cumberland wrote that:

‘The period of European-New Zealand contacts before 1840 was one of crude, destructive exploitation. Except for the activities of explorers and missionaries, it was a period of wasteful destruction of animal and plant life at the hands of sealers, whalers, and timber exporters and of the partial overthrow of the old-time Maori culture and economy. Yet it involved little use or misuse of the soil.’ (Cumberland 1944:156)

At first, existing indigenous grasslands were used for grazing, and pastoralism took off in the 1840s in Nelson, Canterbury and Otago. Grazing expanded rapidly during the 1850s and 1860s, with the frontier advancing westward into the South Island high country (Hargreaves 1966).

New Zealand’s key exports at this time were mainly wool, but also included skins and hides, leather and pelts, tallow, non-perishable by-products, potted and salt meat, and livestock (Grey 1994). Hardly any processing was done in the colony. Most of the wool went to mills in Great Britain (Grey 1994).

Historian R.P. Hargreaves wrote that the graziers imported merinos from Australia because they were cheap and easy to obtain (Hargreaves 1966). However, Canterbury historian Robert Peden (2002: 39) disputed the commonly held view that ‘Canterbury’s pastoralists were simply receivers of Australian technology and techniques’. He stated that:

‘Canterbury imported sheep from Australia in two main bursts: in 1851 and early 1852, and then in 1861 and 1862 when over 55,000 sheep were shipped across the Tasman. Between these two major periods of importation the demand for meat from the goldfields made Australian sheep too expensive for Canterbury pastoralists, who had to rely on sheep from Nelson and, to a lesser extent, the Wairarapa and Otago to build their flocks.’ (Peden 2002: 45)

In March 1852, E.J. Lee and Edward Jollie drove 1800 sheep through a pass in the high country from Nelson to Canterbury (Peden 2002). Within 12 months, c. 5000 sheep and 400 cattle had travelled from the Wairau and Nelson to Canterbury, and in 1854, flocks of 4000 sheep went through (McCaskill 1970). During the 1857–58 season, c. 24 000 sheep were droved south from Nelson (DOC 2005). Figure 3 shows Saxton Pass, an important 19th century route from the Awatere to the Acheron River catchment. Large numbers of sheep were again shipped from Australia in 1861, when demand for stock slumped, and in 1862, when drought in New South Wales and Queensland led to a drop in local stock prices (Peden 2002).

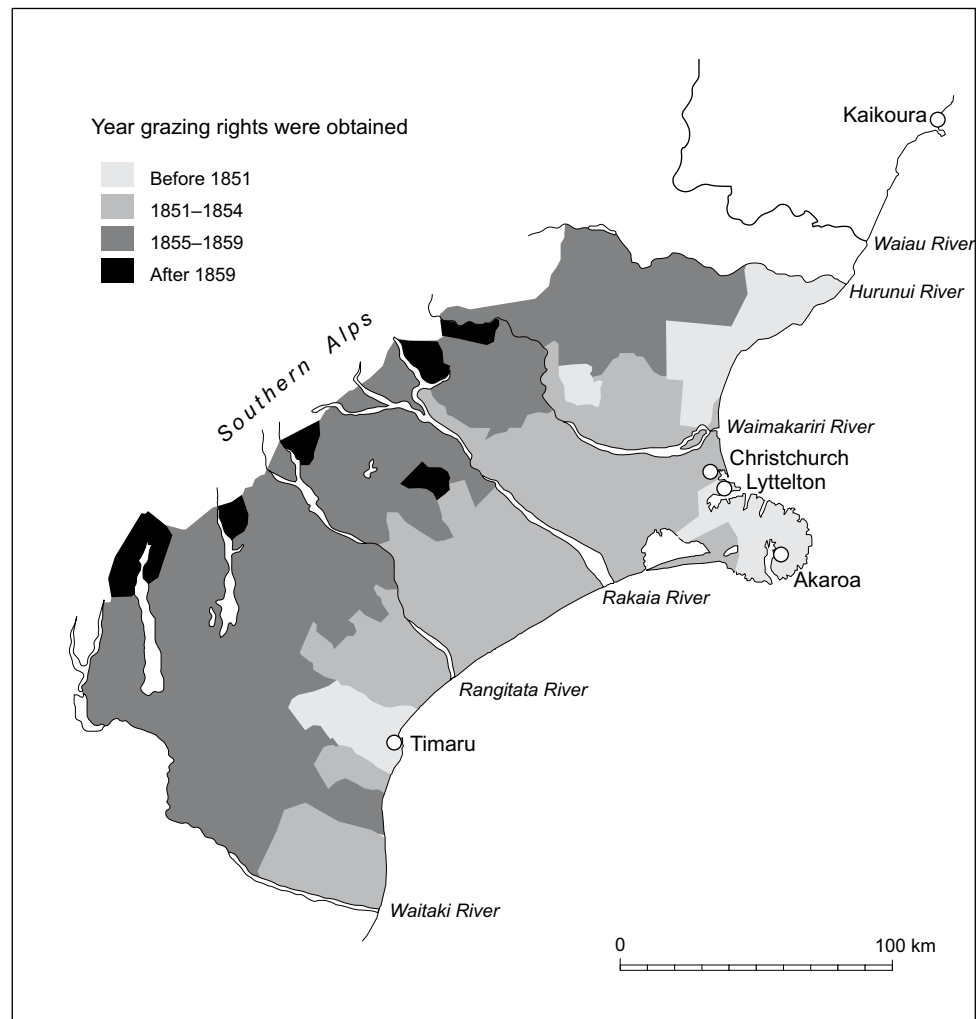
Figure 3. Aerial oblique of Saxton Pass (far right), an important 19th century route from the Awatere to the Acheron River catchment. View to the east. Photo courtesy of Kevin L. Jones, DOC.



