soon to go as well (Pinney 1981). The stations that would evolve out of Benmore and the Otago part of Lake Ohau Station by 1976 were: Benmore, Peak Valley, Ben Omar, Totara Peak, Glencairn, Glenbrook, Buscot, Willowburn, Riverside, Gleneyrie, Ohau Downs, Shelton Downs, Tarnbrae, Bendhu, Quailburn Downs, Claycliffs, Ahuriri Downs, Birdwood, Ribbonwood, Quailburn, Avoca, Lake Ohau and Huxley Gorge (Pinney 1981) (Fig. 21).

6.2.8 Tourism

High-country recreation began in the 1880s (with the construction of the Hermitage Hotel) and gradually expanded through to the years of the Second World War (Historic Resources Directorate 1997). Visitors from New Zealand and overseas began travelling to remote areas to sightsee or to go tramping, mountaineering, skiing or hunting. The Government became involved in the formation of national parks, private businesses sprang up specialising in backcountry recreation and clubs were established (Historic Resources Directorate 1997). Specialist facilities such as hotels, huts, tracks and bridges were built to foster tourism in the high country.

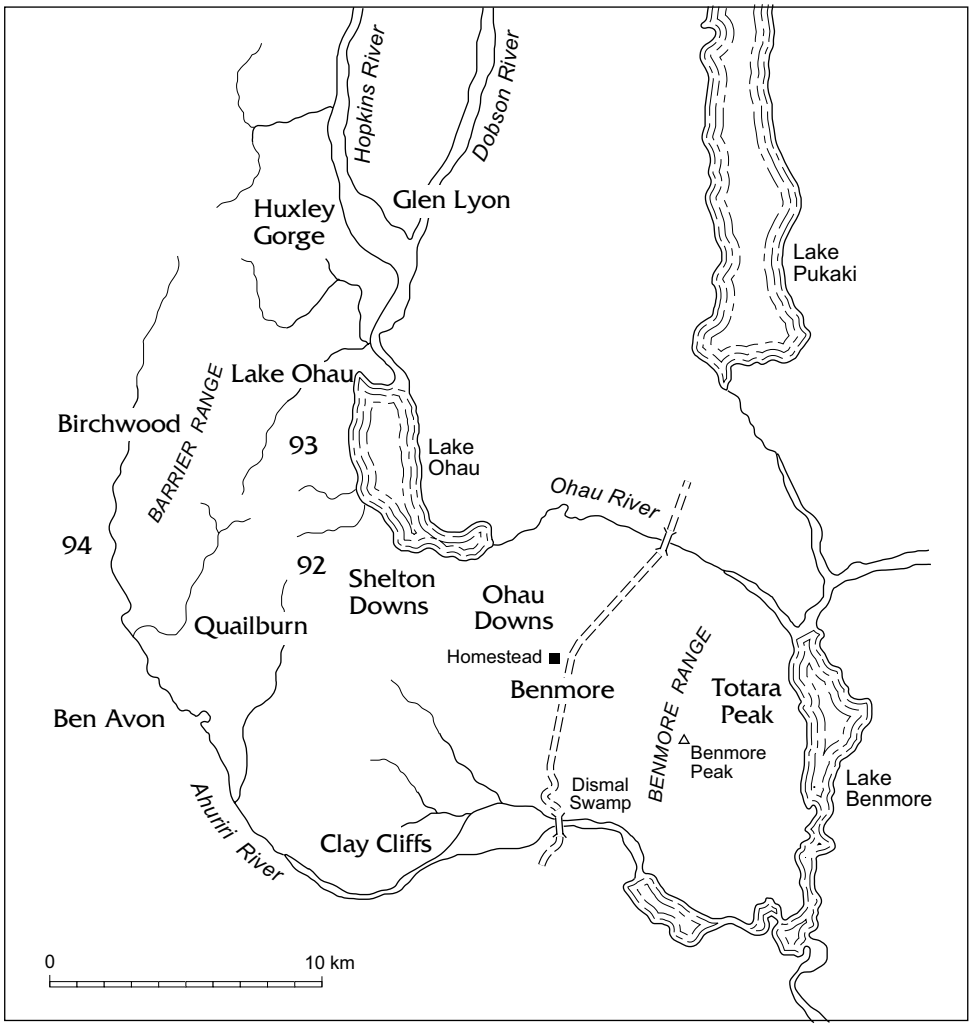

Figure 21. Some subdivisions of Benmore Station, after Pinney (1981).

In 1895, the Government bought out the Hermitage Hotel and operated it until 1922 (Grey 1994). In 1910, skiing was introduced to glacier excursions (Grey 1994). Exotic game animals, such as chamois and Himalayan tahr, were introduced for hunting (Grey 1994). In 1922, the Government rented the hotel to the Mount Cook Motor Company, and in 1935 an airstrip was built (Grey 1994).

Milford Track in Fiordland was built in the early 1890s (Historic Resources Directorate 1997). Benches, bridges and huts were constructed and the Government operated boat services to provide access (Historic Resources Directorate 1997). Glade House was built there in 1896 (Historic Resources Directorate 1997). At Mount Cook, Ball Hut was built c. 1890, and Malte Brun Hut, at a higher altitude, in 1898 (Historic Resources Directorate 1997). The only remains of the original Ball Hut, which was swept away by an avalanche in 1925, is a floor slab on the hillside slightly above the present-day shelter (Historic Resources Directorate 1997).

6.3 LAND TENURE

Possibly the first major debate over water rights in New Zealand took place between 1900 and 1919 (Roche 1994). This was directly relevant to the Central Otago high country. Geographer Michael Roche wrote that:

> 'More capital-intensive gold-mining, using dredges, was pouring sieved river gravels back into the stream bed, disrupting channel flows and discolouring water for downstream farm users. On one side of the debate were the miners, their rights backed up by a raft of state legislation which facilitated resource exploitation; on the other side were the farmers, whose common law riparian rights the courts tended to uphold.' (Roche 1994: 17)

The economic decline of the mining industry was matched by a decline in its political and legal power.

