



The farm, by Walter Withers. Withers came to Australia from England in 1882, intending to become a selector. He worked on the land and later painted with Roberts, Conder and Streeton. Oil, 1890.

GEELONG ART GALLERY

FARMING

WOOL WAS STILL the chief rural product, but the pastoralists no longer had a monopoly of the land. Small farmers who had established themselves on the old sheep runs had bought or were buying their land by instalment from the government. All colonial governments ran schemes of this sort, which were aimed at widening economic opportunity and putting the land to more intensive use. Those who held land under the schemes were called selectors.

When the New South Wales parliament passed its Selection Act in 1861, Tom Worboys had been digging for gold for four years. He had not struck it rich and he decided to take up farming instead. He paid £25 deposit on a selection of 40 hectares and had 5s left to begin farming. From this start he was now the prosperous owner of Wattle Grove farm, Spring Hill, near Orange. The 40 hectares had increased to 95 and he had just moved into a new brick farmhouse. He employed one man throughout the year and extra men at busy times.

Worboys had had to struggle to survive. At first he took contracts to clear land and sink wells and in between times began clearing his own land. He built a house of turf and sank a well 21 metres deep. On the cleared land he grew wheat, which he carted to market at Bathurst. Year by year he cleared more land and grew more wheat. After ten years he was reasonably well established, but he was still looking for outside work. He borrowed money and bought a steam threshing machine to thresh his own wheat and, for a charge, that of his neighbours. This venture prospered; he paid back the loan within three years and cleared more land. In most districts 1882 was a drought year, but not at Orange. The price of wheat rose and Worboys made £1200 from his crop. The next two years were also good and he bought out the neighbouring farm of 54 hectares and built his brick house. Few farmers had such luck.

Worboys' story shows that success on the land was possible for the poor man. It also points to the pitfalls. Like Worboys, selectors without capital had to take work to become established or tide them over hard times. They worked for neighbours,

went shearing or droving, took jobs on road and railway works and carted goods. The difficulty was to find the work at the right place and the right time and to keep off drinking and gambling. If a selector's crop was ruined by drought or rust, he had to find work for longer periods, and that made it more difficult to re-establish his farming income. Even with outside jobs, selectors often fell deeply into debt.

In the 1860s and 1870s few New South Wales farmers shared Worboys' success at Orange because the market for wheat was limited. The mills in Bathurst made flour for the local towns and pastoral properties and, when that need was met, they bought no more. Wheat is a heavy product and could not be carted far by horse or bullock wagon. It would have cost more than it was worth to send it over the mountains to Sydney. Sydney used South Australian wheat sent by sea.

The farmers around Orange owned or were paying off their land. They were better off than the farmers around the older town of Bathurst, who mostly remained tenants. Most land around Orange and along the tablelands and inland slopes was now owned by pastoralists. The selection acts that had allowed farmers to buy land on credit also allowed squatters to buy land for cash. Squatters borrowed heavily to buy land. They bought out selectors who had failed or who wanted to move on to new land. They also broke the law and used dummies to select land on their behalf.

The land reformers in the 1850s and 1860s had envisaged the squatter being entirely replaced and the countryside dotted with homesteads where families lived in frugal comfort; each man, as the Bible put it, under his own vine and fig tree. But the aim of mere self-sufficiency on the land and the attitudes and skills to achieve it were not likely to be found in a population that had migrated from Britain. Many selectors were from cities and those from the English countryside had experienced an agriculture that was market-oriented. The selectors, prosperous and struggling, for the most part did not even grow their own fruit and vegetables. In much of the countryside vegetable growing was left to the Chinese, who were experts in the arts of irrigation and manuring.

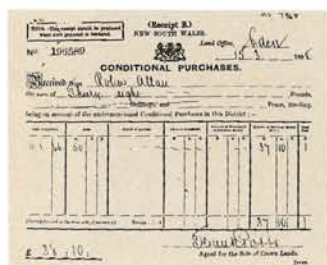
At Quirindi on the northern tablelands of New South Wales, the local population shared the general hostility to the Chinese that swept the colonies in 1888, but they resolved that a few would still have to be admitted so that market gardening could be kept up. Growing vegetables took time and effort in a dry climate, but this does not entirely explain why it was neglected. Steady, close labour was the furthest from the way of life of a prosperous farmer—as the selector hoped to become. When the lucky breaks did not come and security eluded them, the selectors did not have the peasants' habits and skills of survival to fall back on; if they did not abandon the land altogether they slipped into a slovenly despair.

German farmers came from the land and still had peasant skills. In South Australia, Victoria, New South Wales and Queensland they stood out from the rest of the farming population. They took more care with their farming implements and houses; they lived off their land and bought as little as possible and so had less need to borrow money. They were experienced in the cultivation of the grapevine, and in the 1880s they began to change the Barossa valley from a wheat-to a vine-growing region.

When the railways crossed the mountains in New South Wales they presented new opportunities to the selectors. Wheat farmers took up land near the southern railway that reached Albury in 1882. Those already established close to the line could grow more wheat because they now had access to a wider market. Not all the land on which wheat could now be grown was open to selection, for the squatters owned much of the best land. However, the farmers now had a guarantee

Robert Allan selected at Eden, on the south coast of New South Wales, under the Crown Lands Act of 1861. The act introduced the new principle of free selection of crown lands, in specified areas, before survey, in an attempt to help small farmers. Land was sold at a fixed price of £1 per acre, with generous repayment periods, as this receipt shows: Allan pays off in 1888 a balance of £38 10s on land selected in 1866.

ROBERT ALLAN PAPERS,
LA TROBE LIBRARY





that the squatters with their longer purses could not block them out completely. In 1884 parliament gave the squatter immunity from selection on half the land he still leased and gave the selectors unimpeded access to the other half.