Merinos were best suited to the drier tussock lands of Central Otago and the upper Waitaki River regions. By contrast, on the plains and downlands, the expanding demand from English manufacturers for long-combing wools, together with the knowledge that crossbreeds provided better quality meat for preserving, soon encouraged a move away from merinos (Hargreaves 1966). There, English grasses were introduced in order for crossbreeds to prosper, and throughout the period, until the 1880s, stud sheep of several types—Negretti, Gilbert Rambouillet, Saxony and Californian—were imported from around the world (Hargreaves 1966). By the mid-1860s, the Lincoln, Leicester, Cotswold, Romney Marsh, Cheviot, Southdown and Shropshire Down breeds of long-wooled sheep had probably been introduced into New Zealand (Hargreaves 1966). During this period, James Little, a shepherd working on the Corriedale Run, North Otago, bred the colony's own Corriedale—primarily a cross between the merino and the Lincoln, but with some English and Border Leicester as well (Hargreaves 1966). Peden observed that while the Corriedale became the predominant sheep on the plains and downlands of Canterbury for the next century, the merino 'was pushed back to the hard hill and high country' (Peden 2002: 58-59).

The largest pastoral runs were on tussock grasslands and many were situated in or near accessible major river valleys (Grey 1994). A typical sheep run was c. 4 square miles (1040 ha) of tussock land, mostly leased from the Crown (Grey 1994). Figure 4 shows the uptake of sheep and cattle stations in the Canterbury region. Historian W.J. Gardner described the Amuri Plains as they probably looked when the colonists arrived: 'the great bare landscape, the wide vista of clean hills, a tawny-coloured monotony of tussock, varied here and there by manuka and Wild Irishman' (Gardner 1956: 79). Although in some areas tussock was ploughed and sowed with English grasses, European settlers frequently continued and hastened the process of burning off (see section 3.1.2) that was

Figure 4. The uptake of sheep and cattle stations in the Canterbury region, after Cant & Kirkpatrick (2001).



begun by Polynesians centuries before. Cumberland noted that ‘Early destruction or modification of vegetation brought the first large scale, indirect cultural interference with the structure and stability of soil’ (Cumberland 1944: 158).

3.1.2 Burning off

‘Crab-holes’ or ‘podge-holes’ formed when large snowgrass tussocks burnt out (Beattie 1947). Burning was usually done in the spring and a third of the run was burnt each year. The writer and Canterbury high-country pastoralist Samuel Butler wrote that burnt feed meant satisfied and well-nourished sheep, and that the green, succulent grass that grew after burning was much better for sheep than the coarse, dry growth of summer that had been withered by the frosts of winter (Hargreaves 1966). The rough grass and shrubs of the high country gradually disappeared—but so did native birds and vegetation (Hargreaves 1966). On the Glens of Tekoa Station, Amuri, in February 1863, a great fire blazed across the run for 9 days (Gardner 1956). Bush and post-and-rail fencing on the hills burnt out. On the ninth day, as station hands frantically fought fire in the homestead paddock, rain quenched the flames just before they

reached the house. The following year, work started on a new homestead constructed with bricks made on the station (Gardner 1956).