The River Commission of 1919–20 investigated the issue of damage caused by mining, which still affected the Taieri, Maerewhenua and Clutha Rivers (Roche 1994). The value of gold extracted was now far below the costs incurred through flooding, and the mining industry bore none of the costs. Until the Mining Act 1926 was passed, water rights legislation was piecemeal and drawn up in response to problems as they occurred (Roche 1994).

William Massey, who was the Reform Prime Minister from 1912 until his death in 1925, was elected on a platform of granting the freehold option to Crown tenants, many of whom were on South Island high-country land (Condliffe 1959). He immediately picked up the portfolio of Lands and soon carried the Land Laws Amendment Act 1912, which made lease-in-perpetuity lands purchasable on terms favourable to the tenants (Condliffe 1959).

Almost every year through to 1935, the principle of the freehold was gradually extended by amending the Land Act (Condliffe 1959). With

some restrictions, the National Endowment Lands on the eastern side of the South Island high country were also opened to purchase by the tenants over that period (Condliffe 1959). Simultaneously, the Government attempted to liberalise the conditions of the pastoral leasehold tenures that affected much of the high country.

Predatory farming (encouraged by short leases) and insufficient compensation for improvements attracted heavy political and public criticism (Condliffe 1959). Both production and value of pastoral runs, most of which were in the high country, had declined. Almost 10 million acres (4.05 million ha) of land were currently returning on average only 2.32 pence per acre (Condliffe 1959). Leasehold lands were overstocked, rabbits ran rampant, pastures were in poor condition, burning off was done at the wrong times of the year, and erosion and denuding of the hillsides occurred (Condliffe 1959). Otago had the largest area of high-country pastoral leasehold land, and population growth there was slow (Condliffe 1959).

The Royal Commission of 1920, which investigated the problem of deteriorating pasture, made a number of recommendations with regard to the Land Laws Amendment Act 1907 and subsequent amending acts, advising that they be reconstructed as they had indirectly caused the deterioration of high-country pastures 'to the detriment of both the State and the lessees' (Sadd et al. 1920: 9). According to Sadd et al. (1920), the Commission strongly suggested that:

- The 21-year tenure provided by the 1907 Act was too short to make improvements and develop pasture, and should be increased to 35 years with the right of renewal
- After 7 years had passed, the lessee might have the option of acquiring the fee simple (land with unrestricted rights of disposal)
- National Endowment Lands should not be converted to freehold land unless an equivalent piece of land was substituted
- All leases of pastoral land should be offered for selection by ballot in order to put the residential obligations of pastoral runs on the same basis as those for small grazing runs
- Suitable properties should be subdivided
- These conditions should apply to all renewals or licenses, and all the Land Acts should be consolidated

With regard to occupation, cultivation, stocking and improvement of Crown pastoral lands, the commissioners advised that none should be held by any public or private registered companies or absentees: 'Personal residence where possible … is absolutely essential to true settlement, and also ensures better management and greater productivity of the pastoral holdings' (Sadd et al. 1920: 10). They also recommended that the land should be 'spelled' when necessary and no more than three crops should be taken from the same land in succession. At the time, very little was known about the actual regrassing or improving of depleted and deteriorated lands, and the commissioners urged that experiments be conducted in these areas (Sadd et al. 1920). At that time, the Department

of Agriculture was studying grasslands on a small scale to understand their destruction and restoration. The commisioners thought that this work should be expanded (Sadd et al. 1920).

The commissioners gave specific advice on getting rid of rabbits and surface sowing. For disposing of rabbits, they recommended: rabbit netting provided at cost price by the Government; poisoning; the use of dogs, ferrets and guns; digging out; the protection by law of all natural enemies; the breeding and liberation of ferrets and cats; and fumigation (Sadd et al. 1920). Few data were available concerning surface sowing on mountains above 500–700 m in altitude. Although the Department of Agriculture was conducting experiments to find out if it was possible to regrass extremely denuded country at 300–700 m, it was too early to offer suggestions (Sadd et al. 1920). The commissioners felt that far more could done with regard to growing winter crops on high-country sheep stations, and they suggested that cocksfoot, red clover and probably lucerne should be grown (Sadd et al. 1920). Tussock burning should continue in order to provide a seed bed (in the ashes)—but only in the spring. They stressed that 'in supporting burning, it must be understood that we are altogether opposed to *indiscriminate burning*. Burning, indeed, requires carrying out with the utmost discretion' (Sadd et al. 1920: 20). They observed that spelling and exclusion experiments were being conducted in the depleted lowlands of Central Otago, and within special enclosures 'in the plantations at Galloway and Omarama, and in the Agricultural Department's Earnscleugh experimental area near Clyde, there has been truly remarkable regeneration' (Sadd et al. 1920: 19). In advocating the use of introduced predators and even limited burning, they revealed themselves to be men of their times, with their focus on pragmatic farming considerations rather than environmental issues.

Geographer Michael Roche commented that:

> 'Like many commissions of inquiry, the investigation of the Southern pastoral Lands Commission had only limited impact. However, it reflected prevailing attitudes, especially the denial that fire was really a problem. Indiscriminate burning was rejected, but on balance the commissioners accepted farmers' arguments that burning improved and sustained the tussock grasslands, despite the views of Cockayne and others. The affirmation of farming practice reflects the vested position and political influence of pastoralists at this time; it also conceals the financial imperatives they faced for maintaining production, in that some mortgage agreements specified the retention of high stocking levels as a condition of the loan.' (Roche 1994: 27)

Based on this report, legislation was introduced in 1921 and 1922, extending the right of freehold purchase to all South Island high country held under short-term leases, but ironically little advantage was taken of this legislation (Condliffe 1959). Economic circumstances had changed.

