Heritage of the Upper North Region: Background History

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The Region

The Upper North of South Australia is the name given to the region centred roughly on Jamestown, about 200km north of Adelaide. It is an irregular rectangle about 170km from east to west and 140km from north to south, bounded by the shore of Spencer Gulf on the west, and extending as far as the towns of Redhill and Yacka in the south, Hallett and Oodla Wirra in the east, and Wilmington and Orroroo in the north. Council boundaries in the region have been subject to considerable change in recent years, but the local government areas making up the region at present are the Port Pirie Regional Council, the Northern Areas Council, the District Councils of Mount Remarkable and Peterborough, the southern part of the District Council of Orroroo/Carrieton (formerly Orroroo) and the northern part of the Regional Council of Goyder (formerly Hallett).

The historical process of settlement in the Upper North is one of the most interesting case studies in Australia - and indeed in the world - of the economic and social changes brought about by the land reform legislation of the 1860s, which transformed an enormous area of land from pastoral to agricultural use in the space of less than a decade. This process has already been studied by a number of historians. Donald Meinig's superb study in historical geography, *On the Margins of the Good Earth,* first analysed the South Australian wheat frontier in 1962. This was followed in 1966 by Gordon Buxton's *South Australian Land Acts*, in 1968 by Keith Bowes' *Land Settlement in South Australia*, and in 1973 by John Hirst's *Adelaide and the Country*, which provided a fuller background to the Strangways Act and the politics of the land reform era. Michael Williams' *The Making of the South Australian Landscape* in 1974 explored these and the many other forces, environmental, economic, social and political, which have shaped the physical environment we have inherited. Thus, in describing the successive waves of European occupation of the Upper North region, this account is able to draw on some eminent historical studies giving an overview of South Australian agricultural settlement.

The region has also been well covered in more detailed local studies. Because much of the district was taken up by wheat farmers in the 1870s and most of the towns and their civic institutions - schools, churches, council chambers - were established in that decade, the 1970s saw local history flourishing throughout the Upper North as books were written celebrating the centenaries of various milestones in European settlement. Many of these publications have been consulted in compiling this historical account, and are listed in the bibliography of this report. One pioneering study was Nancy Robinson's *Change on Change* in 1971, followed by her *Reluctant Harbour* in 1976, an outstanding history of Port Pirie which provided a model for local historians to follow. Liz Blieschke's *Plain of Contrast* in 1975, *Melrose, Child of the Mountain,* written by a local group and edited by Jim Faull in 1979, Heather Sizer's *Run North Wild Dog* in 1985, and Julie-Ann Ellis' *Hard Yacka* in 1995 are particularly notable among the many other works which have maintained the strong local history tradition.

This report has also been able to draw on the research done in the course of earlier regional heritage surveys bordering the Upper North Region on three sides: the Yorke Peninsula - which similarly experienced the sudden impact of settlement under the Strangways Act - the Lower North, and the Flinders Ranges. The City of Port Pirie, the town of Peterborough and the former District Council of Hallett within the Upper North region have already been covered by earlier local heritage surveys.

The Land

Topography and climate have determined the principal industries and settlement patterns of the Upper North. The region's agricultural lands and their associated towns are generally located in the valleys between parallel ranges, and this has tended to mould transport links and occupation patterns into a series of topographically controlled north-south corridors, so that the layout of European settlement today reflects the neatness of the landscape. Grenfell Price summarised the influence of geography on human activity in the region:

> ... in the North Mount Lofty Ranges, between Gawler and Jamestown, relief becomes subdued. The characteristic topography here is one of low meridional ranges separated by heavily alluviated, longitudinal basins and valleys. The striking regularity of this alternate basin and range pattern is well illustrated in the area occupied by the Light, Wakefield and Broughton Basins, wherein numerous streams from north and south flow in parallel valleys nicely adjusted, in the main, to the folded and faulted structures. Except where resistant rocks outcrop the divides are low and gently sloping.
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> The relief, soil and rainfall conditions of the North Mount Lofty Ranges have proved very suitable for the production of livestock and grain, the wheat yields being among the highest in the State. In the drier rain-shadow areas, between Burra and Terowie, wool is the principal product. (Price & Martin 1946, p. 7)

The topography of the region divides logically into three sections from west to east: (a) the plain along the north-eastern shore of Spencer Gulf, (b) the Mid-North ranges (a convenient abbreviation for what are strictly speaking the North Mount Lofty Ranges in the south of the region, merging into the South Flinders Ranges in the north), and (c) the arid eastern plain. The smallest section is the coastal plain of Spencer Gulf from Redhill up to Mambray Creek, sometimes called the Pirie Plains. The plain is mostly narrow, sloping up to the ranges which everywhere form the eastern skyline.

The ranges occupy most of the region, forming a series of ridges running generally north-south parallel to the coast in a band over 100km in width from west to east. The ranges are highest and most regular in the west near the Gulf coast, reaching 960m altitude at their highest point, Mount Remarkable, and forming a rugged, densely forested tangle of mountains from near Wilmington down to Crystal Brook. More typically, the ranges throughout the region rise to about 500m high at the ridge tops. The ranges generally become lower, trend more to the north-east and their intervening valleys become wider as we travel further from the coast. In the south-east of the region they rise again to 930m Mount Bryan east of the line of the Barrier Highway through Hallett and Terowie. From this last ridge the ranges flatten into the inland plain stretching eastward to the New South Wales border.

This topography is reflected in the rainfall, which is mostly brought by westerly and south-westerly winds from the Southern Ocean, although these have already travelled several hundred kilometres over the Eyre Peninsula before they arrive, and shed much of their moisture. The high coastal ranges running north and south from Mount Remarkable in the west have the highest average annual rainfall of the region, about 500mm, which is about the same as that of metropolitan Adelaide. Most of the region has more than 300mm average annual rainfall, except on the eastern plain, where it falls away to below 250mm. (Griffin & McCaskill 1986, p. 51) The placenames on the map vividly depict the region's climatic range: Crystal Brook and Beautiful Valley in the west, Hell's Gate and Dusthole Range in the east.

Naturally, the vegetation of the Upper North also follows this rainfall pattern. At the time of European settlement, the higher ranges near the coast were clad in *Eucalyptus* and *Callitris* forests, the lower ranges of the inland alternating between red gums along the creeks, treeless grassland in the valleys, and mixed eucalyptus forest on the ridges, with open-canopied mallee on the plains. At least that was the theoretical model, but in practice all these botanic communities occurred in irregular patches, depending on the soil. Grassland became more prevalent than trees on the Willochra Plain, and grass gave way to saltbush in the north and east as the average rainfall reduced. In the far east the level plains were covered in mallee scrub, and the stony ridges of the north-east had almost no trees, simply spinifex on the ridges and saltbush on the plains. (Specht 1972)

The lower two-thirds of the region is within the basin of the Broughton River, and its drainage is dominated by the tributaries of that system. Crystal Brook, Rocky River, Yackamoorundie Creek and Bundaleer Creek all flow from north to south down the parallel valley system before swinging west to join the Broughton, which, when it was a much more powerful river than it is now, cut a channel west through the ranges in a great sweeping curve, to flow into Spencer Gulf south of Port Pirie. At the Broughton's mouth, silt carried on the flow has built up a great alluvial fan - a delta which now has only one mouth - which forms a prominent feature of the eastern shore of Spencer Gulf. The gap where the Broughton and its major tributaries cross the coastal range creates an east-west communication corridor which has played an important part in shaping European settlement in the region. The southern tributaries of the Broughton, the Hill River and Hutt River, drain similar country in the Lower North region to the south.