Flooding became more prevalent as forests were felled. Burning off, trampling by stock and drying ground increased erosion in the high country and downstream on the hills and lowlands. Historian R.M. Burdon described Canterbury in the wake of the great flood of February 1868:

‘The damage to property was enormous; and when the flood abated a desolate picture met the eye - houses levelled with the ground, crops silted over and buried, fences washed away, and the carcasses of drowned sheep and cattle strewn in every direction. The face of the mountains was seamed with great scars that took many years to heal.’
(Burdon 1938: 99)

In eastern Marlborough at that time, the Clarence River rose 10 m higher than any previously known level, spread over the valley floor and swept hundreds of acres of land out to sea (Sherrard 1966). Settlers usually responded by building stopbanks; the possibility that land-use practices may have contributed to the disaster seemed not to be considered (Roche 1994). Engineering solutions would continue to be the main local and governmental tactic until well into the 20th century (Roche 1994).

Settlers discovered that, with the exception of new leaves and flowering shoots, the tall tussocks of the high country and elsewhere were generally unpalatable to sheep and cattle (Holland et al. 2002). In fact, until the harder tussock was burnt off, only cattle could feed. Consequently, settlers burnt tussock continually to encourage the growth of new shoots (Holland et al. 2002).

Cattle were more suited to wet, swampy or bush lands than to the light, dry soils of Central Otago, but many runs were stocked with cattle first (Beattie 1947). When the ground became firmer and drier, the runholders changed their stock to sheep (Beattie 1947). By putting sheep on recently burnt tall tussock, pastoralists induced short tussock grassland (Holland et al. 2002). Fine native grasses declined as tussock grassland regenerated after burning, and less palatable plants, such as speargrass, maori onion, kanuka, cotton plant and silver tussock, thrived instead (Holland et al. 2002). Because prickly matagouri and spaniard could make the land impassable to stock, especially in drier places where these plants flourished, they were also burnt to clear tracks (McAloon 2002). As the nutritional value and productivity of pastures in the high country declined, runholders repeatedly burnt their land, causing further loss of soil and decline in fertility through smoke, erosion and blown dust (Holland et al. 2002).

Predictions of grassland deterioration were few and usually ignored. In 1864, draughtsman, botanist and artist J. Buchanan warned that:

‘Nothing can show greater ignorance of grass conservation than the repeated burning of the pasture in arid districts which is so frequently practised. The first species of grass having fine fibrous roots ramifying near the surface are either destroyed by fire or afterwards by sun and frost, while the coarser tussock grasses, spear grass (*Aciphylla*) and

many plants worthless as pasture, having large succulent roots, strike deep in the soil and are preserved. Much of the grassland of Otago has been thus deteriorated since its occupation, by fire, and it is no wonder that many of the runs require eight acres to feed a sheep according to the official estimate.' (Buchanan 1868: 181)

In 1868, the explorer and naturalist W.T.L. Travers (1868, cited in Holland et al. 2002) noticed that pastoralism in Nelson, Marlborough and Canterbury was affecting the environment adversely.

3.1.3 Advance of European settlement and retreat of mahika kai

In Otago by late 1858, all the best available runs had been claimed right up the Waitaki River, and in the Maniototo, Manuherikia, Lindis and Wanaka Districts (Pinney 1981). By the early 1860s, the 'front country' of the Amuri District, including the Hanmer Plain, was all being farmed, but the high country to the west was not yet fully occupied (Gardner 1956). Everything changed rapidly when the gold rush occurred across the mountains in 1864-65. Enterprising men who had an eye to new markets invested capital in the Amuri District high-country runs (Gardner 1956).