The railway carried more and more wheat from the southern slopes and plains to Sydney. There it met competition from Victorian and South Australian wheat. In some areas competition was even worse, for the railway which carried wheat to Sydney could also be used to take Adelaide and Melbourne wheat into the country. Selectors in New South Wales demanded a protective tariff. Farmers on the Darling Downs, the one area in Queensland suitable for wheat, also demanded protection. Western Australian wheat growers also wanted protection because Adelaide wheat was landed in Fremantle more cheaply than they could supply it.

What made the South Australian and Victorian farmers such formidable competitors? Almost from its foundation South Australia had produced a lot of wheat, and still accounted for half of Australia's wheat-growing land. The squatters had never gained such a firm hold on the land as they enjoyed in the eastern colonies. There were good wheat lands around Adelaide and to the north and the indented gulf coastline put the farmers within easy reach of the sea. Their wheat could be carried cheaply to Adelaide or to the other colonies. In the early 1860s, when New South Wales and Victoria passed their first selection laws, agriculture in South Australia was booming. Squatters' leasehold land was being resumed and farmers were paying cash for it. But ten years later the farmers pressed parliament to allow them to buy on credit because the squatters were beginning to outbid them at the land auctions for their old runs. Once the new credit provisions were available, selectors streamed into the north and on to Yorke Peninsula. Most were farmers and their sons from the older districts who brought capital, skill and machinery with them. The wheat frontier advanced, but not away from the sea. Short spur railways were built to carry wheat to the gulf ports.

The establishment of wheat farmers in the Wimmera and across northern Victoria in the 1870s and 1880s was the great success of the selection acts, the more remarkable because at first in this colony the acts had been a failure, especially in

A German farm family at Boonah, Queensland. Boonah, 75 kilometres southwest of Brisbane, was occupied by farmers in the 1870s and attracted a large German Lutheran community. The average German farm wife who married in the early 1860s had eight children by 1888. This younger family is well on the way to beating the average.

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the fertile Western District. A new law made it harder for squatters to use dummies and made the terms of repayment for the selector more generous. The Victorian land reformers discovered that it was through new methods of administering the law as much as through changes in the law itself that success would come. The first selection laws had tried to stop dummied by insisting that the selector reside, cultivate and improve. But the more difficult these provisions were made, the harder it was for the genuine selector to get established. Nor had the laws developed a satisfactory method for deciding who was to have the land when two or more people applied for the same piece. In 1870, the Victorian government set up land boards throughout the colony to interview applicants for land and to decide who would be allowed to select. Boards asked applicants about their experience, the capital they had, the amount of land they already held and their personal circumstances. Preference was given to family men. This was a much better way to weed out squatters' dummies. New South Wales adopted the land board system in 1884 and South Australia in 1888.

Wheat was shipped to Adelaide from more than 30 small ports along the South Australian gulfs. When wheatlands were so close to the sea, transport costs were low and farmers could compete with growers in other colonies where the good land was much further inland. South Australia exported 70 per cent of the colony's wheat crop. Victoria had a tariff against South Australian wheat, but Queensland, New South Wales and Western Australia did not.

SOUTH AUSTRALIAN ARCHIVES

When the farmers moved on to the lands north of the Divide in Victoria they had an effective law to assist and protect them; the drier climate was well suited to wheat growing; and new railways gave them access to Melbourne and from there to other colonies and overseas. Without the railways wheat growing in these areas would have been impossible; but the changes in the land laws were essential too. If the squatters had been able to get a firm hold on the land, they would have been the ones to benefit from the new opportunity to grow wheat. The farmers would have had to rent land from them, take it on shares or buy it at inflated prices. Instead they became owners by paying 2s per acre each year to the government over ten years, and the squatters were almost entirely displaced. The better-off farmers in this area were rich men.

The South Australian farmer produced wheat very cheaply by using labour-saving machinery and new methods. His agricultural year began in April with the autumn ploughing. Sometimes he could not begin until June, for the ground was rock-hard after summer and he had to wait for the first rains to soften the soil.



Then the teams were out at the crack of dawn, drawing the new two or three furrow ploughs which had almost supplanted the single-furrow plough. If the land had been cleared of mallee scrub the farmer used a stump-jump plough, a local invention of the 1870s that reduced the cost of clearing because, after the scrub had been rolled down and burned, farming could begin immediately. The roots of the scrub remained in the earth, but the plough jumped over them. The stump-jump plough was also useful for stony country. Growing crops among stones and stumps was considered slovenly by British standards. The one traditional British aspect of South Australian farming was that the farmer walked through his paddocks broadcasting the seed by hand. A few farmers now used mechanical seed sowers. In a normal year, the main rains fell in June and July, and the crops of wheat and oats, the latter a hay crop, began to show for ear in early November. The farmer now looked anxiously for signs of rust and if he found any he would be forced to cut the wheat crop for hay before it had ripened.

The wheat harvest was in full swing everywhere by Christmas. The wheat was taken off by the stripper, invented in South Australia in the 1840s. The harvesting had to wait until the stalks of wheat were dry and rigid so that the strippers could beat the grains of wheat from the ear. Timing was everything; too early and the green flexible stalk bent under the beater, too late and the grains had dropped from the ear. The stripper moved through the paddocks raising clouds of dust and the air vibrated with the humming noise made by the rapid rotation of the beaters. When the stripper was full, the farmer shovelled out the contents on to a tarpaulin in the paddock. The wheat was cleaned—the grain separated from the chaff—by a winnower taken from pile to pile. Winnowers were usually worked by hand, sometimes by horse. Harvesting in this way was also considered slovenly by old-world standards because the straw was left standing in the paddock. The last act of the harvest was to burn it off.