Just south of Melrose and Booleroo runs an east-west watershed, and to the north of it Booleroo Creek and Coonatto Creek run together to form Willochra Creek which flows north, then west through a gorge in the Flinders Ranges to soak into the western plain, or in a very wet year to flow on into Lake Torrens. Further east, in the dry stony hills north of Peterborough and Oodla Wirra, the creeks also flow northward to lose themselves on the plain long before they reach Lake Frome.

Before European settlement of the region commenced about 1842, the land was occupied by three groups of indigenous people. Most of the Upper North, comprising the inland ranges of hills and valleys, was the home of the Ngadjuri people. The Nukunu lived in the high coastal ranges along the gulf, around Mount Remarkable. The Danggali people occupied the flat mallee plains in the south-east corner of the region, stretching into the east. (Tindale 1974) These three territories closely reflect the range of topographical and climatic environments in the region.

Rain shapes almost all human activity in Australia. But it is not rainfall in its statistically simplest form, the annual average, that has had most impact on European settlement of the Upper North. Rather it is the deviations from that average, the cycles of prolific rain - which the early settlers of the Upper North convinced themselves were normal - followed inevitably by years of drought, that have shaped the economy and the way of life of the region for 160 years.

The Explorers

As far as we know, the first Europeans to see the Upper North region were the crew of HMS *Investigator* in March 1802, when Matthew Flinders' monumental voyage of coastal discovery charted the Gulf which he dutifully named after the Earl of Spencer, President of the Admiralty Board. Hoping he had found a maritime passage to the unknown interior of the continent, Flinders was disappointed when the broad Gulf dwindled at its north end, becoming no more than a creek near the later site of Port Augusta. A party of his naturalists and their staff walked inland for two days to the summit of the most prominent peak visible, Mount Brown in the Flinders Ranges, and looked down on the Willochra Plain. (Feeken & Spate 1970, p. 59)

In April the same year the French explorer Nicolas Baudin cursorily charted the gulf in *Le Geographe*, and sent Louis Freycinet in *Le Casuarina* the following year for a longer look. Baudin gave the gulf the far more romantic name of Golfe Bonaparte, but unfortunately he was a month too late to claim the naming rights. (Robinson 1976, p. 13-14) Although sealers and others were busy on the offshore islands of South Australia and around the later site of Port Lincoln from that time onward, there is no record of another European expedition penetrating to the head of Spencer Gulf until March 1830, when the cutter *Dart* from Sydney explored its east coast looking for some sign of Charles Sturt, long overdue on his voyage down the River Murray. (Sexton 1990, p. 23)

The formal occupation of the South Australian mainland by Europeans began with the foundation of Adelaide and the proclamation of the Province in December 1836. This commenced a period of land exploration as the colonial administration sought to learn more about the interior. In May 1839 Edward John Eyre set out from Adelaide and travelled north up the east coast of Spencer Gulf to Mount Arden, which had been named by Flinders thirty-seven years before. (Feeken & Spate 1970, p. 128)

Eyre's party were the first Europeans to set foot in the Upper North region, and that expedition was the forerunner of many more. In 1840, Eyre was again sent north by the Northern Exploring Committee, a syndicate of hopeful pastoralists in search of grazing land. On the way he took a more inland route through the ranges, discovered Rocky River and Crystal Brook, and named Mount Remarkable for 'the lofty way in which it towered above the surrounding hills'. The 1840 expedition is remembered for its discovery of the chain of salt lakes - Torrens, Eyre, Blanche, Callabonna and Frome - which Eyre believed to form an impassable obstacle of one continuous horseshoe lake encircling the northern Flinders Ranges, a mistake which was to persist for eighteen years. It was not until Augustus Charles Gregory, droving stock from Queensland, arrived overland through the 'horseshoe' in 1858 that the true nature of the lake system became clear.

Eyre was followed northward through the region by the luckless John Ainsworth Horrocks in 1841 and a party led by Deputy Surveyor-General Thomas Burr and Inspector Alexander Tolmer in 1842. In the course of his expedition Horrocks named the area north of the Broughton River the Gulnare Plains. Surveyor-General Edward Frome in 1843 continued the search for northern pastoral lands. (Feeken & Spate 1970, pp. 128-130, 154-155 & 250; Faull 1979, pp. 16-18)

The significance to the Upper North region of this episode of outback exploration was that on their way to and from the Far North, all of these expeditions passed through the basins of the Broughton River and Willochra Creek, and each contributed to what was known about the region's geography and agricultural potential. Their aim in every case was the search for pastoral lands, and during the early 1840s there was emerging a good picture of the grazing potential of the ranges of the Upper North.

The Graziers

Of the few dozen Europeans who had ridden through the Upper North region, it was probably Deputy Surveyor-General Thomas Burr in 1842 who did more than anyone else to encourage pastoralists to move north. Reporting on the country around Mount Remarkable, he wrote, 'This country is well wooded and watered and the grass grows as luxuriantly as I have seen in any part of the province.' (Faull 1979, p. 18) Certainly it was after his visit in 1842 that sheep grazing commenced in the region, but there was also a relaxation of government land administration that assisted the process.

The spread of settlement in South Australia mostly moved outward from Adelaide behind a frontier which at any time formed a surprisingly orderly line. This was in part the natural result of economic forces, as a growing population gradually expanded from a central point into a progressively larger area of land. But the process was tidier in South Australia than in any of the other Australian colonies, for it was partly imposed by central policies on land survey and sales. An important tenet of the Wakefield theory of colonisation was 'concentration' or the expansion of settlement in contiguous blocks. (Meinig 1962, p. 10) This was partly to concentrate economic benefits and hold down infrastructure costs, and of course it also made for administrative convenience. Before taking up land in South Australia, applicants had to wait for surveys to be completed, and these tended to proceed outward in a logical order. The only way to break out of this settlement pattern was to apply for a Special Survey, which was always expensive, usually slow, and was only granted if the applicant could demonstrate that it was justified by special circumstances.

The danger was that impatient graziers would simply drive their flocks out beyond the surveys, and occupy outside land without legal entitlement. This practice of 'squatting' was common in New South Wales, and there it had led to later disputes over land ownership, and deprived the colony of revenue. In 1842 the Legislative Council passed An Act to Protect the Waste Lands of the Crown from Encroachment, Intrusion and Trespass. This created Occupation Licences to give pastoralists annual renewable tenure to an area of land which was identified by a system of landmarks rather than a formal survey. (Love 1986, p. 4) This was a rough-and-ready improvisation on the Wakefield plan, but at least it served notice on the South Australian squatters that their tenure was only temporary, allowed a record to be kept of who was occupying the land, and brought in some licence fees.

The graziers moved their flocks into the Upper North very rapidly after 1842, but the sequence of events in occupying the region is not always clear. There is information to be found in newspaper accounts, Gazette notices of Occupation Licences, and later reminiscences, but these do not always add up to a coherent picture. Sometimes there was a long delay after the application date before the land was occupied; in other cases the sheep were grazing on the land months or even years before the paperwork was done. After runs were established, their boundaries and names remained fluid, both changing by the year.

The frontier of pastoral settlement was moving northward from Adelaide year by year, and had already reached the southern tributaries of the Broughton. Anlaby on the Light River had been taken up in 1839, then Hill River and Bungaree in the Clare district, and Penwortham nearby on the Hutt River were all occupied by pastoralists in about 1841-42. In the three years from 1843 to 1846 the next wave of pastoralists took up much of the better country of the Upper North region, starting with the well-watered country near the coastal ranges. Probably the first pastoralist to stock a run in the region was John Bristow Hughes, who had certainly taken up Bundaleer Run in a choice site on the Gulnare Plains straddling the Broughton River by 1843, and may have been grazing stock there without a licence for two years earlier, perhaps even before Horrocks had named the district. His brother Herbert was on the adjacent Booyoolee Run by 1844, John and William Jacob took up Beetaloo Run, and the brothers Samuel and Frederick White took up the Charlton Run near Wirrabara in that same year. In 1845 Alexander Campbell and Malcolm Gillies took up the Willowie Run, later re-named Mount Remarkable Run, and William Younghusband and Peter Ferguson took up Crystal Brook. The Willogolochee Run, the Wirrabara Run, Koolunga Run and Pekina Run were all stocked by 1846. At the end of this first phase of pastoral expansion, Pekina homestead was the most northerly outpost of European settlement in South Australia.