By the 1860s, on the eastern side of the South Island, Maori still relied on the traditional use of mahika kai, including that in the high country, for protein foods, especially eels, weka and waterfowl (Evison 1993). As European settlement advanced, their mahika kai disappeared. When grasslands, shrublands and forests were burnt to create pasture, wildlife habitats were destroyed (Evison 1993). Fences and the law of trespass often stopped Maori from getting to mahika kai that still existed (Evison 1993). Acclimatisation societies were formed to import game birds and animals, and to stock rivers with Northern Hemisphere fish for angling (Evison 1993).

By 1870, the plains, hills and mountains of the South Island had been transformed. Many of the former hunting and food gathering places of Maori were now the sheep stations of Pakeha (Evison 1993). Some high-country runholder residences were built in sheltered places where the old kaika nohoanga of the Maori used to be (Evison 1993), and mostly the lands were in the hands of relatively few men. For example, Robert Campbell was a partner in Galloway Run in Central Otago, and also owned Benmore and Otekaike Stations in North Otago, together with several runs in South Canterbury and Southland. In 1879, both he and Native Minister John Sheehan were responsible for the expulsion of Kai Tahu leader, tohunga and prophet Hipa Te Maiharoa and his people from land at Te Ao Marama (the world of light) near Benmore and Otekaike Stations, and Omarama. Te Maiharoa and his followers were forced to leave the upper Waitaki and to return to the coast (Mikaere 1998).

Throughout New Zealand, before fertilisers were used generally, production could be increased only through the expansion of the area farmed. Stock increased until the late 1870s as the total area under grazing increased, but once the supply of new land was exhausted, stock numbers declined in the drier parts of the country (Holland et al. 2002). Runholders began

to realise that this exploitative type of grazing was not sustainable (Holland et al. 2002). Overstocking and burning off reduced fertility to the extent that if it continued certain areas of Otago and other high-country districts would be damaged irreparably (Nightingale 1992).

3.1.4 Pests

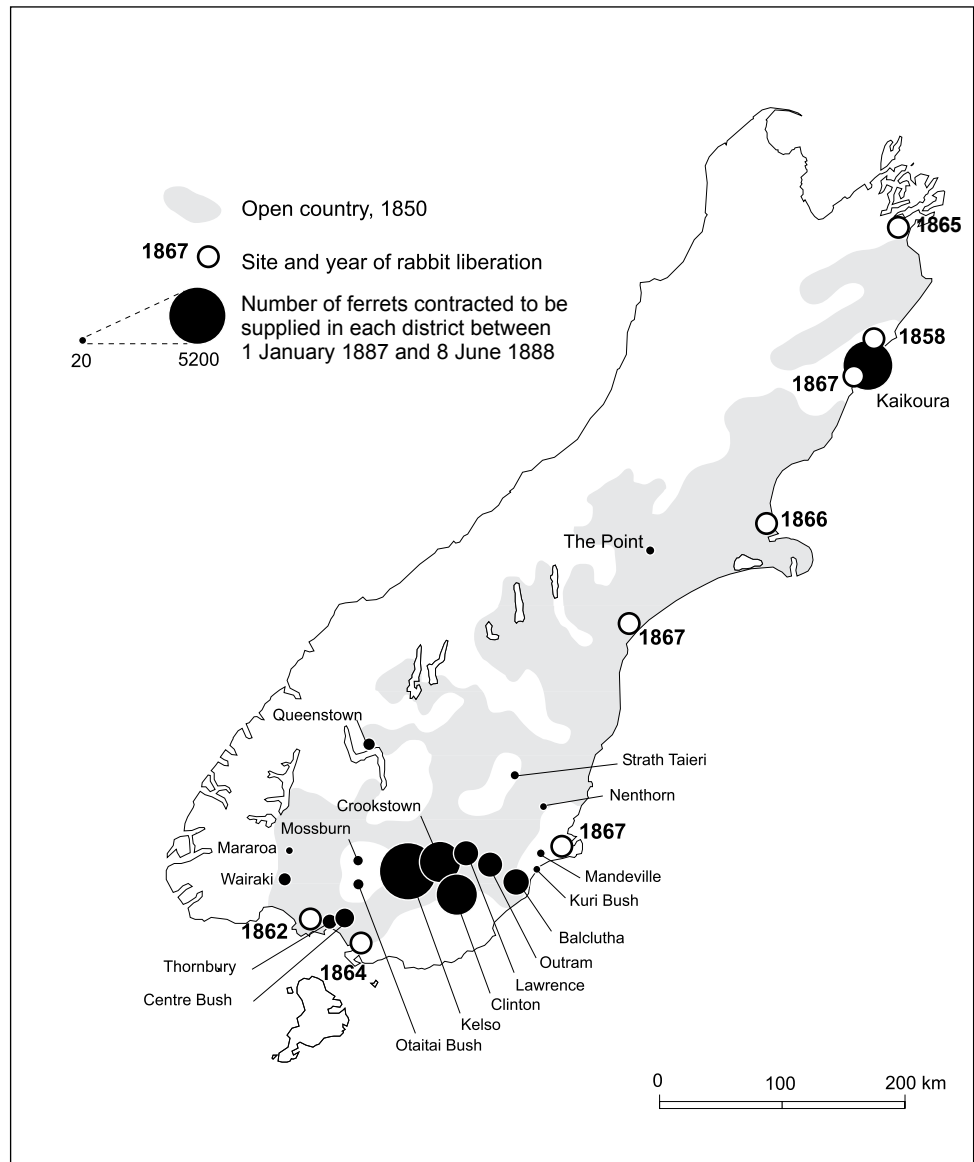
Introduced animals that became feral caused problems. Pigs rapidly spread into the high country after their introduction by Europeans in the 1770s (McAloon 2002). They dug up roots of speargrass and tussock, and pitted the pasture. By the 1860s, when Bishop Hobhouse rode across Greenhills Station, he found that ground that should have been good for cantering had been 'honeycombed' by wild pigs (Hobhouse 1863, cited in Sherrard 1966). Wild dogs (imported animals crossed with the Maori kuri) preyed on sheep (McAloon 2002). In August 1860 at St Leonards, Amuri, 28 dead sheep were found in a small creek after being herded and caused to be smothered by these dogs (Gardner 1956). In response, sometimes sheep were guarded or enclosed at night, and men were employed to catch the stray dogs in the high country and elsewhere.