Farmers grew wheat on the same land year after year. They did not use fertiliser or rotate crops. Their attachment to wheat was legendary. A storekeeper selling a farmer some potatoes asked why he did not grow them on his farm. He replied,

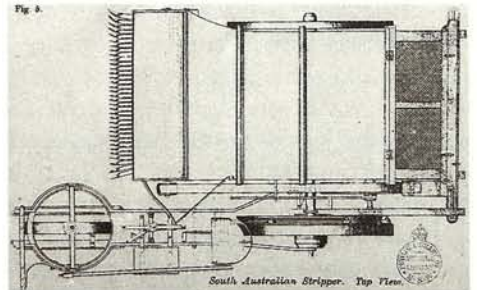
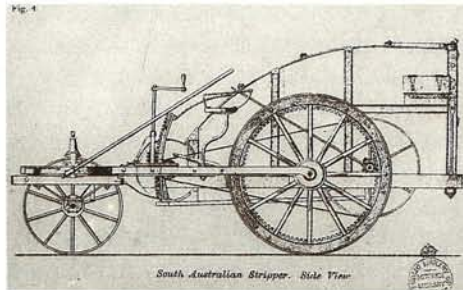
South Australian farmers trekking to southern New South Wales. South Australia could not meet the demand for land from its farmers and their sons. They took their skills and equipment to the new wheatlands of Victoria and New South Wales. These farmers leased or bought land from pastoralists who had held the freehold for many years.

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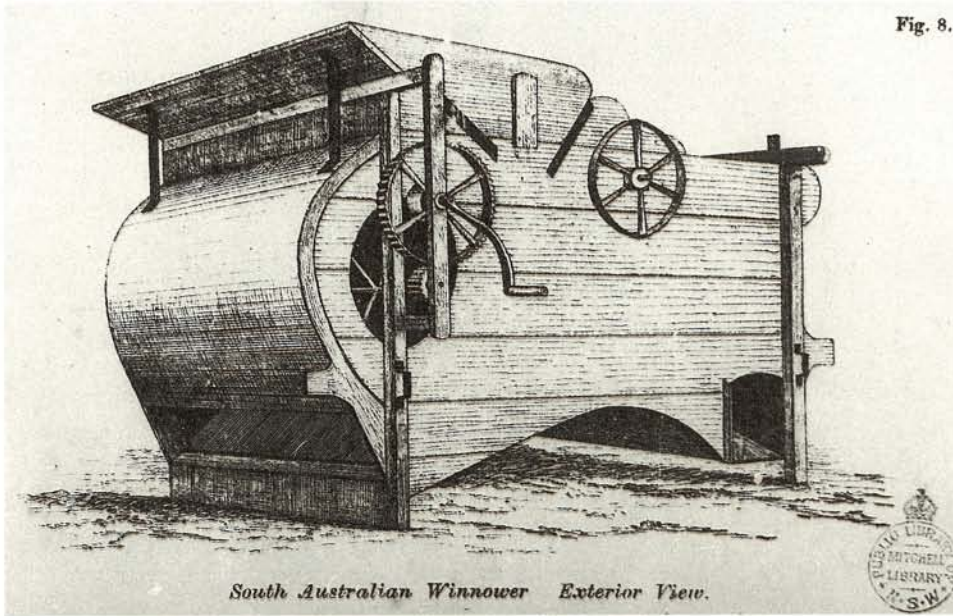
Harvesting. The stripper headed the grain from the standing crop by horizontal projecting combs and revolving beaters. Worked by four horses and a man, this machine stripped three hectares in a day of eight to ten hours. It economised greatly on harvest labour and 'enabled the farmer to reap crops which otherwise could not have been gathered'. J.F. Conigrave, Agriculture in South Australia, Adelaide 1883.



'Because I couldn't take them off with the stripper'. On virgin land wheat yields were good, but in time they fell. Farmers responded by moving on to new land, by cropping larger areas, and by looking for new ways to cut costs.

In Victoria wheat growing had become mechanised but more slowly and along different lines. Where wheat was grown in the 1850s and 1860s—around Melbourne, Geelong and the inland goldfields towns—the summers were not warm or dry enough for strippers to be used. In Victoria the American reaper was used. Rotating blades cut the wheat at the base of the stalk and the wheat was then bound by hand into sheaves—one reaper would keep seven binders busy. The sheaves were stacked, then threshed by a steam thresher hauled from farm to farm. It took a team of men to feed the thresher, stoke its boiler, bag the wheat and stack the straw. Labour costs were much heavier than harvesting by strippers.

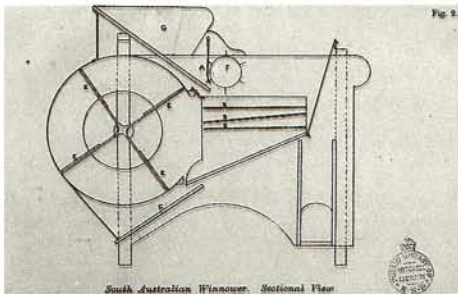
The climate north of the Divide was suitable for the stripper. Farmers from South Australia brought their strippers with them and Victorian farmers copied them. But then the Americans perfected what they had been attempting for years—a combined reaper and binder. This machine came onto the market in the 1880s and reduced the cost advantage of strippers. Some farmers used strippers, some reaper-binders, and good farmers had both. The wheat could be taken off with the stripper and the reaper-binder used to cut the crop which was to be used as hay. It could also be used to cut and collect the straw after the stripper. The machines being used in the new farming areas saved on labour costs and allowed



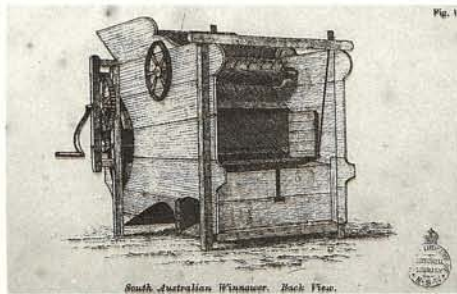
South Australian Winnower Exterior View.



Harvesting. South Australian hand winnower. One man feeds uncleaned wheat in the top (G), and the wheat falls onto vibrating slats of wood. The fan (E), turned by a second man, blows dust and chaff out of the back of the winnower, while the heavier clean grain drops down the slats and slides down (C) to the opening at the front of the winnower. This light portable winnower cost £25. J.F. Conigrave, Agriculture in South Australia, Adelaide 1883.



South Australian Winnower. Sectional View.