The Land Act 1924 introduced 35-year renewable terms for pastoral leases, extending the 1913 provisions for 21-year renewable terms (Broad 1994). David McLeod, runholder at Grasmere and Cora Lynn Stations

on the upper Waimakiriri River in northern Canterbury, commented on the Land Act 1924:

> 'The result of the commission's report was apparent in the Land Act of 1924 which embodied a number of recommendations on tenures and administration. But except for an intensification of the runholders' own attack on the rabbit problem (aided by fairly high prices for rabbit skins and the wide use of strychnine poisoning), and the generally accepted restriction of burning to a period in the spring, little change came over the management of the stations. It was still a basic tenet of the high-country management that tussock should be burnt every five years and that the more sheep that could be crowded into the high basins in summer the better for the run as a whole. The only touchstone for judging land use was the condition of the sheep in the autumn.' (McLeod 1980: 17)

Under the deferred-payment scheme (abolished in 1892), 1 028 023 acres (c. 416 349 ha) had been purchased, and just 311 763 acres (c. 126 264 ha) were converted into freehold lands after the system was reintroduced in 1912 (Broad 1994). The conversion of perpetual leases into freehold tenure happened almost entirely before 1912 (Broad 1994).

The reasons for the small overall effects of this policy reversal were:

- The leasehold versus freehold arguments were over the remnants (often in the high country) rather than the main areas of land in New Zealand.
- During the recession of the 1920s, the system of taxation was advantageous to Crown tenants. From 1923, Crown lessees of extensive high-country runs did not have to pay income tax. Consequently, between 1924 and 1926, while 193 785 acres (c. 78 483 ha) of freehold land and 181 502 acres (c. 73 508 ha) of private leasehold land went out of cultivation, the area of Crown leasehold land increased slightly (Condliffe 1959).
- When runs were auctioned, most runholders who wanted to managed to resecure their leases. Therefore, continuity of ownership was stronger than the lease might imply, and leaseholders faced little serious threat of being outbid (Broad 1994: 34).

6.3.1 Land subdivision

Soldier settlement

Land was purchased by the Government for discharged soldiers under the Discharged Soldier Settlement Act 1915 and its amendments (Condliffe 1959). Condliffe argued that this piece of legislation 'was more important as an agency of closer settlement in the post-war period than was the older purchase policy under the Lands for Settlements Act', although it was very costly because land was bought at the peak of land values in the post-war boom (Condliffe 1959: 264). He also wrote that it was the 'most conspicuous example of this form of government encouragement to speculation in the period 1890–1935 ... In effect the

Government turned loose in the real estate market 22,792 new purchasers armed with £23,570,491 of borrowed money' (Condliffe 1959: 276).

Land speculation that had begun with the return of prosperity in the mid-1890s had been spurred further by the decline of leasehold tenure. During the First World War, speculation became a form of gambling (Brooking 1996). The last attempt at closer settlement in the South Island high country took place in the Mackenzie Basin, which has some very dry areas. Between 1910 and 1920, several ambitious subdivisions were established, including those for soldier settlements (Broad 1994). The original 24 runs swelled to 45, but eventually, through amalgamation and partition, the Mackenzie Basin would revert to containing close to the original number of runs (Broad 1994).

The property market

Between 1890 and 1935, there was a strong trend among freeholders towards subdivision and closer settlement (Condliffe 1959). In times of escalating prices, speculation in land became frenzied—few farmers or runholders could resist the lure of rising prices. Condliffe wrote: 'In the Dominion it was the trafficking in rural land which was the outstanding characteristic of rural organisation on the freehold tenure' (Condliffe 1959: 275). During the time of rising prices before, throughout and immediately following the First World War, speculation was more pronounced than after 1921, when land values began to fall:

> 'The inevitable result was that in a time of violent speculation, such as followed the First World War, there was a clear tendency for the creditor class to take an increasing share of the returns from farming. The freeholder, under such circumstances, exchanged the landlord for the mortgagee ... Only those who had viewed farming as a permanent productive business and the rise and fall of land values as windfall gains and losses were on a sound economic basis.'
>
> (Condliffe 1959: 277–278)

6.3.2 Kai Tahu

The First World War of 1914–18 stopped any further consideration of the Kai Tahu Claim. In 1918, Judge W.E. Rawson of the Native Land Court completed a report announcing that, in order to qualify for a grant of land under the South Island Landless Natives Act 1906, claimants had to be landless descendants of those Maori who had ceded their land to the Crown, and to have been born before 31 August 1896 (Evison 1993: 482). More than 100 Kai Tahu proved they were eligible and applied for land, but did not receive any because all available and suitable blocks were used for soldier settlement. Instead, claimants were paid an average of 13 shillings and threepence per acre (Evison 1993). Kai Tahu historian Harry Evison wrote:

> 'The Government thus revealed the true market value of the 1906 South Island Landless Natives Act grants to Ngai Tahu. It was tacitly acknowledged that after more than thirty years of parliamentary campaigning for the Ngai Tahu Claim, and an official acknowledgement

that a substantial grant of land was justified, all that the average landless adult Ngai Tahu had got for his claim was £33/2s/6d or its equivalent in wasteland—enough perhaps to buy five or six acres of average farmland.' (Evison 1993: 482)

In 1921, Kemp's Purchase was again investigated by a Royal Commission. The Commission's report criticised the inadequacy of Mantell's reserves and the 1868 proceedings of Chief Judge Fenton, and declared that the South Island Landless Natives Act had been no solution to the Kai Tahu claim (Evison 1993). Since no land was available, not even in the high country, it recommended a payment of £354,000 as compensation for the unfulfilled promises in Kemp's Deed, based on the price per acre that had been paid for the Otago Purchase in 1844, as well as 72 years' interest at 5% (Evison 1993).