The annual licences encouraged short-term changes in land ownership, which set up a pattern for many decades. In the turbulent period of pastoral occupation, many of the best-known land owners in South Australia took up land in the region for a time. Wirrabara Run was first taken up by the White Brothers, then successively sold to Charles Brown Fisher, his brother William Fisher in partnership with George Tinline (Manager of the Bank of South Australia), and then to Alexander Borthwick Murray. Fisher also bought Bundaleer from John Hughes. Price Maurice bought the Pekina Run and Daniel Cudmore the Yongala Run, Edmund Bowman bought Crystal Brook, Henry Ayers and Robert Barr Smith each owned Bundaleer for a time, and John Morphett and Samuel Davenport the Baroota Run, John Howard Angas bought the Mount Remarkable Run in 1854. (Cockburn 1925) Sometimes the pastoral families were linked by marriage: Herbert Hughes of Booyoolee married the sister of the White brothers of Charlton Run.

For the first ten years, pastoral tenure remained on an annual licence basis, then in 1851 the Waste Lands Act replaced Occupational Licences with Pastoral Leases of fourteen years duration. This greatly improved the graziers' security of tenure, and reduced some of the risks of their enterprise. Encouraged by a series of good seasons, there was a second wave of pastoral expansion throughout the Upper North, extending grazing further into the marginal lands to the east and north. In the following twelve months, Hugh Proby took up the Coonatto Run, John Williams the Black Rock Run, Alexander McCulloch the Eldoratrilla Run, and Thomas Marchant the Mannanarie Run. At the same time, established graziers took the opportunity to extend and consolidate their runs; the Hughes brothers expanded their holdings at Bundaleer and Booyoolee.

Although most of the land suitable for grazing in the Upper North had been taken up by the early 1850s, the total number of Europeans living in the region was still small. The big pastoral runs each employed a few dozen people, who formed a small village at the head station, with smaller numbers at a few out-stations. The runs were mostly unfenced - there were a few stone walls, but steel fencing wire would not become an economical option for another twenty years - and the graziers relied on shepherds to keep track of the flocks and look after their well-being. Living alone or more usually in pairs, a shepherd and a hut-keeper, these workers were scattered across the landscape in tiny wooden huts about five kilometres apart, looking after flocks of perhaps 1,000 sheep, and leading the most lonely and monotonous existence imaginable. Perhaps unfairly, the men who undertook this thankless work were often stereotyped as ex-convicts or worse, and described even by their employers as 'the dregs of the colony'. (Hayward 1927-28, p. 82)

The contact between European settlers and Indigenous land owners in the Upper North, as elsewhere in Australia, is mostly silent in the historical sources. Certainly there were Aboriginal employees on many of the early pastoral runs, whose knowledge of the country and its resources made the early decades of European pastoral settlement possible. Oral tradition tells of Aboriginal camps near some of the Upper North towns until as late as the 1920s, but only rarely are these mentioned in the written record. The well-watered southern Flinders Ranges supported a relatively large indigenous population, and in the early decades there were violent clashes between hunters and shepherds in the ranges around Melrose, Orroroo and Black Rock, usually initiated by thefts of sheep. While the second wave of pastoral expansion was underway in 1853 a magistrate reported that "The natives in the northern settlements are very bold and troublesome'. (J.W Macdonald to Colonial Secretary 31 January 1853) These clashes were rarely recorded, but one pioneer boasted that he had 'never missed a black that he got a chance to kill'. (Robinson 1971, p. 49) Even Johnson Hayward, the relatively humane manager of Pekina in the late 1840s, recalled that the Aborigines 'had to be terrified before their depredations ceased'. (Hayward 1927-28, p. 89) Precisely what form this terror took is suggested by the fact that in 1859 a visitor to the Pekina Run was shown an Aboriginal warrior's skull, kept in the office as a trophy. (Jessop 1862, vol. 2, pp. 36-37)

Few of the early pastoral runs have large impressive homesteads. Most of the grand homesteads of South Australia - such as Martindale, Poltalloch, Struan, Padthaway and Yallum Park - date from the prosperous late 1870s, when the sheep runs of the Upper North had already been broken up and sold as wheat farms. In any case, most of the wealthy landowners with holdings in the Upper North did not live there. They owned extensive property elsewhere, and installed a manager to look after their local runs. The Whites, McCulloch and the Hughes brothers were among the exceptions who lived on their runs. Surveyor-General George Goyder disapproved of large homesteads, as he made clear when he described the Yongala Run in 1864:

> The improvements comprise a large newly-built stone house, woolshed, kitchen, store, men's huts, yards, garden and paddock fences, and two whim wells on the run. Had half the sum expended in building the new house been devoted to well sinking on the west

> portion of the run, nearly double the quantity of stock might have been depastured on it. (Mattey 1968, p. 22)

There were small herds of beef and dairy cattle in the Upper North, but generally speaking, cattle were of little interest to pastoralists, because the only market for meat and milk was local domestic demand. For the most part, wool was the sole economic product of the region, and sheep were the dominant grazing animals. Australia produced wool for the Imperial market, and virtually all of the clip was shipped to England. However, because of drought or market gluts, it was sometimes necessary to reduce the size of the flocks, and then sheep were slaughtered for their by-products; during the drought of the 1860s, boiling-down works were established at Pekina and Pinda Runs. In these noxious plants, animal carcasses were rendered down for their fat, which was sold as tallow for making soap and candles. The sale of hides, wool, hooves and bones sometimes added a meagre bonus, but most of the meat had to be discarded as waste.

Before satisfactory refrigeration was developed in the 1880s, the usual way of exporting carcasses of either beef or mutton was in casks of brine, an unreliable product which returned very little profit. The only other means of preserving meat was by canning it, a technology which had been developed in the 1840s. (Farrer 1980) When Booyoolee and the surrounding runs had to reduce their stock numbers after the Strangways land resumptions began in 1869, Herbert Hughes responded by installing South Australia's first meat canning factory. The initiative probably came from his brother John, founder of Bundaleer, who in 1867 had established the Melbourne Meat Preserving Company, which built a large cannery at Maribyrnong. (Robinson 1971, p. 77; Vines 1993; Farrer 1980, pp. 99-108)

The Booyoolee cannery was a significant industrial enterprise; in its first two years the plant exported over 200 tons of canned meat through Port Pirie, as well as tallow and other products. Tinned meat from Booyoolee was supplied to workers constructing the Overland Telegraph Line from Port Augusta to Darwin in 1870-72, and it has been claimed that their shortening of the name 'Booyoolee Beef' gave us the generic name 'bully beef' for any tinned meat. (Taylor 1980, p. 63) However, there are some problems with this theory; one is that the similarity of the word 'bully' to the French *bouillir* - to boil - seems unlikely to be coincidental, and another is that most of the Booyoolee product was mutton, not beef. The tins were unequivocally labelled 'Boiled Mutton', seemingly with little concern for the market appeal of the name. (*Gladstone* 1980, p. 6)

In its early decades the rapidly-boiled product of meat-canning plants was notoriously unattractive, and encountered strong resistance from consumers who gave it derisive nicknames like 'red blanket' and 'boiled dog'. With supplies dependent on stocking levels, the weather and the wool price, the Booyoolee cannery could not keep up momentum. In 1872 the plant was dismantled and sold to Adelaide stock agents Dean Laughton and Company who planned to re-establish it at Port Adelaide, although there is no record that this ever happened. (Robinson 1971, p. 77)

The Towns

Pastoral settlement of this kind, with its low population density and minimal infrastructure, did not normally result in the growth of towns in the district. The pastoral homesteads were self-sufficient townships, and nearly all the European population of the region either lived at them or were supplied from them. A few scattered police stations and post offices were the only forms of government administration in the local area, and most of these were also at large homesteads. The one form of settlement which the pastoral industry required was coastal ports for shipping in supplies and loading wool for export.