South Australian Winnower. Back View.

the farmer to cultivate a larger area. In Victoria, farms over eighty hectares had accounted for 42 per cent of cultivated land in 1860 and 85 per cent in 1888.

Just as the reaper-binder was coming into use, a farmer's son in Victoria gave the Australian stripping method a new lease of life. Hugh McKay knew what it was to spend days in the paddock turning the winnower by hand. How could he incorporate the winnower into the stripper and so complete the harvest in one operation? McKay's great achievement was to design a machine that could be raised or lowered as the height of the crop varied but that kept the sieves in the winnowing section level. The machine he and his brothers built out of old machines and scrap harvested a hectare of their father's farm in 1884. McKay contracted out the construction of machines to his plan and they were demonstrated successfully through the wheatbelt. In 1888 he moved to Ballarat, the chief agricultural implement centre in Victoria.

OPENING THE COASTAL FORESTS

From the 1870s, selectors began to carve farms out of the coastal forests, and in return for their labours with the axe they acquired good soil and enjoyed more abundant and reliable rainfall than the wheat farmers over the ranges. In burnt-off clearings along the rivers of the north coast of New South Wales, selectors grew maize. That prolific crop grew well there, even with primitive methods of

Harvesting. Farmers in areas too damp for stripping could import American reaping machines. Men and women were no longer needed to bind the stalks into sheaves. One man could haul the sheaves into stooks. Australasian Ironmonger, Sept 1888.



Te Kowai plantation mill, Mackay, Queensland. Large plantations like this one had their own crushing mills, but most were inefficient. Sugar prices had slumped since 1883; to encourage small growers and reduce dependence on Kanaka labour the Queensland government subsidised the construction of two large co-operative mills in Mackay. OXLEY LIBRARY

cultivation. The pioneer maize farmer clambered over huge, blackened logs in his first clearing, chipped some holes in the ashes with the hoe and dropped in the maize seed. When the paddocks were cleared the plough was used, but as there was no harvesting machinery for maize, the farmer cultivating among logs and stumps was at no great disadvantage. The cobs were pulled by hand, carted to a shed and later husked. A machine worked by hand or horse shelled the maize. As maize was planted and harvested at various times during the summer, small farmers helped each other much more with the harvesting than did the wheat farmers whose crops ripened at the same time.

Maize was the chief crop along the whole east coast, from Gippsland into Queensland. But the market was limited because the only people who ate maize were prisoners in jail, Pacific Island labourers on the north Queensland sugar plantations and the maize growers themselves if they were desperately poor. Maize was fed to farm animals and shipped to Melbourne, Sydney and Brisbane for horse feed. The 1888 drought drove up fodder prices and gave maize growers a bonanza, but generally maize prices were low.

Sugar prices rose in the 1870s and selectors on the northern rivers of New South Wales planted sugar alongside their maize. They were good complementary crops because sugar cutting and milling were over before maize harvesting began. The Colonial Sugar Refining Company (CSR), which owned the colony's one sugar refinery in Sydney, opened its own mills in the north. The company gave long contracts to the selectors at fixed prices and insisted on minimum standards of cultivation. With its great resources and technical superiority CSR gradually drove small rival mills out of business. The northern selectors produced 80 per cent of New South Wales sugar requirements, but prices were falling and dairying seemed a better prospect.

The attack on the forests on the fertile soils along the northwest coast of Tasmania began in the 1850s, but proceeded only slowly because markets for





*Clearing the Gippsland forest,
Victoria.*

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potatoes and oats were uncertain. Goldrush Victoria had been a good market for Tasmania, but then Victoria had erected tariff barriers to protect its own growers. In the 1880s the pace of clearing quickened because the growth of Sydney, the free trade port, gave settlers a larger market for their produce. Tasmanians feared that the New South Wales government would adopt a protective tariff, as the colony's farmers were urging it to do.

In the dense forests of south Gippsland, selectors carved out tracks just wide enough to allow a packhorse to pass. It was difficult to find space to fell the first trees. They usually began by chopping down the tree ferns and smaller scrub along the creeks. That gave them a long, narrow opening into which they could fell larger trees and so gradually expand their clearing. Through the summer, the sky was dark with the smoke of fires. In their first clearings the selectors sowed grasses in the ashes and grazed cattle. Anything they produced had to be able to walk out of the forest or be carried on a packhorse. Little was needed to begin. The cows were milked by hand; the milk was placed in dishes for the cream to rise; the cream was made into butter in a small hand churn. The butter was packed into small kegs, carried out of the forest on horseback and sent by sea or rail to Melbourne.

By the 1880s the forest country was virtually the only good land still open to selection in Victoria. A man wanting to start farming could pay £5 per acre for an established farm in the northern wheatbelt; or for £1 per acre paid off over twenty years he could get land in the Mallee or in the forest. Alf Broome had worked for years on his father's mixed farm at Bairnsdale in the old settled area of central Gippsland. He saved a little from occasional jobs around the district, but was not

paid for working on the family farm. In November 1883, when he was twenty-one, Alf and his brother and cousins selected on the Cann River almost on the New South Wales border. They staked their claim by the approved method of driving in pegs at the corners and placing a notice on each peg describing their claim and giving their names and addresses. When they returned to Bairnsdale they appeared before the local land board and were granted permission to select.

For five years Alf kept working for his father while he cleared his selection. He made five trips to the Cann, timing them so as not to interfere too much with his work at home. When he went early in the year he returned to plough. When he went late, he came back for the harvest. The young men travelled down together and helped each other clear and fence their selections. The journey took five days and they usually stayed for two or three months.

When he selected his land Alf had begun to court Ada Filmer, who lived a few kilometres from his parents' farm. In 1885 they were engaged, and more than two years later Alf decided after a long talk about their future that he must start out on his own. That week he asked his father what help he would give him. The father was encouraging and later named a definite figure—in a year's time he would give him £50 or more if possible. Alf made two more visits to his land. He planted fruit trees, started a vegetable garden and fenced it, put in some bulbs that Ada had given him, ploughed part of the land and sowed it with grasses, cut and shaped timber, including thousands of shingles, for a house which was to replace the bark hut. On 1 August 1888 his father kept his promise about the time of his help but not its amount. Alf received a cheque for £25. He and Ada were married the next month and moved down to the Cann. Alf made some hurried changes to the temporary housing before he began building the new house. He put in a floor, made a partition and erected a lavatory outside. Then they began farming in earnest. They bought two cows which Ada milked and together they planted maize.