The greatest damage to high-country grasslands was wreaked by rabbits after their introduction (Gardner 1956). Runholders imported common brown, silver grey, bluish grey or large black rabbits, and established warrens for shooting parties with their friends (Gardner 1956) (Fig. 5). Silver grey furs were prized by English merchants, and runholders used small presses for bundling the pelts, which were packed in zinc-lined cases for export to London (Gardner 1956). Soon after they took up their run in 1859, the Keene family were probably the first to introduce rabbits in Kaikoura, at Swyncombe Station in the 1860s (Sherrard 1966). According to local lore, on Swyncombe at the top of a small hill, a clump of blue gums—which can be seen from the Inland Kaikoura Road—marks the spot where Captain George Ruck Keene let loose several pairs of silver grey rabbits (Sherrard 1966). In April 1869, Governor George Bowen asked the Keenes for a supply of silver grey rabbits to serve up to Prince Alfred, who was touring New Zealand (Sherrard 1966). In the 6 months leading up to October 1869, 10 000 rabbits were trapped at Swyncombe (Sherrard 1966). Despite the huge number removed, the rabbits depleted the pasture and eroded the hillsides, and in 1882 the Keenes were forced to walk off the property (Sherrard 1966).

3.1.5 Animal diseases

Kaikoura historian J.M. Sherrard (1966) wrote that in the early years of European settlement, animal imports were virtually uncontrolled and scab soon became rife. This disease was caused by ticks irritating the skins of sheep, which then tugged out their own wool, exposing flesh covered by a greenish scab. Although the Sheep Ordinance 1849 was introduced to eliminate scab by stipulating the inspection of flocks for infestation (McLintock 1966), the legislation was unlikely to work while flocks were able to intermingle (Sherrard 1966). Effective control could be achieved only after flocks were fenced. Moreover, there were no penalties for owning scabby sheep (Sherrard 1966).

Figure 5. The liberation of rabbits in the South Island, after Pawson & Brooking (Eds) (2002).