Within a few years of settlement, the few sheltered landing places on the upper gulf coast were fitted with primitive jetties and wharves to facilitate handling goods to and from small boats for transfer to larger vessels anchored offshore. The inlet at Port Germein had been charted by

John Germein in the *Waterwitch*, supporting Eyre's 1840 expedition. Briefly known as Samuel's Creek, the landing place was made accessible by a road inland through the Germein Gorge, and was being used by Price Maurice and John Hughes for loading sheep from 1846.

The best harbour in the upper gulf was a sheltered river mouth just south across the bay from Port Germein - the northernmost abandoned channel of the Broughton River delta - but it was not discovered until a voyage by the *John Pirie* in 1845, apparently at the behest of William Younghusband in search of a port for his Crystal Brook Run. For a while it was called Hummocks Harbour, but soon became Port Pirie. A road was cut over the range at Hughes Gap, and by 1847, Bundaleer, Booyoolee and Crystal Brook runs were shipping their wool from the new landing place. The major pastoralists built jetties and wool stores there, and their activities fostered a small permanent population. In 1848 a private town was surveyed at the anchorage, and in November allotments were offered for auction by Matthew Smith and Emanuel Solomon, speculators from Adelaide. (Donley 1975; Robinson 1976)

Port Augusta, to the north of the region, was first occupied as a police post and Aboriginal ration station in 1853, and known for a time as Curdnatta. Elder and Company planned to establish a wool store there for their runs in the Flinders Ranges, so a government town was surveyed in 1854. The new port was intended principally to serve the Flinders and the far north, but within a few months a government party had cut a road through Horrocks Pass to the valley of Willochra Creek, making it the closest port to the northern runs of the Upper North region. (Anderson 1988)

Within ten years of European settlement, there were three small ports strung along the coast of the region. Each had a little township with some private businesses, but they only saw much economic activity for a few weeks each year. A visitor to Port Augusta in 1854 described the township as 'a wooden hut and a wooden pub, and a blacksmith's forge'. (Hayward 1927-28, p. 161) Their heyday was still a long way in the future.

The Mines

Small deposits of mineral ores are found throughout the older rocks of the Mid-North Ranges, but they are neither as large nor as rich as many of those found further south in the Mount Lofty Ranges, or some of those found in the Flinders to the north. The Upper North has never had a Burra, or even a Blinman. There have been many small mines opened in the region, most of them intended to produce copper, but none has ever been operated at a profit.

However, the mining impulse has had positive outcomes for the region. The first inland town in the district was established as an indirect outcome of a failed mining venture. South Australian entrepreneurs had been whipped into mining fever by the success of the Kapunda copper mine in 1844 and the even bigger Burra copper mine in 1845. When a modest discovery of copper ore was reported much further north near Mount Remarkable in April 1846, it was promoted in Adelaide as a 'mountain of copper'. (Austin 1863, p. 26; Brown 1908, pp. 14 & 94) Investors Frederick Dutton and Alexander Elder sought to take up the land. Mining leases did not yet exist, and the only way they could gain tenure was to apply for a Special Survey, and buy a minimum of 20,000 acres from the Crown.

The Mount Remarkable Special Survey was completed in September 1846 at the standard cost of £20,000. Dutton and Elder then joined with a group of prominent Adelaide businessmen to form the Mount Remarkable Mining Company with capital of £25,000 the following November, no doubt hoping to emulate the success of the South Australian Mining Association, proprietors of the fabulous Burra mine. Their property became the site of the colony's northernmost administrative outpost when a police station was established there in 1848. The police were not there in response to crime among the European population; their principal duty was to deter Aboriginal raids on the sheep flocks. The Mount Remarkable mine was worked half-heartedly for a few years, but it proved to be a miserable failure; the company lost its money and was wound up in 1851.

To retrieve something from the disaster, the syndicate subdivided their 20,000 acres of freehold land, and auctioned allotments in the newly-surveyed towns of Melrose and Bangor in January 1853. On the map of South Australia, these provided a small island of surveyed allotments far to the north of the nearest inland towns, Burra and Clare. Bangor never became more than a stopping place on the Port Germein road, but for some reason Melrose, beside the police station at the foot of Mount Remarkable, captured the imagination of buyers. It became South Australia's most northerly inland town, a position it was to hold for nearly twenty years. (*History of Melrose* 1966)

There were other mineral discoveries in the Upper North. On the Charlton Run in the 1850s the Australian Mining Company spent £20,000 to build a smelter at the Charlton copper mine overlooking the Rocky River. In the vicinity of Mount Remarkable the Spring Creek mine was worked actively for a time in the 1860s and 1870s, and another smelter was built there. These two were the most substantial mining ventures of the region, but both were failures. The Great Gladstone further north produced some very pretty specimens of copper and silver mineralisation, but no profits. (Austin 1863, pp. 26-29; Brown 1908, pp. 42, 58, 133-34) A mine called Wheal Sarah worked a small copper deposit near Bundaleer homestead from 1858 to 1861. (Robinson 1971, p. 65) For all their disappointments, these mines created employment and optimism, generated public awareness of the region, and attracted population and investment, with all the economic multiplier effects that followed. In a frontier economy, no mining venture is unsuccessful for everyone.

At the beginning of 1869 most of the arable land in the Upper North had long been occupied by sheep graziers, and there had been little significant change in the region's land utilisation or economic activity for nearly twenty years. There were no crops growing in the region; the nearest wheat farms were still a long way to the south, in the Clare valley. The only towns in the region were Melrose, Port Pirie and Port Germein. This situation was about to change very rapidly.

The Strangways Act

During the 1870s, European settlement in the Upper North was transformed by a series of events which encouraged new industries and brought much more intensive occupation of the land. One, although by no means the only, cause of these changes was new legislation which went through Parliament at the beginning of 1869 with the rather dreary title An Act to further amend the 'Waste Lands Act'. It was to be repeatedly amended, and replaced altogether in 1872 by the Waste Lands Alienation Act, but the whole legislative package it initiated has been loosely known ever since as the Strangways Act.