Alf, his brother and his cousins all established themselves on the Cann, but across the colonies there was not enough land for all the sons of farmers to become farmers. Alf was one of seven children and there were eleven in his cousin's family. Farmers seeking land for their sons contributed to the movement of farmers from one area to another. Of farmers' sons who married at this time, only about half were farmers. The rest were labourers, or had jobs in the towns and cities.

As farmers moved out from old agricultural areas to select in new, great changes took place in the old areas. The land had become exhausted after continuous cropping and was often overrun with weeds. Holdings were amalgamated and new, more careful mixed farming began. Sheep, beef and dairy cattle were run, potatoes, oats and hay were produced. Specialist areas devoted to dairying, fruit growing and market gardening developed. Tasmania, which at first had grown wheat for the mainland, now supplied other products and imported wheat. In the old areas population stagnated or declined. The process was repeated in the new lands. After some ten or fifteen years, the land was yielding less and some farmers left to take up new land or abandoned farming altogether. Neighbours expanded their farms by buying them out. For each new farm established, a farmhouse somewhere else was falling into ruins or being used to store hay. That is why the number of farmers rose much more slowly than the area under crop. In South Australia, Victoria and New South Wales the area cultivated was five times more than it was in 1861 but the number of farmers had increased only two and a half times, from 34 000 to 82 000.

Such an increase in the number of farmers may appear at first sight substantial, and may suggest that the selection acts had succeeded. But the proportion of adult males in South Australia, Victoria and New South Wales who were farmers had



Alf Broome. This photograph was taken when he came to Melbourne for the exhibition.
MRS E. CUNNINGHAM

risen from 10 per cent in 1861 to only 11 per cent in 1888. Across large tracts of the countryside there were new communities of independent proprietors untroubled by landlords or squatters, though many were still indebted to money-lenders. But the grand hopes of the 1860s when the selection acts were first passed had not been fulfilled.

Over most of Australia, the growth of agriculture was associated with the development of farms that were truly family enterprises. Children were valuable not only as a labour force but in the acquisition of the land itself since the selection acts, partly by accident, partly by design, allowed children and unmarried women as well as men to select. A farmer could build up a larger property by taking out new selections in his children's names. Brothers could select and work their land as one farm. A young woman could transfer her selection to her husband on marriage. Married women could not hold selections, but widows could. When a selector died his widow could take over the land and with the help of children and neighbours try to keep up the payments until the land was hers.

In Queensland, by contrast, the most important crop, sugar, was grown on large plantations using Pacific Island labourers, known as Kanakas. The islanders were indentured to serve for three years and paid a tiny wage of 2s 6d per week. The Liberal party of Samuel Griffith, supported by working men and farmers in the south of the colony, miners in the north and the few small farmers in the sugar country, was committed to stopping the indentured labour system. In 1885 the Griffith government outlawed the recruitment of further labourers after 1890. To encourage small farms as an alternative to the plantations, the government provided loans for the erection of co-operative sugar mills. The greatest difficulty of the small sugar farmer was that he was dependent on the mills of the large holders to process his crop. The farmer had met his other difficulty—the need for cheap labour—in the same way as his large neighbour; he employed Pacific Islanders. But the rest of Griffith's following, though anxious to help the small



*Ada Filmer's house,
Brackendale, Gippsland,
Victoria. R. Anderson, Cann
River collection, Cann
River 1984.*



Kanaka labourers on Hambleton plantation, Cairns, Queensland. Queensland sugar growers on both large and small plantations depended on Pacific Island labourers, who were paid little and lived in poor conditions. In 1883 one in twelve died. In 1884, a year of dysentery and scurvy epidemics, one in seven died. Yet half those who came to Queensland re-engaged for a second three-year term. North Queensland sugar growers petitioned the British government for political separation so that they could retain the Kanaka labour trade.

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farmer, wanted to rid Queensland of black labour. The government money for the co-operatives was offered on condition that they did not crush cane produced by black labour. Two groups of farmers at Mackay accepted this condition; the North Eton and Racecourse mills opened in 1888. The movement to change sugar growing into a small man's industry using white labour had started.

GOVERNMENT AND FARMING

In the south the survival of the small farmers was threatened in the 1880s by a crisis in the wheat industry. Prices kept falling. There were bad seasons and 1888 was a disaster. The yield per hectare continued to decline in South Australia and Victoria. In New South Wales, where more of the farms had recently been established, it held up better. Agricultural experts who had for years denounced the wheat farmers for growing only wheat and not growing it well felt fully vindicated. Now the change had to come. The parliaments of South Australia and Victoria appointed commissioners to examine and advise on new crops and products. Governments became actively involved in the quest to save the wheat industry or to replace it.

Governments were the chief sponsors of scientific research into wheat growing which began in the 1880s. The researchers were in the newly established or expanded departments of agriculture, and at the new agricultural colleges, Roseworthy in South Australia and Dookie in Victoria. The greatest researcher, William Farrer, was not on the government payroll: he was supported by a wealthy relative in England and by some Monaro squatters, but was ridiculed by many farmers.

Soon after Professor J.D. Custance was appointed to Roseworthy in 1881, he established that the decline in yield in the South Australian wheat lands could be offset by using superphosphates. But while wheat prices were so low, farmers could not afford to buy and spread superphosphate. Prices would have to go up first—or could there be a way of applying super apart from broadcasting it at large over the paddock and ploughing it in?