Cattle infected with pleuro-pneumonia may have come from Australia in the early colonial period (Hargreaves 1966), and this disease was even more infectious to cattle than scab was to sheep (Hargreaves 1966). The Diseased Cattle Act 1861 attempted to prevent these animals from being imported from Great Britain and Australia. According to the Act, cattle believed to be infected were slaughtered, and the embargo remained in force until the late 1860s, when all provinces were declared clean (Hargreaves 1966). The Government had no other powers to control the general importation of alien species until the Animals Protection Amendment Act, 1895, clause (2) was passed (McDowall 1994). In fact, the earliest statutes were designed to encourage the formation of acclimatisation societies and to protect the species that they introduced, such as hare, swan, partridge, English plover, rook, starling, thrush and blackbird. Native species were not mentioned (McDowall 1994).

3.1.6 Acclimatisation of animal and plant species

Most introduced plants, birds, fish and mammals were from Europe (Sherrard 1966). For example, in 1873 G.F. Bullen successfully liberated ferrets to prey on rabbits at Kaikoura (Sherrard 1966). Thousands of ferrets were released on Greenhills, Waipapa, Kincaid and the Clarence Runs (Sherrard 1966) (Fig. 5). J.W. Trollove let out hundreds of cats bred on the Shades Station as rabbit destroyers (Sherrard 1966). By contrast, in the 1870s at Benmore Station, in the high country of northern Otago, rabbits were not yet considered to be a threat—wekas and a couple of men with guns and dogs kept their numbers down (Pinney 1981).

Plant nurseries were also responsible for introducing exotic species, which altered ecosystems (or habitats) and threatened the indigenous communities (McKinnon 1997). Attempts at sowing introduced grasses and clovers led to further environmental change. Many tall tussock grasslands had already been transformed into short tussock grasslands by burning and grazing in the alpine and lower subalpine zones (Holland et al. 2002). This exposed indigenous species to competition by invading grasses and weeds from Australia, California and Europe (Holland et al. 2002). In the South Island, although sown grass acreages were concentrated along the east coast from northern Canterbury to Southland, throughout the alpine zone of the high country—particularly in the drier parts—native grassland ecosystems were transformed irrevocably by exotic flora tolerant of rabbit browsing, sheep and cattle grazing, and low soil fertility (Holland et al. 2002). At St Leonards, Amuri, in the 1870s, seeds such as cocksfoot, crested dogstail and pine from San Francisco were planted (Gardner 1992).

Like other settlers, those of the high country attempted to tame and domesticate the wild colonial landscape surrounding their homesteads by planting trees, shrubs, herbs and lawn grasses that reminded them of 'Home' (Holland et al. 2002). Some of these introduced species became pests. For example, Nugent Wade, the manager of a northern Otago station, wrote to the owner, W.H. Teschemaker, in 1876 telling him that 'I found sweet briar growing very freely as a weed over the flat at Otematata, gradually spreading about everywhere ... [it] would have assumed great proportions on our soil in a few years, being carried about by rabbits and birds, etc' (Holland et al. 2002: 76).

3.1.7 Weather

Although the years 1857-68 were considered to be 'the great age of Canterbury pastoralism' (Grey 1994: 207), Canterbury historian W.H. Scotter (1971: 179) wrote that 'Success depended on a heavy outlay of capital and a continuation of good conditions but, after 1864, troubles accumulated. Scab spread among the flocks and costly treatment was required. Large numbers of sheep were lost during the snowstorms of 1862 and 1867'.

In Canterbury, these storms were especially severe. The Kennaway brothers were forced to sell Clayton Station (behind Mount Peel) in 1862, and then in 1867 the new runholder, G.A.E. Ross, was ruined (Scotter 1971). Lady Barker wrote that during the 1867 storm, snow fell for 90 hours (Barker 1956). On her family's run the sheep were forced down to the flat near the homestead by an icy wind, but as the snow melted more sheep were drowned in the creeks than had been frozen. She described the scene afterwards:

‘Even the first glance showed us that, as soon as we got near the spot we had observed, we were walking on frozen sheep embedded in the snow one over the other; but at all events their misery had been over some time. It was more horrible to see the drowning, or just drowned, huddled-up “mob”.’ (Barker 1956: 168)

Barker and her husband lost 4000 of their 7000 sheep during this storm (Hankin 1990).