The Strangways Act was part of a world-wide movement to break up grazing lands and make them available to small farmers. Throughout the 1860s, broadly similar legislation had been enacted in New South Wales and Victoria (*Crown Lands Acts 1861*), Queensland (*Crown Lands Alienation Act 1868*) and the United States of America (*Homestead Act 1862*). There were significant variations in the ways these acts worked, but their net effect was to give farmers tenure of land that had not been available to them previously, and this usually involved taking it away from graziers. The South Australian legislation was more effective than its counterparts in most other places:

> The effort to settle farmers on the land was successful only in South Australia, but this achievement sprang from the peculiar character of the province's geography and population rather than from any peculiar genius in its politicians. South Australian wheatlands lay in a compact area near the capital, on a fertile coast plain blessed by a

> climate ideal for wheat-growing. The crop could be carted cheaply, over very short distances, to one of a dozen small ports or to Port Adelaide. South Australia's pious farmers worked hard and intelligently. In the 1840s, when other Australian farmers were still reaping their crops by hand, John Ridley and John Wrathall Bull invented a mechanical stripper. Seed drills and stump-jump ploughs were invented in the same colony in the following decades .... [By] 1880, South Australia's wheat crop was about equal to that of all the other colonies combined, and she was exporting her surplus to Britain as well as to Sydney and Brisbane. (Ward 1992, pp. 174-175)

Indeed the experiment was successful only in some parts of South Australia, notably the Upper North and the Yorke Peninsula, whereas in the South-East and the Eyre Peninsula the same legislation failed to produce any significant results. It was not surprising that the Strangways Act achieved its greatest success in the Upper North, for the reform was largely prompted by increasing knowledge of the agricultural potential of that region. From 1864 to 1866, the northern pastoral runs had been devastated by drought, and many graziers had sought government relief. Surveyor-General George Goyder, one of the most capable public servants in South Australian history, investigated the extent of the problem. To determine the need for assistance, Goyder carried out a lengthy survey of the Pastoral Lease Districts of the colony, and drew up a map classifying them into four zones, for which he recommended varying levels of concessions on lease conditions. (SAPP No. 82 of 1866)

One boundary which Goyder identified in his travels - very roughly approximating to the 15 inch (380mm) isohyet or line of average rainfall - he regarded as the limit of agriculture, in other words, the line defining the land where there was sufficient rainfall to grow crops. As a result of this observation, what struck many people looking at Goyder's map was not the plight of the northern pastoralists outside that line, but the extent of the under-utilised land inside it which could successfully grow wheat. Within a year, the expression 'Goyder's Line' had gone into the South Australian vocabulary to mean the boundary which divided grazing land from land suitable for cropping. Soon a political movement was underway to extend the agricultural frontier outward into the sheep lands.

It was an article of faith among nineteenth century South Australian politicians that small farming was the most desirable model for colonial settlement, and implicit in this faith was the vision of physically recreating the English countryside, its farming economy and way of life, in South Australia. The southern English landscape of small cereal farms, with its relatively dense population and closely spaced villages and towns, was seen as a far more desirable model than either the grazing lands of Scotland, which locked up large areas of land in the hands of a small population, or the new industrial cities with their institutionalised poverty, and health and social problems already plainly visible.

The reform movement was driven by a growing population within the colony which was exerting a demand for farmland. There were two obstacles to the spread of the small farmer: first, there was no suitable land available, all the arable land north of Clare was held under Pastoral Leases; and second, most of the aspiring farmers had no money to buy the land even if it were to become available. Led by newly-elected Premier Henry Strangways, the reformers set out to solve both these problems at a single stroke.

The essential provisions of the new legislation (including some added by amendments to the 1869 Act) were: (a) land, both unoccupied and under pastoral lease, was to be surveyed and then offered for selection, (b) selectors could take up land on 10% deposit, with the remainder due in three years, (c) land was first offered at £2 per acre and if not taken up fell progressively in price each week until it reached a minimum of £1, (d) competing bids for the same land were settled by ballot, (e) each applicant could take up 640 acres, a big farm for the time, and (f) applicants had to reside on the land, and carry out prescribed improvements such as fences and dams. There was no requirement that the land be used for cropping, and both town allotments and small grazing farms were taken up under the scheme; however the vast majority of the applicants were after land to grow wheat.

This was not simply a redistribution of land from the rich to the poor, although that played a part in what was happening. It was intended to bring about a profound restructuring of the means by which the region's natural resources were being exploited, in the direction of more intensive economic activity, faster creation of wealth, maximisation of government revenue and, in particular, encouragement of greater population density. In the short term at least, it succeeded very well.

A number of elements combined to make the Strangways Act a success. First the time was right; there was a swelling population within the colony, generating both a growing demand for wheat and a supply of aspiring farmers. The international market was expanding, and most of the wheat grown in the Upper North in the following decades would easily find a market in the northern hemisphere. The weather also smiled on the region in the short term: 1870 and 1871 brought booming wheat harvests, 1872 saw a slump, but then a run of good seasons followed throughout the 1870s with few setbacks. The late 1870s were a time of unprecedented prosperity throughout South Australia. In the crucial early years of the Strangways land reforms, more and more farmers were attracted to the new wheat lands, and the displaced pastoralists had little difficulty finding good grazing land further to the north.

South Australian farmers were also technologically ready to take advantage of the expansion. The first farmers to arrive in the colony from 1836 brought with them English farming methods which had changed little since the Middle Ages; land was cleared with axes, wheat was cut with a sickle and manually threshed with a flail on a stone floor. Then, twenty-five years before the Strangways Act, the ingenuity of Bull and Ridley had commenced the process of making the colony a leading wheat producer by developing the stripper, which mechanically harvested and threshed wheat in the field, ready for bagging. The machines cost only £50, and enabled one worker with three horses to harvest five acres (2ha) in a day. The stripper was particularly well-suited to the dry South Australian wheat belt, for its beaters worked best on brittle stalks; it was less successful in the wetter wheatlands of eastern Australia. Winnowing machines developed by John Stokes Bagshaw and Fred May later mechanised the bagging process.

Techniques for rapidly clearing the mallee scrub with a minimum of manual cutting had been developed in the Lower North from the 1850s onward; the flimsy tree trunks were snapped off by a horse-drawn scrub roller (or mallee roller) made from a large log or an old iron boiler, and the crushed forest was burned and the ashes ploughed in. Two- and three-furrow ploughs were coming into use by the 1870s, and in 1876, in response to the expansion of the wheat frontier, Richard Smith developed the stump-jump plough specifically for ploughing freshly-cleared mallee lands. (Simpson 1988) These continuing developments kept the Strangways Act farmers at the forefront of agricultural technology through the early decades of wheat-growing in the Upper North.

The Wheat Farmers

The resulting influx of wheat farmers was the most significant event in the European settlement of the Upper North, and one of the most dramatic population movements in South Australian history. There was not a single wheat farm in the region at the beginning of 1869, but the landscape was described by a visitor five years later as 'wheat, wheat, without intermission'. The entire area which is under agriculture in the region today was transformed from grazing land or uncleared forest to ploughed fields in the space of ten years. The revenue gained by the colonial Treasury through the sale of millions of acres of land at £2 per acre made a major contribution to South Australia's great economic boom of the late 1870s.

The impact of this agricultural expansion was to go far beyond the local economy, and have a profound effect on South Australia's place in the world. By 1884 the colony's wheat harvest exceeded that of New South Wales and Victoria combined; for the rest of the nineteenth century South Australia produced about 50% of Australia's wheat, and exported about 90% of the crop to Europe. (Meinig 1962)

The Strangways Act came into operation on 2 March 1869. Four new Hundreds in the Upper North - Andrews, Reynolds, Whyte and Yackamoorundie - had just been proclaimed for land survey under the old Waste Lands Act on 18 February. The first Hundreds under the Strangways Act - Bundaleer, Koolunga, Redhill and Yangya - were proclaimed on 15 July, surveyed in the following months, and the first land was offered to farmers under the new provisions in the Hundreds of Redhill and Bundaleer early in 1870.

Not all the buyers were farmers. Graziers could legitimately compete for the land, and many bought up as much as they could afford; the very early sales in the new hundreds were dominated by names such as Charles Brown Fisher and Tom Barr Smith. The Hughes brothers at Bundaleer and Booyoolee, Alexander McCulloch of Yongala and the syndicate who owned Canowie freeholded some of their land to retain at least the core of their former holdings, and all these homestead blocks are still intact as grazing properties today. To maximise their land purchases, some graziers used 'dummies': land agents who bought blocks adjacent to pastoral holdings and sold them on to the principal a few months later. Other graziers knew their time had come; many sold out shortly before the Strangways reforms, Price Maurice simply walked off the Pekina Run and left his stone homestead buildings and his boiling down works to fall into ruin. While the graziers lost their land, they were compensated for their improvements.