The new researchers took over from farmers the search for a variety of wheat that would yield well without succumbing to rust. When farmers came across wheat plants that had escaped the rust or had done better than the rest in a bad year, they harvested the grain separately, planted it out in special plots and so built up a

stock of new seed. They often christened the new variety with their own names—Ward's Prolific, Frame's Early—and sold or gave packets away to neighbours and to flour millers who were important links in the seed network because they were in contact with all the farmers and had the machinery to clean seed to ensure that the sample was pure. By this means the farmers had discovered and distributed varieties suited to local conditions, but a rust-resistant wheat had eluded them.

The researchers tested and classified the existing varieties and tried to bring order into the bewildering array of names. They sped up the distribution of new varieties. The find of the 1880s was Steinwedel, isolated by a farmer of that name in South Australia in 1884. It was planted in an experimental plot at Dookie and widely distributed from 1888. But the researchers' method of establishing new varieties was the same as the farmers'—to select plants with the desired qualities as they appeared. Farrer at first worked in this way but by 1888 he decided to adopt a different method. A wheat plant is usually self-fertilising, but occasionally if the plant is damaged it can be fertilised by another variety and produce a cross. Some of the farmers' new varieties were probably crosses of this sort. Farrer planned to produce his own crosses.

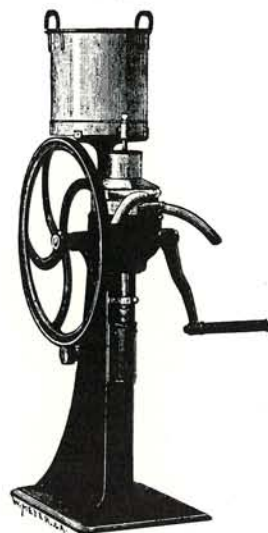
With wheat struggling, irrigation became an article of faith in Victoria and South Australia and revived the hopes for the closely settled countryside that the selection acts had failed to produce. Irrigation would double agricultural output. Alfred Deakin, the energetic young minister of public works and water supply in the Victorian government, visited irrigation works in California in 1885 and returned home to guide the Irrigation Act of 1886 through parliament. The government encouraged the formation of local urban trusts and started a scheme of damming rivers flowing north into the Murray and distributing water through open channels across the northern plains. The Victorian government granted 100 000 hectares of land to George and William Chaffey, two Californian irrigation experts, at Mildura on the Murray River, and the South Australian government granted them 100 000 hectares further down the Murray at Renmark. The two irrigation colonies were imaginative ventures, but they would require large investments and many years of hard work before bush orchards and vineyards replaced the mallee scrub. Melbourne suburban land speculation outshone irrigation subdivisions in 1888.

Amid all these high hopes, one rapid transformation did actually occur. Dairying was established in Victoria on a new basis. In April 1888 the Victorian commissioners into new agricultural products visited the dairying district on the New South Wales coast south of Sydney. This was an old agricultural area that had long specialised in supplying Sydney with butter and, since the arrival of the train, with fresh milk as well. It was the first district in Australia where butter production had shifted from the farm into the factory. The factories used the new De Laval cream separator, invented in 1879, a much quicker and more efficient method of separating cream than setting the milk in pans. In hot weather when the pan method was least efficient, the De Laval separator produced 50 per cent more cream than the traditional method. The factories were co-operatives owned by the dairy farmers, their landlords and the townsmen.

The factory brought a new uniformity and quality into butter production. When each farm made its own butter, there was a great variation in quality. The lowest grade butter was often unsalable or at best went to makers of sweets or soap or to keepers of cheap boarding houses. Factories drawing milk from a number of suppliers smoothed out individual imperfections. Sydney people quickly took to the new product and paid more to get it; by 1888 over one-quarter of Sydney's

Before the invention of the cream separator, milk was left to stand in pans and the cream skimmed off after it had risen to the surface. This took time, care and a large space that had to be cool if the milk was not to turn sour in the pans in hot weather. In the separator the cream was quickly separated from the milk by centrifugal force.

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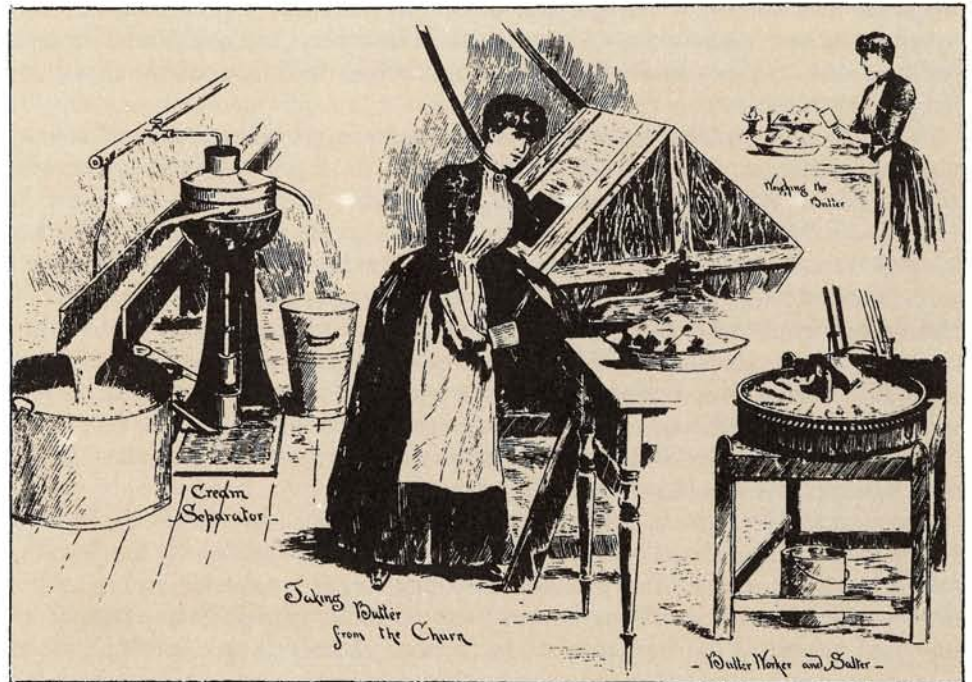


butter was factory produced. During the winter when feed was short and cows were giving less, the price of butter might be twice what it was during the glut in early summer. The advent of refrigerated shipping helped as the glut in the Australian summer coincided with the period of shortage in Britain. From the mid-1880s Sydney butter sold in London and the local summer price did not fall so low.