However, by this time few Pakeha New Zealanders took Maori claims seriously (Evison 1993). The Kai Tahu claim made no progress for 20 years after the Royal Commission's Report of 1921 (Evison 1993).

6.4 SUMMARY

6.4.1 General historical features

- Depredation of high-country tussock land by rabbits
- Invasion of high-country tussock land by indigenous and exotic plants unpalatable to stock
- Spread of pests such as the grass grub
- Burning off of mountain tussock
- Erosion of mountain slopes and formation of shingle slips because of burning off, depredation by rabbits, over stocking, continuous grazing and short-term leases
- Desertification of driest high-country areas
- Declining sheep returns
- Development of crossbred flocks and relative decline in the merino
- Declining productivity from the 1920s
- Planting of orchards and plantations on depleted areas
- Construction of irrigation systems and use of old mining water races for irrigation
- Irrigation schemes made dairying possible in some areas
- Expansion of close settlement
- Establishment of soldier settlements after the First World War
- Setting up of experimental plots and plantations by the State and private enterprise to assist the farming industry
- Sowing of exotic grasses
- Initiation of hydroelectric power network
- Cultivation of crops such as oats, turnips and lucerne for animal feed and/or to replenish the soil

- Continuing expansion of road and rail grids, and metalling of some roads
- Increasing use of traction engines, water-powered mechanical devices, internal combustion engine and electricity
- Further subdivision of high-country estates
- Growing State involvement in high-country recreation, and construction of huts, hotels, tracks and bridges
- Declining importance of extractive industries

6.4.2 Key physical resources

- Traction engines
- Cars, lorries and tractors
- Water-powered shearing machines, chaff cutters and saws
- Hydroelectric plants
- Hydroelectric dams
- Experimental farms and plantations
- Subdivided estates
- High-country huts, hotels, tracks and bridges

7. 1935–1948: High-country management and the soil conservation movement

7.1 LANDSCAPE MODIFICATION

Problems caused by burning, overstocking and continuous grazing of sheep without improvement, rabbits, and insecurity of tenure persisted in the high country. In addition, there were concerns over damage to pastoral grasslands by introduced weeds and noxious animals, and the intrusion of wilding trees into the landscape (Dominy 2001). In the early 1940s, historical geographer K.B. Cumberland observed that occupation of the South Island tussock high country had accelerated normal geological soil creep in regions of high frequency of freeze and thaw and induced landslides. In Central Otago, the diggers' hydraulic sluices had 'shifted the matted tussock cover and with it the surface soil to give birth to ever-extending gullies' and, in areas of lowest precipitation, tussock grassland had been reduced to semi-desert dominated by scabweed (Cumberland 1944: 159). He explained that:

> '... the tussock ranges were stocked with increasing intensity while their carrying capacity decreased. In addition, annual haphazard burning, rabbit infestation, and the spread of tussock insects have assisted in depleting, if not destroying, tussock species. Surface organic waste has often disappeared. Wind velocity is no longer effectively restricted at the soil surface. Moisture conservation by vegetation is reduced and the ground bared. Humus content of soil is diminished. On open plains and sunny hill faces this has led to accelerated wind and frost erosion and on higher mountain slopes to increased down-hill creep of "shingle slips" and mantles of wasting *Steinfelder*.'
>
> (Cumberland 1944: 160)

Canterbury runholder David McLeod, with C.L. Orbell, bought the Grasmere and Cora Lynn Stations on the upper Waimakariri River in 1930. He wrote that when he took over Grasmere in May 1930, he:

> '... had no other task than to perpetuate the traditional system of management, making use of every available square yard, however rugged or inaccessible, and of every plant that sheep would eat, no matter what its value might be to the environment as a whole. In this endeavour I spent the first ten years, struggling against the economic disasters of the early thirties and slowly coming to realise the part that depletion and nutrition played in that struggle.
>
> 'The following thirty years passed in a slow readjustment to the realities of the situation not only in the case of my own treasured home but in the wider sphere of the high country as a whole, where our own situation was duplicated all down the Southern Alps from Marlborough to Southland. During this time our knowledge slowly increased, not

only through studies of the soil, plant and animal relationships of the present and future but through searching back through the past for the history of our country.' (McLeod 1980: 17–18)

7.1.1 Rabbits

In Kaikoura at the time of the First World War, runholders had already been losing the battle against rabbits in the back country, particularly on Kekerengu Station (Sherrard 1966). The situation worsened with the shortage of labour and the abandonment of Bluff Station to the scourge. In 1920, a full-scale eradication programme was resumed and, although on Clarence Reserve gangs were destroying 100 000 rabbits each year, they could not wipe them out (Sherrard 1966). Annual rabbit skin returns exceeded those from wool (Sherrard 1966). Simultaneously, across the river, W.S. Bennett, A.J. Murray and P.J. Halligan attempted to recover Bluff Station (Sherrard 1966). Rabbits had turned the land into a desert, except for matagouri bushes, and even these had been stripped of their bark. Nine men rabbited, fenced and sowed seed, and pack teams carted food, fencing material and tons of grass seed up the 50-mile (c. 80.5-km) track (Sherrard 1966). The seed was mixed on site and sown by hand, and between 1921 and 1930, 8000 acres (3240 ha) were regrassed. Unfortunately, just as rabbit numbers began to decline, the economic depression of the 1930s and the Second World War (1939–45) forced retrenchment (Sherrard 1966).

At Grasmere and Cora Lynn during the war, McLeod also struggled:

> 'With most able-bodied countrymen away at the war the labour-intensive job of rabbiting became almost impossible and the catchment boards were well aware that they could never cure depletion and erosion as long as large areas of the country were overrun with this insidious pest. It was not until the Killer Rabbit Boards were formed and the trade in skin and carcase abolished that any progress was made and that was against the bitter opposition of a lot of people—runholders among them—who had had a very satisfactory income from the vermin.' (McLeod 1980: 47)

The three 'killer boards' that speeded rabbit destruction were: the Marlborough East Coast Rabbit District (1926); the Kekerengu Board (1946); and the Conway Rabbit Board (1949). The Conway Board especially achieved dramatic results by poisoning, fumigating, trapping, and the use of dogs and guns. In the first 2.5 years, 51 469 rabbits were killed above ground and probably three times that number were fumigated (Sherrard 1966).