The proclaimed land expanded within two years into the Hundreds of Appila, Belalie, Booyoolie, Black Rock Plain, Caltowie, Crystal Brook, Mannanarie, Narridy, Pekina, Tarcowie, Terowie and Yongala, forming a block of about one thousand square miles (2,600km^2) in area, extending from the coastal range east and north to Goyder's Line. This satisfied existing demand, and there was a pause for a few years as the proclaimed land was surveyed, but the process resumed in 1874, and 28 more Hundreds had been proclaimed in the region by 1880.

By 1875, there were a million acres (400,000ha) under wheat. The new wheatlands were known in the terminology of the Strangways Act as the Gulnare and Broughton Agricultural Areas, often abbreviated to the Northern Areas, or locally just as 'the areas'. A visiting journalist in 1874 wrote:

> The farms in the areas ... vary in age from one to four years, and a general description of their appearance may be summed up as ... mile after mile of waving wheat just bursting into ear, in blocks from 200 to 800 acres in extent, covering a country with rolling valleys and hills, some parts lightly timbered and some bare .... little and generally no stock, temporary fences (in most cases light mallee round posts and two wires), houses necessarily far apart on such large farms, and built skillion fashion (with the white stone already spoken of) evidently with the intention of adding a main building at the front by and by, a rough shed for the working horses, and the usual farming implements. The strippers, winnowers, and double ploughs, and wheat, wheat, without intermission .... This constitutes the unvarying scene throughout the block of about 1000 square miles already referred to as at present forming the most thickly settled portion of what is known as the northern areas. (Dow 1874, pp. 31-32)

Perhaps if the Strangways land redistribution had stopped at that point, it would be remembered today as a complete success. The legislation originally applied only to the area south of Goyder's line of rainfall, but in all the excitement, the pressure for land, the high annual wheat yields and the huge government revenues, an atmosphere something like a self-perpetuating bull market in shares set in, and the rainfall line which had provided the original basis for the land reforms was forgotten. Goyder had drawn his line to take in the lower Flinders Ranges, with two loops extending northward around Melrose and Pekina. During the prolific and reliable winter rainfalls that characterised those few years in the mid-1870s, Goyder's opinions no longer seemed relevant.

People began to speculate that extensive planting of wheat throughout the region had somehow modified the climate, and therefore the more wheat that was planted, the more it would rain. After the Strangways Act was amended by the *Waste Lands Alienation Act Amendment Act 1874*, land further north and east could also be taken up on credit. Land was selected outside the line in the Hallett, Orroroo, Terowie and Yarcowie districts. Farmers planted wheat around newly-surveyed townships such as Bruce and Dawson and Franklyn and Hammond, where Goyder had said it would not grow. For a few years they boasted that they had proved the Surveyor-General wrong, but of course the good seasons could not last.

Donald Meinig has pointed out that the 1874 amendment to the Strangways Act brought about a fundamental change in South Australian land administration. Previously, the application of Goyder's Line to agricultural land policy was in keeping with the colony's cautious tradition of planned rational settlement, and 'its abandonment was a conscious, radical reversal of practice.' (Meinig 1961, p. 214) The amendment had put the South Australian government in the irresponsible position of extending large amounts of credit to people to buy farms on the understanding that they would repay the debt by producing a crop which, according to the government's own advisers, could not be grown successfully on their land! Or, to put it in 1990s terminology, the Strangways reforms were no longer environmentally sustainable.

After an initial decade of prosperity in the Northern Areas, the summer of 1880-81 brought a severe drought, even worse than that of the 1860s, which continued over several seasons; the average wheat yield fell dramatically in the next ten years, and so did the area of land under grain. In August 1885, eighteen-year-old William Stagg of Tarcowie wrote in his diary:

> Father saw Uncle King at Mannanarie. He don't think he shall get a bit of wheat, it never came up. He is not the only one in the same pickle. One near Jamestown sowed it again it never came up either, the third time he sowed and now it is not up and for all his trouble he will get nothing .... Yesterday was a tremendous dusty day, the wind was blowing from the North west. (Robinson 1973, p. 40)

The drought that began in 1880 stopped the Strangways Act expansion in its tracks, and defined the wheat-growing area of the Upper North. Goyder was proved to be almost exactly right. The agricultural frontier shrank inwards, and has remained in roughly the same place during nearly 120 years since. (Williams 1974a, pp. 45-49) No new Hundreds have been proclaimed for settlement in the Upper North since August 1880. (The Hundreds of Howe and Darling in the western ranges were proclaimed in 1891, but these were simply administrative boundary adjustments, and did not open any new land for settlement.)

The drought of the 1880s also brought to life an important South Australian business, as the wheat growers of Jamestown formed the Farmers Co-Operative Union in response to declining yields. The immediate issue was the supply of wheat bags. Normally these had been provided free of charge by the grain agents, but in the 1887 season there was a shortage of bags, and the agents made farmers buy them at 7/- per dozen. This outrageous impost on their already meagre income drove a group of Jamestown farmers to call a public meeting to raise enough money to order 100 bales of grain sacks direct from Calcutta. This initiative spread to co-operative purchasing of a variety of farm necessities, and at a meeting on October 1888 the district's farmers voted to form a permanent union to represent their interests, a local manifestation of a movement that was forming similar co-operative societies around the world. The South Australian Farmers Co-Operative Union Limited was registered in November, with its office in Ayr Street, Jamestown described as "little more than a cubicle". (Baker 1988, p. 21)

From its beginnings as a local co-operative purchasing body, the Union in 1892 expanded into marketing the wheat crop, and went on to become one of the biggest agents selling farm produce. By 1895 its headquarters shifted to Adelaide, and it has further diversified into dairy manufacturing and stock, wool and fish sales, today trading under the names Farmers Union, Southern Farmers, Safcol and National Foods.

Farmers throughout the Upper North settled into a stoical acceptance of the rhythm of the rainfall cycle as the principal determinant of their annual income. Much farmland in the east and north of the region is still managed on an opportunistic mixed farming basis: wheat is planted only in good years, sheep are grazed the rest of the time. The drought revealed the unsystematic haste with which the ten years of land selection had been done, for it left many anomalous situations. There were farmers committed to paying off hopeless land in the far east of the region, while relatively well-watered land between the western ranges had never been surveyed. Many credit purchase agreements were converted to agricultural leases on an annual rental basis; but other farmers simply walked off the land. 'Some of the farms were abandoned, and the land, stripped of its native vegetation, was left useless for grazing. A century later, some of it has not fully recovered.' (Love 1986, p. 13)

After a decade of nearly continuous drought, Goyder himself described the plight of the outlying farmers in a pessimistic summary of the Strangways reforms:

> The first schedule of the Waste Lands Alienation Act, 1872, limited ... selections to within what is known as Goyder's line of rainfall ... but after a good season the schedule referred to was repealed by Act 22 of 1874, which extended the limit in which country lands might be surveyed and selected to the 26th parallel of south latitude [i.e., all the way to the Northern Territory border!].
>
> The risk of allowing lands to be open for selection that were situate beyond the reliable limit of a sufficient rainfall was pointed out over and over again, but the demand for land was urgent, and so persistent, that it was ultimately agreed to. As each plan of a proposed new hundred was laid before Parliament prior to proclamation, it was notified in the description that the rainfall within the proposed hundred was doubtful, and that the result of farming operations on the land would be precarious; yet, when survey and opening the land followed, it was taken up even more readily than before .... 'The rain follows the plough' became the cry, and the demand still further and more urgently increased, so that notices of resumption for large areas had to be given to meet the growing desire. The seasons changed at length, however, failure occurred in the outside hundreds, selection all but stopped, and many thousands of acres surveyed and ready for sale were withheld.
>
> ... the selectors should have been called upon to surrender their agreements for land in such uncertain localities and where universal ruin prevailed. This might readily have been done, as there were abundant lands then available within the line of rainfall, although perhaps of somewhat inferior character .... [but] most of them continue to occupy this outside country and to suffer with their wives and families the wants and anxieties entailed by a succession of bad seasons, which the profits of exceptionally good ones will rarely enable them to overcome. These people appear to cling to the land with the utmost fortitude, enduring every species of privation, hope of better times being their only solace. (SAPP No. 60 of 1890, pp. 16-17)

Despite the setbacks that came in the 1880s, the Strangways wheat lands established in the Upper North and the Yorke Peninsula during the 1870s transformed South Australia into one of the major grain-growing areas of the world. From the 1880s into the mid-twentieth century, a large proportion of the State's export income was to be earned by the wheat farmers of the Upper North.

The Wheat Towns

When the Strangways Act was being debated in Parliament in 1868, the only towns in the Upper North region were Melrose, and the small coastal settlements beside the anchorages at Port Pirie and Port Germein. That changed dramatically in the following ten years, as the demands of closer settlement established a large number of towns throughout the ranges.

The farm blocks were surveyed in land units called Hundreds (the equivalent of Parishes in other colonies), areas which were to be as nearly as possible ten miles square, and would thus ideally contain exactly one hundred 640 acre farms. Goyder established a policy of surveying an agricultural town in the centre of every hundred, so that in theory there was to be a town spaced every ten miles (16km) apart along both east-west and north-south lines. Events were to show that this spacing was over-optimistic, but no-one at the time seems to have questioned whether any other agricultural land in Australia was supporting towns only ten miles apart. In practice, the geometry was never as neat as this; the size and shape of the Hundreds naturally varied with local topography, and towns could only be positioned where water supply and convenience of road access permitted. However, even given these constraints, the road map of the Upper North still clearly shows the orderliness of the 1870s surveys.

The pace with which these towns were established was astonishing. In 1869, within months of the Strangways Act, Georgetown and Redhill were drawn up, then in the following decade, nearly every town in the Upper North region was surveyed:

1870	Hallett and Yacka,
1871	Caltowie, Jamestown, Laura, Narridy and Port Pirie,
1872	Appila, Baroota and Gladstone,
1874	Gulnare, Nelshaby, Pekina, Stone Hut, Yarcowie, Wirrabarra and Yatina,
1875	Crystal Brook, Lake View, Koolunga and Tarcowie,
1876	Orroroo, Spalding, Wilmington and Yongala,
1877	Huddleston, Lancelot, Mannanarie, Morchard and Warnertown,
1878	Booleroo, Hornsdale, Port Germein, Terowie and Willowie,
1879	Amyton and Hammond,
1880	Franklyn, Merriton and Petersburg. (Manning 1990)

In some cases, the determinants of geography put the new towns alongside the homesteads established thirty years earlier, simply because the place chosen to build a homestead in the 1840s was also likely to be the best place to locate a town in the 1870s. Thus Orroroo was established not far north of Pekina in 1876, the town of Wirrabara near the homestead of the same name in 1874, and the new town of Gladstone was surveyed beside Booyoolee homestead in 1875. The old road network also played a part; the existing track up the valleys from Clare to Melrose, passing half a dozen homesteads, influenced the locations of Yacka, Gulnare, Georgetown, Gladstone, Laura, Stone Hut, Wirrabara and Murray Town along its route. Not all of the new towns were laid out by the government; Samuel Robinson had Mannanarie surveyed as a private speculation in 1877. The government town of Booleroo, laid out in 1878, was virtually ignored by settlers, who preferred the private town of Booleroo Centre, surveyed five miles (8km) to the southwest in 1882. (Manning 1990, p. 41) Thus Melrose, Solomontown, Mannanarie and Booleroo Centre began with land sales by private investors, whereas residents in most towns in the region bought their land from the Crown.

The rawness and excitement of the new towns reminded one Victorian visitor of the goldfields:

> At all these townships the scene reminds one of a rush to a new diggings, only instead of gold the rush here is for Land. In each township there are prominent the stripper and plough factories, some having as many as three. A flour mill at work is to be found in most, and the hotels and stores, which are of a more superior class than might be expected in

> such new places, are driving a brisk business. The number of houses in each township, including hotels, stores, banks, mills, implement factories, schools, and churches, vary from about fifteen to fifty, and rapidly growing. (Dow 1874, p. 30)

One fundamental difference between a gold rush and a land rush was the gender balance of the population. Unlike the goldfields with their thousands of young restless male diggers, a large proportion of the Strangways Act pioneers tended to arrive in the district as family units, or at least as married couples. Large numbers of children were present from the outset. A sprinkling of the new arrivals were experienced middle-aged farming families who had moved 100km north from the farmlands between Gawler and Clare to try their luck on a bigger farm in the Areas.

Many of the business people in the new wheat towns were also from similar towns further south, moving their trade to the new frontier. The names of shopkeepers and hoteliers from older towns like Clare, Auburn, Gawler and Kapunda are conspicuous among the early people taking up town allotments in the Areas. Under Goyder's directions, the standard form of these town surveys was a miniature version of Colonel Light's plan for Adelaide, a square of town allotments centred within a square of parkland, centred within a square of farmland:

> Light's plan for Adelaide had some effect on these early towns, private and government. Goyder drew a sketch plan of an imaginary hundred including a town centre, park lands and surrounding suburban land. This became the model for surveyors for the rest of the 19th century and little copies of Adelaide were strewn all over the agricultural areas. (Love 1986, p. 8)

The surveyors of the 1870s had to peg out about two million acres of farmland and select about forty town sites very quickly, and not surprisingly their judgement was not always perfect. The town of Yongala is notorious for having the coldest winter temperatures of any town in the State, and Jamestown straddling Belalie Creek suffers from infrequent but serious flooding. The editor of the *Jamestown Review* pointed out some of these defects at the time; he did not share Goyder's passion for geometrical symmetry, and wrote his own acerbic instructions for the government surveyors:

> Avoid all sites that are naturally high and dry and possess natural facilities for easy drainage. If there be a gentle slope, sheltered by friendly upland, avoid that also; eschew any elements of the picturesque, and select rather the flattest, most uninteresting site possible; if a flat with a creek running through it and subject to overflow, by all means get on the lower bank of the creek and peg away. If a running creek be not available get in the way of a storm channel. (Quoted in Cooper 1978, p. 3)

Beside their commercial roles, the new wheat towns became centres for government administration, with police stations, court houses, post offices and telegraph stations erected on government reserves. The Education Act of 1875 encouraged the construction of public schools early in the life of the new towns. In Gladstone the government commenced building a large gaol of a radically new design in 1879, signalling that the frontier of law and order had moved on from Redruth at Burra, which had been the northernmost gaol since the 1850s.