These developments in the New South Wales industry owed nothing to government assistance. They had happened there first partly because T.S. Mort, a pioneer in the frozen meat trade, had a dairy property on the south coast and had promoted the new factory and export business. In Victoria the new methods were promoted by a government anxious to give farmers a new source of income. It acted swiftly as soon as it received the commissioner's report on the New South Wales industry in May 1888. Two dairy experts were appointed, one to establish a model dairy factory at the exhibition and the other to take a model factory on tour through the country. It offered subsidies to co-operative dairies and bounties on butter exports, and bought a freezing works in Melbourne to store butter bound for export. The first of many co-operative dairies in Victoria was opened at Cobden in October.

Dairying was traditionally women's business. It was unusual for Ada Broome on the new selection to help plant maize, for women did not usually work in the field, but not for her to milk the cows and make butter. At Warrnambool in western Victoria, women even attended the cattle sales to buy dairy cows. Victoria's new travelling dairy expert was upset at the amount of work women were left to do. He did not think that men should actually help to make butter, but he did believe that they should show as much interest in labour-saving devices for the dairy work as for their own. A horse eating its head off in the paddock could have been used to turn the heavy churn. A butter worker bought for a pound or two could have saved the woman from the back-breaking job of working the salt in by hand. She should not have to stay up until one or two in the morning printing butter for the

This working dairy, organised by David Wilson of the Victorian Department of Agriculture at the centennial exhibition, was 'well appreciated by thousands of visitors'. Working exhibits included the Witt patent refrigerated cold room. Students nominated by agricultural societies throughout Victoria attended the exhibition school, and some became managers of new butter factories. Illustrated Australian News, 13 Oct 1888.



next day's market. The new factories would save the women from all this—as indeed they did, but at the cost of taking them away from the productive work of the farm. Women were not employed in the new factories. Agricultural societies throughout the colony were invited to send a young person to learn the new methods at the exhibition dairy. If a factory were to be established in the district a boy should be sent; if not, a girl. The new methods, however, did not extend to milking the cows. Boys and girls on dairy farms had to milk by hand for some time yet. The whole family was subject to the unrelenting tyranny of milking cows twice a day.

HARD TIMES

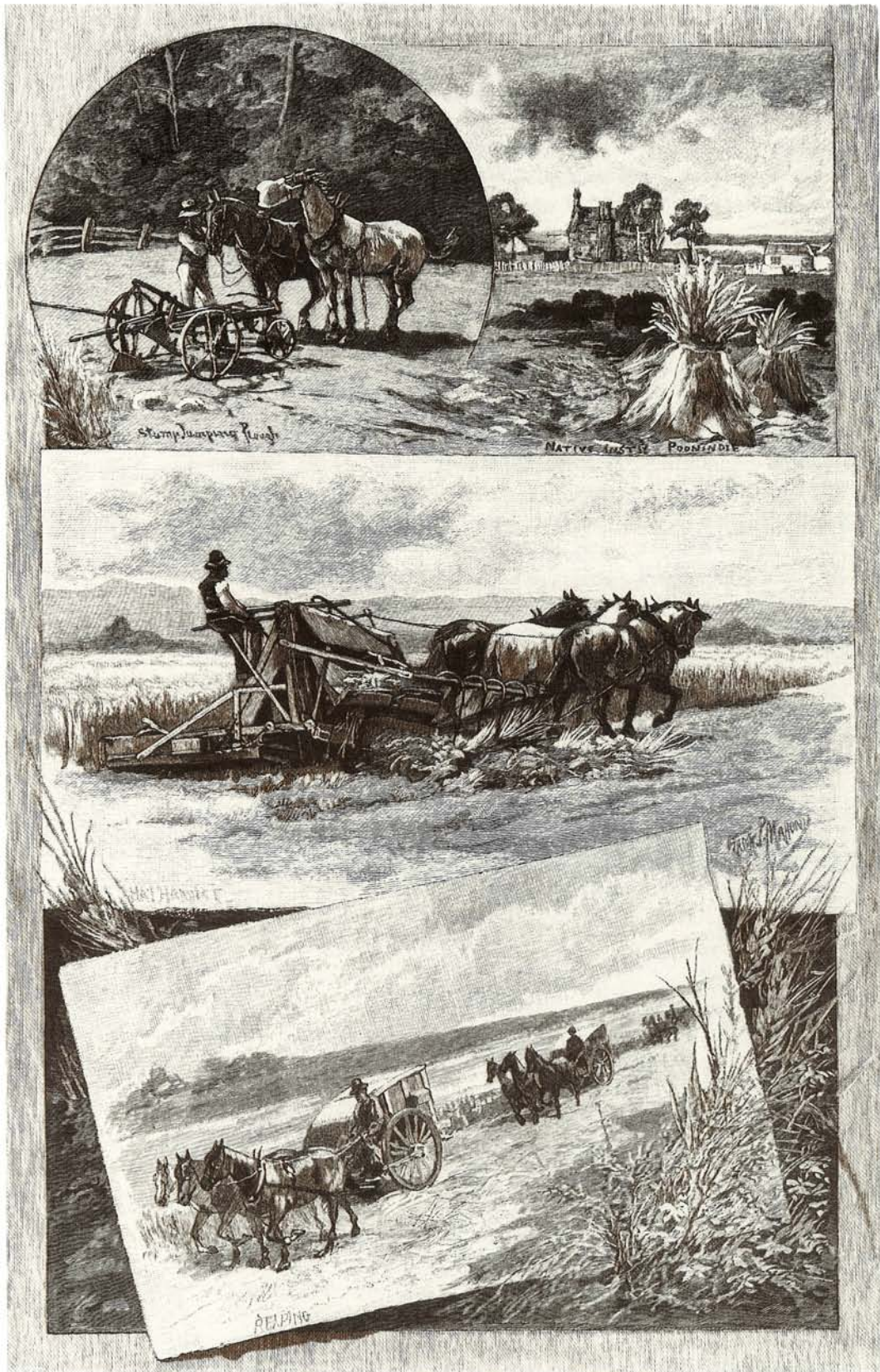
Despite drought, soil exhaustion and abundant advice about alternatives, the wheat farmers stuck to wheat. They coped with the crisis in their own ways. Farmers and agricultural implement makers redoubled their efforts to develop a complete harvester, and with the successful testing of the McKay machine that aim had been achieved. By 1888 the larger farms in the wheatbelt practised 'bare fallowing' and ran sheep on fallow ground to keep down the weeds. In the winter the land was ploughed, then kept free of weeds, ploughed again and sown in the autumn. The land was rested and manured by the sheep, the moisture from the fallow year was made available for next year's crop, and weeds that infested land kept continuously in wheat were kept in check. The sheep were a valuable extra source of income. The distinction between small squatter and selector began to disappear.