The rabbit population was finally reduced to manageable numbers with the use of the aeroplane and 1080 poison after the war (McLeod 1980). In the dry areas of the Mackenzie Country and Central Otago, this combination was the most effective means of restoring the land (McLeod 1980). By 1956, the prohibition of the sale and export of rabbit skins was to put another nail in the rabbit coffin (McCaskill 1973).

7.1.2 Other pests

Wild cattle, deer, pigs, goats and Canadian geese also caused problems on the South Island high-country stations (McCaskill 1973). In the late 1920s, botanist Leonard Cockayne pointed out that, whereas deer and forests in other parts of the world had been closely associated for a long time, in New Zealand the forests had developed in the absence of grazing and browsing mammals. Deer were a new and destructive pest to New Zealand, and beech forests in the high country were in danger of being turned into fields of debris and barren ground. As a consequence, water would cascade down the bare slopes after each rainstorm, taking with it masses of stone, gravel and clay to smother the fertile, arable lands below and causing flooding in the rivers. He asked whether the protection of deer and other pests should be allowed to cause such havoc (Cockayne 1926, 1928, cited in McCaskill 1973: 178).

By 1935, Lake Coleridge Station was 'infested' with wild cattle, and in spring the musterers Peter Newton and Jim Binnie were hired to 'clean them out':

> 'Our agreement was to get what we could out alive and shoot the rest. They were cattle that had been hounded about many times in abortive attempts to muster them in, and they were as wild as deer. Living as they did in bush-bound country up rough creeks, it was no easy task and as Jim and I had had no experience of real wild cattle, we had to learn by our mistakes as we went. The cattle of course were fifty per cent. bulls, some of them hoary and crusty old gentlemen who had to be given a fairly wide berth unless one was astride a pretty good sort of horse.' (Newton 1953: 97)

In November that year, Newton went over to Mount White Station. He described the wildlife in this 'way back' station:

> 'I had never seen deer in such numbers and the Esk Valley harboured hundreds of wild pigs. The headwaters of all the rivers were the haunts of wild cattle, and the Lochinvar lagoons were prolific breeding grounds for Canadian geese. And even the nimble little chamois were then working their way north over those tops.' (Newton 1953: 108)

Newton stayed at Mount White for 3 years and while he was there government deer cullers came for a season. Although the weather was bad, the cullers killed 3000 deer. One of them stayed on for a further year and killed another 1200 (Newton 1953).

Mona Anderson explained the problem posed by Canadian geese at Mount Algidus Station in the 1940s:

> 'At that time it was illegal to kill them, but we caught them in dozens. They bred on the station in hundreds and were an absolute pest. A forty-acre paddock of turnips would be stripped bare by them as if sheep had been feeding there for months. Besides eating the winter feed, they polluted the paddocks so that the stock did not care to feed where they had been.' (Anderson 1963: 79)

Soon it became legal to kill geese, and the Government sent in cullers to smash the eggs and shoot nesting birds (Anderson 1963).

7.1.3 Weather

Weather was the perpetual wild card in the high country. At St Helens, Marlborough, 11 000 sheep were lost during a disastrous snow storm that blew in from the northwest during the winter of 1939, representing a 27% loss (McCaskill 1970). The Canterbury high country and foothills were blanketed with snow. In 1945, another snowstorm came from the southwest, covering the entire province of Canterbury (McLeod 1980). The years 1946, 1947 and 1948 were very poor for lambing. The main reason was bad weather in winter and spring, and in 1947 the Canterbury high country was subjected to a freak summer storm (McLeod 1980). At Grasmere, 1400 sheep were lost (McLeod 1980). Anthropologist Michèle Dominy contended that runholders often made the link between weather and market as:

> '... external forces against which control is futile and minor modification possible, and speculate that the high country copes better than most New Zealanders with economic crises because the are "geared for" uncontrollable factors that characterize high-country history, such as variable mountain-weather conditions, and boom-and-bust market cycles.' (Dominy 2001: 192)

7.1.4 Molesworth Station

The Crown took over Molesworth Station in 1938 because it had become an ecological disaster area and uneconomic to run (McCaskill 1970). The question of seeding the bare country was immediately considered, because of the success at Bluff Station. Experimental plots revealed that spring sowing was best, and that cocksfoot was the main grass, with ryegrass, white clover and red clover also present (McCaskill 1970). A programme of sowing was initiated in September 1940, with 3622 pounds (c. 1643 kg) of seed delivered to Molesworth. In 1940, the sheep were taken off, and the station was restocked with 788 head of Angus-Aberdeen and Hereford cattle (McCaskill 1970). (Lance McCaskill (1970) pointed out that this was a case of history repeating itself, as in the early days of Molesworth and Tarndale, only cattle were run.)

Wild deer, pigs and goats continued to denude Molesworth. In 1939, a private shooter killed at least 700 deer, and there were large numbers of goats in the Saxton and Severn Valleys and in the Yeo Creek Block (McCaskill 1970). Pigs were prolific in the Lake McRae-Elliott Block. The position became so serious that at the end of the war, when men were released from duty, the Department of Internal Affairs made a full onslaught on the problem using ex-soldiers as marksmen (McCaskill 1970). As every shooter got tallies of up to 1000, deer numbers receded, to the extent that by 1946 it was possible to stock the Saxton country with cattle (McCaskill 1970).