In Amuri, the 1867 snow storm was the worst ever experienced by runholders (Gardner 1956). About 3½ feet (c. 1 m) of snow lay over the entire district for about a month. The partners on the St James Station, James Jones and the brothers Thomas and Edward Pavitt, were hard hit, and by 1869 they were bankrupt. Gardner commented: ‘St. James as a sheep station was one to break the stoutest hearts and the most secure reputation’ (Gardner 1956: 150-151). John Tinline of Tarndale lost 4000 of his 30 000 sheep and John Murphy lost 100 cattle on Molesworth Station, where the snow varied in depth from 5 to 25 feet (c. 1.5-7.5 m) (Gardner 1956). F.C. Tabart of Highfield Station lost 3300 dry sheep out of 9100 (Gardner 1956).

3.1.8 Mustering

As more and more high-country runs were taken up, tension grew between runholders over straying stock, especially where scabby sheep were involved (Hargreaves 1965). Managing a complete muster on rough terrain or in extensive high country was virtually impossible, and just a few sheep that had escaped dressing or dipping could reinfect an entire flock (Hargreaves 1965). Rivers acted as boundaries in some instances, but no run was properly bounded on all sides. Smaller runholders could not afford to build sheep dips to treat scab, and their flocks were often a menace to their neighbours. The altitude and craggy nature of the high country, fog and snow made mustering difficult. The average time leaseholders spent on the runs was 3 or 4 years of ‘bitter struggle and blighted hopes. Most runholders were soon ruined by snow, scab, depression, or the failure of the West Coast market ... Even for one winter it was a life of isolation, cold, discomfort and real danger’ (Gardner 1992: 147-148).

3.2 PHYSICAL REMAINS

3.2.1 Station construction

Early European settlers, like the Maori before them, often built their homes in sheltered places near streams, in hollows or in the lee of hills for protection from extreme heat, cold or wind. Pragmatic considerations such as proximity to water, firewood and building materials were also important (Dominy 2001). High-country homes were built from materials brought in, such as canvas, or from resources close to hand, often stone, clay, earth, trees or tussock (Beattie 1947). Walls of wattle-and-daub, snowgrass tussock thatch, beech, treefern and pit-sawn timber, putty made from moss, and mud floors with rushes were variously used in their construction (Beattie 1947). St Leonards Station, Amuri, had a cob cottage with tiny rooms and a great pile of peat outside for fuel (Gardner 1956). In the 1850s, some sort of improvised building construction was happening there all the time. Since there were no trees, rafters and palings for the men's house were brought in from Pahau bush in the station dray. Thatch grass was cut for the roof (Gardner 1956). At Otematata Station on the upper Waitaki River, timber that had been cut from the bush near Lake Ohau and rafted downstream was used for station construction (Pinney 1981).

In 1856, the politician Henry Sewell noticed that on pastoral runs, housing lagged behind because fencing was given priority (Scotter 1971). Fences reduced the need for shepherding, arrested the spread of disease and allowed runholders to exercise their pre-emptive (prior purchasing) rights. Sewell described the typical contemporary homestead on the Canterbury Plains, which doubtless was similar to many high-country homesteads:

'A Station house is a very rude affair. Every man his own builder, is the rule for Station buildings. You cannot get Carpenters, so people learn to put up the best sort of Sheds they can. Wooden slabs and clay—Toi toi grass for thatch are the materials. The result is a second rate kind of Farm outhouse, partitioned off it may be into two apartments; one serving for a sleeping room for the Master and Mistress, the other for all other purposes, including dormitory for an unlimited number of guests. The floors of course are clayed; a broken chair or stool, a chest of drawers, and a rough sort of Table form the furniture. From the roof hang joints of meat, harness and saddlery, (and other things suspendible) ... These Station houses stand solitary and desolate in the midst of a huge wilderness of plain, not a tree or a hillock to relieve them—nothing except the Ti palm ...' (McIntyre 1980: 208-209)

Figures 6 and 7 show cottages built at Mesopotamia Station in the early 1860s.

In the 1850s and 1860s, sheep runs usually consisted of several thousand acres of tussock grassland, mostly leased from the Crown. For example, at Coal Creek (by 1870 renamed Shag Valley) Station in Otago, Johnny Jones was allotted Crown grants for freehold land of around 11 000 acres (4455 ha) as legal compensation for land he had bought from Maori (Pinney 1981). In February 1853, his son John Richard took up a pastoral