New methods helped only a few, but what if the government also cut railway freight rates, lowered duties on imported machinery, kept 'foreign' wheat out of the market or reduced repayments on land? These were the aims of the farmers' associations that now existed in South Australia, New South Wales and Victoria. The associations were partly imitations of the trade unions and farmers explored the possibility of alliance with city unions. They did not feel directly threatened by the growth of unions. Half the farmers never employed labour and they and their sons were often occasional wage workers themselves. Those who did employ labour did so chiefly on a casual basis and workers thus engaged were not unionised.

Neither as employers of labour nor as owners of land were farmers fearful; it was as sellers of wheat that they felt aggrieved. They wanted to keep the middleman's cut for themselves. All their associations considered schemes to bypass the city wheat merchants by forming co-operatives to market the crop or at least to store it so that the farmers would not have to take what the merchants offered. Most of this talk came to nothing, but a beginning was made in South Australia. In 1888 the newly formed Farmers Co-Operative Union sold wheat sacks to farmers and stored their wheat.

The small wheat farmer was often locked into poverty. He had to sell his crop immediately to pay off debts and had to plant as much wheat as he could. He did not have the money to go in for mixed farming or to let his land lie fallow. The Staggs of Tarcowie in the northern wheatbelt of South Australia owned only eighty hectares, when something over two hundred hectares, with adequate implements, was necessary to yield a reasonable family income. William Stagg had taken up this land on credit in 1876. There were seven girls and two boys in the family. The elder girls went out to work as domestic servants. The older boy, young William, worked the farm with his father. They were barely surviving.

The farm was in poor condition. Sometimes they were harvesting as much wild oats as wheat. The paddocks were not yet free of stones and stumps. They had removed cartloads of stones, but as many seemed to remain. The stones played



havoc with the plough, and with the ploughman as the plough was brought to a sudden stop. On rough patches they harvested with the sickle. The stripper was old and heavy; it needed four horses, but they had only three. In dry seasons, they spent hours taking horses and cattle to water when the dam dried up. There was very little feed for the animals. The horses became so weak they could not be worked for a full day. Mrs Stagg made some extra money selling eggs and butter in the township. Father and son cut and sold timber for firewood or fencing and quarried stone from their land for local building. Their most regular source of other income was work on the roads.

At times they were driven to desperate measures. They killed their dog to save the registration fee. If they could have found a buyer, they would have sold their few cows to meet an interest payment on the mortgage. Yet Stagg was still prepared to spend money on agricultural machinery. At a clearing sale he bought a mower and horse rake very cheaply. They had been about to cut some of their crop for hay with a scythe; with this equipment the job took half the time. When the blacksmith ordered stone from the Staggs to extend his shop, Stagg immediately ordered from him a stump-jump plough for use on the stony ground. Stagg missed no opportunity to have the right machinery even if it did not solve his immediate problems.

Young William, who had his own life to make, saw that farming could not go on as it was. From the Adelaide newspapers he picked up the message of the agricultural reformers. He told his father he should plough deeper and not burn the stubble. After many rows about the ploughing, William kept silent. On his own farm things would be different. Names of new crops tossed off casually in Adelaide committee rooms and public halls were carefully noted at Tarcowie. William planted sorghum, tobacco, maize, capsicum and date palm. They all failed. Tomatoes and almond trees did better. He still thought that farmers were foolish to rely solely on wheat, but he had to admit that there seemed to be no alternative in this arid climate. More and more he wanted to get away—to go gold digging, or to America, to farm where work was not so hard and the return so small.

They reaped another poor harvest and their creditors became very threatening. Stagg had to get a second mortgage. As the end seemed near, William finally made his break from home. He worked on a nearby farm and then went south to his grandparents in the old agricultural district of McLaren Vale. Here grapes were being grown, but as a Methodist William refused the chance to work in the vineyards. Within a few weeks he was back home again.

It was through a scheme promoted by the agricultural reformers and irrigation-ists in Adelaide that young William achieved some independence. For a low rental, working men were to be allowed small blocks of up to eight hectares on which they would practise the new intensive agriculture and eventually become self-supporting. The scheme would remove unemployment and show the way forward to the wheat farmers. William was granted four hectares on an old unused reserve across the road from his father's home. On this land in 1888 the young man, who knew its disadvantages so well, planted wheat. At least he was free to cultivate it in his own way. In a drought year he got more than three times the yield per hectare his father reaped, though the son had the advantage of virgin soil. On his block he built a tiny stone 'shanty'. At last he had his own home and farm. But four hectares was no farm. Over the road were responsibilities which he could not escape, an ageing and sickly father, young children, and land that would not support them. On New Year's Eve he wrote in his diary: 'Farewell 1888. I am glad you are gone. A year to be remembered as one of hardships and miserable disappointments.'

Opposite page.
Harvesting in South
Australia. A. Garran (ed),
Picturesque atlas of
Australasia, Sydney
1886-88.