Between 1938 and 1949, Molesworth was amalgamated with Tarndale, Dillon and St Helens Stations, when their leases were also surrendered for similar reasons, to form one vast, remote station called 'Molesworth'

(Fig. 22). The land was rehabilitated, with difficulty, by controlling the rabbits, preventing burning, changing grazing patterns and oversowing grasslands (DOC 1999). Wilding trees and weeds such as brier and broom caused the greatest damage to the vegetation cover, and extreme weather conditions limited plant growth. The cattle were crossbred and coped well with the harsh conditions, and their population eventually increased to more than 10 000 as the vegetation improved (DOC 1999). By January 1946, the floors of most of the Molesworth valleys were covered by a variety of grasses, tussock was seeding all over the station and the native bluegrass had reappeared. Although vast areas consisted of shingle slides, depleted mountain sides and patches of scabweed, many shingle slips had been arrested by new growth, often sorrel and Yorkshire fog, and formerly bare faces had incipient cover (McCaskill 1970). The restoration of Molesworth is now cited as one of New Zealand's major soil conservation and farming successes (DOC 1999). Figures 23 and 24 show Molesworth Station as it is today. Figure 25 illustrates the environmental changes that have occurred on Molesworth as a consequence of burning and the taking of timber.

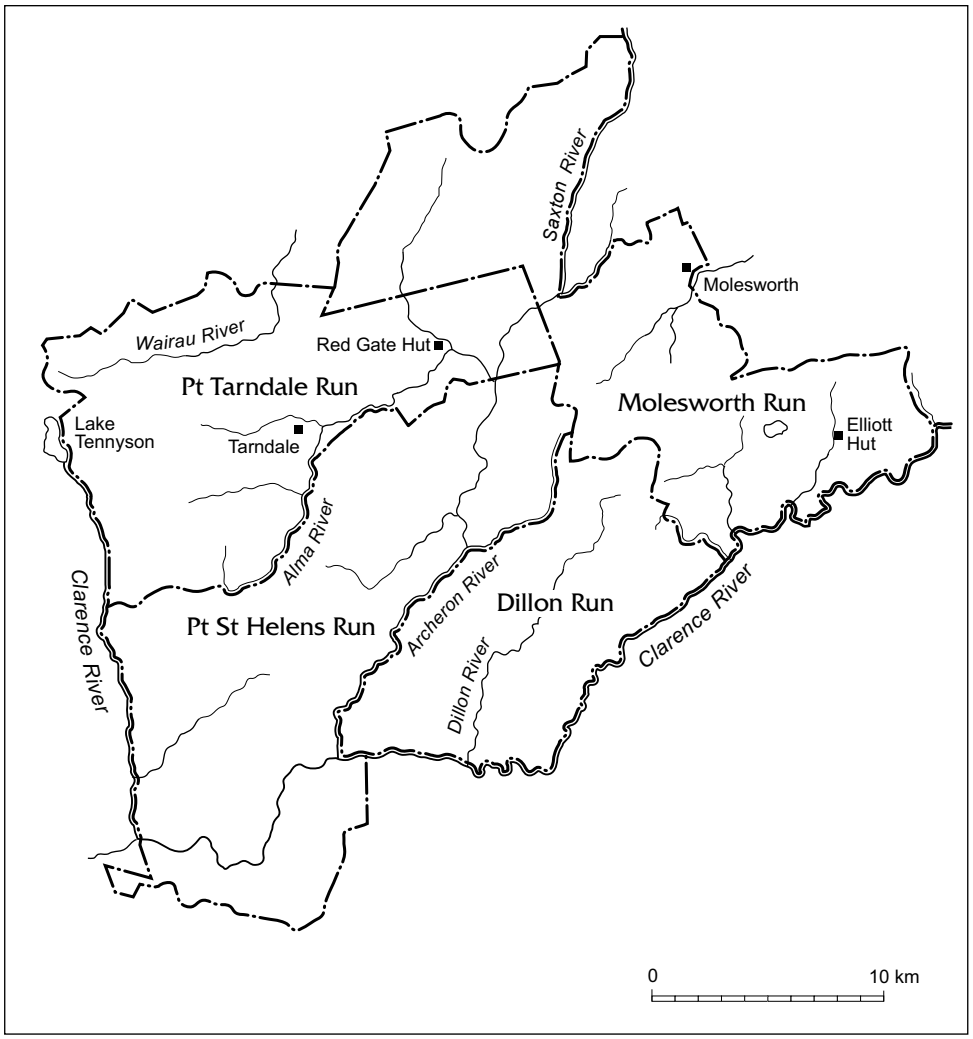

Figure 22. Map of Molesworth Station in 1949, after McCaskill (1970).

Figure 23. Aerial oblique of Molesworth Station: distant view looking southwest. *Photo courtesy of Kevin L. Jones, DOC.*

Figure 24. Aerial oblique of Molesworth Station: close view of station homestead and other buildings. *Photo courtesy of Kevin L. Jones, DOC.*

7.2 PHYSICAL REMAINS

Canterbury historian W.H. Scotter (1965) believed that the years 1935–48 were a separate period in the history of New Zealand because of the new developments in farming and industry and the election of the first Labour Government, and that these changes were intensified by the Second World War of 1939–45. In the high country, differences were made by the increasing use of jeeps, motor lorries and limespreaders. Topdressing began from vehicles in 1945 and from aeroplanes in 1949 (Scotter 1965).

Figure 25. Aerial oblique of Bush Gully on Molesworth Station. In this western valley, rainfall was sufficient to sustain a natural forest cover. The pattern of beech forest, which was partially destroyed by fire and the taking of timber, is still graphically marked on the landscape. *Photo courtesy of Kevin L. Jones, DOC.*

7.2.1 Population decline

Mechanisation and soil deterioration contributed to the loss of rural inhabitants, who were also attracted to expanding urban centres by job opportunities in the tertiary sector. For example, in Otago and Southland, the population declined by c. 10 000 between 1936 and 1945 (McLintock 1975). While the population in urban areas rose by 3500, that in rural areas actually fell by 13 500 (McLintock 1975). Historian A.H. McLintock contended that 'the decline in the rural population of Otago indicates the gradual but steady exhaustion and deterioration of the soil fertility' and that 'much of the wide expanse of Central Otago has suffered by reason of soil deterioration' (McLintock 1975: 752, 756).

7.2.2 Experimental plots

In 1920 and 1921, botanist Leonard Cockayne, a member of the 1920 Southern Pastoral Lands Commission, had fenced 12 rabbit-proof plots on depleted country at an altitude of 300–1000 m between Cromwell and Lowburn Ferry, and sown them with seed of various species of pasture plants (McCaskill 1973). A committee of runholders and an officer from the Department of Agriculture assessed the results and found that no improvement of the high-country soil was possible without subdivision, exclusion of rabbits and a regular system of spelling the land (McCaskill 1973). His lead was followed in 1938, when the Department of Agriculture began to supervise plant introduction trials on a 30-acre (12.15-ha) area at Pisa Flat (McCaskill 1973). Through to 1951, a total of 350 species and strains were tested for their suitability for revegetating semi-arid land (McCaskill 1973). In 1944, the Botany Division of the DSIR started a project of observation and experiment at Molesworth and Tarndale Blocks in Marlborough to discover which grasses and legumes were useful in renovating the grasslands and to propagate them (McCaskill 1973). Further experimental fenced enclosures were set up

by the North Canterbury Board in 1948. These showed that where the land was above c. 1000 m and/or the slope exceeded 30° and bare ground exceeded 40% of the area, vegetation was unable to cover the bare ground if sheep grazing continued (McCaskill 1973).

7.2.3 Sheep

The Government's acquisition of phosphate-rich Nauru Island in 1919 and the mixing of sulphuric acid with the phosphate at fertiliser plants dramatically boosted the supply of superphosphate to farmers (Brooking et al. 2002). However, South Island high-country runholders did not use superphosphate on any scale until aerial topdressing was introduced in 1949 (Brooking et al. 2002). Consequently, there was not a great increase in production between 1900 and 1950. While North Island sheep numbers increased from 12.9 million to 19 million between 1910 and 1950, those in the South Island rose from 11.3 million to 14.8 million (Brooking et al. 2002).

In spite of the general increase in the number of sheep, merino flocks declined. A government report stated that the substitution of heavier and less hardy sheep for merinos led to a fall in the number of sheep in the foothills of Canterbury (Scotter 1965). Half-breds declined too, but crossbred flocks stayed at around 3 000 000 (Scotter 1965). The main feature of the years 1935–45 was the swift rise in the number of Romneys (Table 1).

TABLE 1. NUMBER OF SHEEP IN CANTERBURY IN 1935 AND 1945. DATA TAKEN FROM SCOTTER (1965).

BREED	1935	1945
Romney	92 000	342 000
Merino	465 000	367 000
Corriedale	746 000	797 000
Half-bred	1 207 000	1 129 000
Crossbred	2 848 000	2 767 000

7.2.4 Wool

During the Second World War, the price of wool was controlled at what was, according to farmers, a low level, averaging 12 pence to 14 pence a pound (Scotter 1965). After the war, farmers returned to the auction system of wool selling (McLeod 1980). World prices rose quickly for all wools, and the demand for merino and fine crossbred wool after years of restraint drove their relative value to a considerable premium over coarser wools (McLeod 1980). The high country experienced its most prosperous period yet. Timaru doubled its wool exports from 6000 tons in 1938 to 12 000 tons in 1950 (Scotter 1965). Maintenance and development had been neglected for many years because of the war, and much of the profit was spent on buildings, fences, manures and seeds (McLeod 1980). Some runholders, like McLeod, built power plants (McLeod 1980). The boom lasted for several years, until the Korean War of 1950 escalated the demand further and prompted the Prime Minister at the time, Sid Holland, to freeze a third of farmers' wool receipts as a hedge against inflation (McLeod 1980). The price of wool remained fairly high throughout the 1950s (McLeod 1980).

Higher wool and stock prices, new techniques, and the research services provided by the Department of Agriculture and Lincoln College helped to improve the management of the high country (Scotter 1965).

7.2.5 Woolsheds

Dominy (2001) wrote that the woolshed encapsulates the history of the high-country sheep station, fusing farm and homesite. It was the communal site for social activities, such as dog trials, family reunions, dances and weddings. She suggested that:

> 'The cultural significance of the woolshed may also derive from the role it plays, like the yards and tailing yards, as a physical and conceptual intermediate space between uncultivated pastoral land and the homestead: as the ultimate container for the expansiveness of stock activity and human labor, it is the physical site for harvesting a product, the fleece, and for concentrating the labor force (farmers, family, shearers and classer); and it is the conceptual site for distilling the landscape and pastoral activities of the year into fleece.'
>
> (Dominy 2001: 189)

The function of the woolshed as the station nexus did not change, and during the post-war period of prosperity, many old woolsheds were improved and new ones built.

7.2.6 Mustering

Mustering also continued throughout this period with little change. Dominy studied the high-country tradition:

> 'The seasonal use of extensive back-country tussock grasslands with their low-carrying capacity most distinguishes high-country merino farming from hill- and down-country farming. In autumn—either April or May depending on a property's altitude and latitude—sheep are "mustered in," brought from remote summer grazing country into the station's front country. Autumn-muster narratives predominate in station and family histories, autobiographies, short stories, station and farm verse, and novels... Such accounts tell us how essential mustering is to the distinctiveness of high-country farming.'
>
> (Dominy 2001: 167)

Dominy noticed that Canterbury runholder Peter Ensor began his mustering narratives by describing the front faces of Double Hill, Glenrock and Glenariffe on the upper Rakaia River and also the back country, which encompassed two-thirds of the combined properties (Dominy 2001). He gave the altitudes of the main peaks and the two most significant saddles—Macintosh's at 1000 m, and Turtons at 1300 m. He and his two brothers mustered in together. Later, their sons and other relatives and neighbours did the same (Dominy 2001).

The traditional Double Hill autumn muster of the 1940s took six or seven men with a packman and four horses 6 days to complete. Ensor's narratives outlined familiar routes, which often followed streams or ridgelines, altitudes and distances, mustering hut locations, and the

long hard journey faced by the packman with his heavily laden horses (Dominy 2001). At Erewhon, before the advent of helicopters, the muster took 35 days. Much of the Double Hill country was to be closed up after the last big muster in 1968 (Dominy 2001).

Dominy concluded that:

> 'For Rakaia families, the autumn muster persists as a focal point of back-country pastoral activity. Because topography does not change much, the mustering beats remain constant over the years, as do the paths taken by sheep and men; such physical traces provide unexpected degrees of continuity with the past. Property and fencing subdivision may change the routes slightly, as may scrub growth or unstable scree slopes, but even these transformations depend on the contour of the land and predetermined beats and, most important, they must consider sheep movement or else the stock will smother against new fences.' (Dominy 2001: 168–169)

Distances covered were vast, and 'taking a beat' (or horizontal section) meant finding one's way across scree slopes, above or below sheer rock faces and gullies, along ridges, and down spurs (Dominy 2001). Beats could be up to 1.5 km wide and 16 km long. In assigning a beat, the runholder or head shepherd gauged a man's ability, the calibre and mix of his dogs, and the steepness and difficulty of the country. He tried to be fair in giving each a turn at top, middle and bottom beats (Dominy 2001). Mustering huts were still virtually the only dwellings to be found in the remote back country (Historic Resources Directorate 1997).

Mona Anderson described the four huts she sheltered in while mustering on Mount Algidus Station in the late 1930s: 'The four huts, More-rain, Mistake, Manuel's and Moa had all been very well built. All had thick concrete walls with corrugated iron on the outside and a lining of tin inside' (Anderson 1963: 46–47). Mistake had two rooms: a living room with a wide fireplace at one end and a bunkroom with eight bunks. The living room had kitchen utensils, a big table and two long forms, and an armchair that had probably been made with a pocket knife by a musterer on a wet day (Anderson 1963). Manuel's hut also had two rooms, and the others had one. Their colourful names referred to past events, characters and relics. Verses, ditties and anecdotes were scribbled on the walls (Anderson 1963). Further up the Wilberforce Gorge, dating from gold rush days, were the remains of Miners' and Dynamite Huts, a large blacksmith's shop, an accommodation house, and the beginnings of a road across Browning Pass that was littered with rusting metal tools (Anderson 1963).

In the early 20th century, gangs stayed longer on a station than they do today, in the early 21st century (Dominy 2001). They played cricket and golf, and held dances. A stronger sense of community and kinship was created (Dominy 2001). The high-country population rose while the men were mustering, as it did during shearing. Class distinctions between runholders and shepherds were bridged, but at the same time class lines were strengthened, as one man's son would apprentice to his father's old classmates (Dominy 2001).

7.2.7 Transport and communication

High-country runs carried on using packhorses despite the advent of motor vehicles, and some runs were still extremely isolated. For example, the musterer Peter Newton wrote that in the late 1930s, Mount White in northern Canterbury had the finest team of packhorses that he had ever seen, 'all light draughts and bred on the place' (Newton 1953: 113). He recalled the time that he and his mate 'Honey' Richards went to a dance:

> 'At Mt. White we were truly shut off from the rest of the world. Honey and I did once venture out to a dance, but it was a trip we would not care to make every day in the week. We left the homestead at 4 p.m., rode twenty miles to Cass in four inches of snow, left our hacks in the railway yards, and caught a goods train to Springfield thirty-five miles away. At 2 a.m. we boarded another goods train on the return journey to Cass, and arrived back at the homestead just in time for breakfast. In all, we travelled seventy miles by goods train and just on forty per pig skin—and thought it worth it.'
>
> (Newton 1953: 120)

In 1936, the inter-island air service began, rail cars started to run to schedule on the Midland line to Greymouth and the Bealey Bridge was opened. In 1937, the Lewis Pass road was opened, and in 1939 the Rakaia traffic bridge opened up that area. By the late 1930s, the number of private motorcars had increased, and a new trend of weekend and holiday motoring was evident. The earliest motor lorries began carrying loads from some of the most remote stations in the 1930s. Sheep were driven across narrow suspension bridges (Fig. 26).

Mona Anderson gave her first impression of 'the dreaded Wilberforce' River on her arrival at Mount Algidus Station as a young bride in the late 1930s:

> 'The waters of the Wilberforce were locked up for the winter in the heavy matrices of snow and ice that rested on the mountains. Months later I was to see it with the spring thaw on its back—brown, ugly and raging, a killer river that no man in his senses would cross. Now it was a gentle murmuring stream.' (Anderson 1963: 13)

During the thaw, the river became 'an impassable barrier' to the world outside (Anderson 1963: 39). Stores were taken in only once a year because of problems of access and transport, and sometimes they had to sit on the iron store across the river for days while the river subsided (Anderson 1963).

Betty Dick, who lived on Lilybank Station at the head of Lake Tekapo in Canterbury, wrote that all river crossings there were by horse or horse-drawn transport until 1949, when she and her husband, Allan, invested in a large four-wheel-drive ex-army vehicle (Dick 1964). Lorries fording the Macaulay River with sheep, stores, hay or wool all experienced difficulty when rapidly rising snow-fed rivers suddenly prevented access, sometimes within half an hour: 'The horse has been, and still is, a faithful friend for river crossings' (Dick 1964: 40). Years after the war, she continued to

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