The new farmers arriving in the region tended to be predominantly of English descent, and they brought with them their traditional religious faiths, the Anglican church and the various Methodist denominations. There was not the fervent Wesleyan evangelism that had accompanied the spread of farming in the Lower North twenty years earlier; chapels set among the wheatfields are rare in the Upper North. In the 1880s the Salvation Army arrived, but found that the hard-working farmers of the Upper North provided them with only a small amount of sin to fight. A large proportion of the Anglican churches in the Upper North towns were designed by William Mallyon of Port Pirie, who produced some fine designs despite being entirely untrained in architecture; somewhat improbably he had a full-time job as a bank manager. (Fenton 1971)

However, there was some cultural diversity in the new population. There were Catholic churches everywhere in the region, and around Pekina there was a particular concentration of Irish families who had moved north from Armagh and Clare, so many that for a time under Bishop Maher the little town became the seat of the Port Augusta diocese, and the district was known by outsiders as 'Vatican Valley'. Bishop Norton of Petersburg designed some of the Catholic churches of the region; unlike Mallyon he had trained as an architect. (Press 1993) There was a sprinkling of other protestant denominations. Unusually for South Australian farmland, Lutheran churches were rare, but there were small groups of German settlers who moved north from the Barossa and established Petersburg and nearby Gottlieb's Well (later Terowie), and a few German families settled in the Booleroo and Appila districts.

The old towns also had a new lease of life. In 1871 a new government town was surveyed along the Port Pirie river; in conforming to the plan of the wharves along the riverbank, it became one of the very few South Australian towns to have curved streets. The new excitement gave hope to the moribund private survey of 1848 nearby, and in 1873 it was renamed Solomontown to distinguish it from the government subdivision. The muddy estuary at Port Pirie was improved by harbour works. In 1876 the Queens Wharf was constructed along the river on steel piles driven into the river bed, and the channel was dredged to allow ocean-going ships to tie up alongside. By 1880, over 300,000 tons of silt had been dredged from the channel and pumped ashore for landfill. (Robinson 1976, pp. 151-161)

In 1878 Port Germein was also surveyed as a government town. Although it was a sheltered anchorage, its main drawback was the extreme shallowness of the seabed in the upper Gulf, so to upgrade Port Germein for the wheat trade, a long jetty was built in 1881. It was extended to 5,459 feet (1,664m) in length in 1883, stretching over a mile out to sea, making it by far the longest jetty in South Australian waters. Even at that length, it drew only nine feet (2.7m) of water at the outer end.

As the wheat harvest of the Upper North grew year after year, so Port Germein, Port Pirie and Port Augusta entered a new era as booming wheat ports in the 1870s. During the harvest each year the ports came to life as bagged wheat arrived on wagons and was built into rectangular mountains along the foreshore. Then the ocean-going wheat ships arrived, usually four-masted barques, many of them owned by Scandinavian trading firms and crewed by Swedish and Finnish sailors. In the deep river channels of Port Pirie and Port Augusta they could tie up to the wharves and be loaded up gangways. At Port Germein they sat at anchor in the roadstead while the 'mosquito fleet' of local ketches worked for weeks lightering wheat out to them from the jetty; typically each ship held about 4,000 tonnes of cargo, which was about 50,000 wheat bags. (Sundberg 1998) When the big ships were deep in the water they sailed for the markets of Europe, their holds full of bagged wheat grown by the farmers of Redhill and Jamestown and Orroroo.

The Railways

The economic gains of the wheat farming boom were consolidated by the construction of railway lines from the ports into the farming districts. In the process, the selection of railway routes was to reorganise the chequerboard of more or less evenly-spaced wheat settlements into a hierarchy of economic significance, as the new railways conferred prosperity on the fortunate towns along their route.

Railways had been built outward from Adelaide since 1856, the northernmost line reaching the mining town of Burra in 1870. The first line in the Upper North region was independent of the Adelaide network, constructed east from Port Pirie through the Crystal Brook gap, commencing in 1875 and extended in stages, reaching as far inland as Petersburg within six years. The first section was open to Crystal Brook in 1875, then it was built onward to Gladstone in 1876, extended to Caltowie in January 1878, and to Jamestown the following July. It reached Yongala in 1880 and Petersburg in January 1881.

The Port Pirie to Petersburg railway was to form the principal east-west transport axis of the Upper North region, bringing prosperity to all the towns along its route for many decades, and, although both its principal freight and its route have changed, it still makes an important contribution to the region's economy today. The full impact of this line on South Australia would only be felt after 1887 when it was extended to the New South Wales border to link with the Silverton Tramway to Broken Hill.

While the Petersburg line was under construction, another line was built north from Burra to Hallett in 1878. It reached Terowie in 1880, and in May 1881 the link between Terowie and Petersburg was completed, connecting the Port Pirie hinterland with Adelaide by way of Burra. The farmers of the Orroroo district repeatedly lobbied for their own railway from the coast at Port Germein, along a route that would have taken it up through the Germein Gorge past Bangor to Murray Town, then through Booleroo and Pekina to Orroroo. They pursued their campaign so persistently that three parliamentary enquiries considered the question over twenty years in 1881, 1891 and 1902, but their expensive line was never found viable.

Instead, in November 1881 a branch line was opened from Petersburg north to Orroroo, and then the following year this was pushed north through Eurelia to Quorn, linking with the Great Northern railway which was open from Port Augusta to Farina. This link was to take on new significance in 1917, when the Transcontinental railway was opened across the Nullarbor to Perth. Railway traffic from Adelaide to Perth travelled north via Burra through Terowie and Petersburg, thence through Quorn and Port Augusta to the west. Although no-one had planned it that way, these developments made Petersburg the railway hub of the Australian continent. In the 1920s and 30s, all long-distance passengers and freight from Sydney to Perth, from Adelaide to Brisbane, or from Melbourne to Alice Springs, had to pass through the Petersburg railway yards. Surprisingly, it was not until 1937 that a direct line was built between Port Pirie and Port Augusta, allowing trains bound for Perth or Alice Springs to travel north up the shore of Spencer Gulf. (Donovan 1992)

The railways brought economic benefits to the region for many years, not only because they reduced the costs of goods coming inward and hastened the carriage of wheat to the ports for export, but also because the railways themselves were an important industry. Because of the complicated politics of Australian public transport, there were three different rail gauges in the region, so there were break-of-gauge facilities and goods sheds at Port Pirie, Terowie and Gladstone. Because of the delays to passengers at the break-of-gauge stops, they all had large stations with refreshment rooms. Petersburg became the busiest railway junction in South Australia; a large maintenance workshop was built there, and the tracks in its yard were fitted with four rails to take rolling stock of all three gauges. Stations at such strategic points on the railway network employed large workforces for many years.

Over the next few decades, more branch lines filled in many of the blank spaces on the railway map. In the south-west of the region, a horse tramway was built from Port Broughton to Barrunga Range (Mundoora) in 1876, and later converted to steam operation. A branch line was built from Gladstone to Laura in 1884, then on to Booleroo Centre in 1910, and extended north to Wilmington in 1915. The region was linked more closely to the southern railway network by a series of lines that came north up the valleys, connecting Blyth to Gladstone in 1894, Clare to Spalding in 1922, and Snowtown to Redhill in 1935.

The 1930s saw the peak of the Upper North region's railway era. The first railway closure in the region came soon afterward as a result of wartime rationalisation, when the short line from Port Broughton to Mundoora closed in 1942. This was an early precursor of what was to happen after

1975, when all railway lines in the Upper North region were taken over by Australian National Railways.

The Forests

From early setttlement it had been realised that South Australia was less plentifully endowed with trees than any other Australian colony, with the result that nearly all timber for any purpose had to be imported, so it was not surprising that nineteenth century governments were eager to create forest plantations. The ranges of the Upper North were chosen as the most promising land for afforestation.

In 1875 the Forest Board Act provided the legislative basis for government involvement in forestry, and within months, in February 1876, the first seedlings were growing at Bundaleer, south of Jamestown. Over 132,000 seedlings were planted out as the beginning of a commercial forest later that year. From the outset, there was great diversity in the plantations. There were native red gums and sugar gums, introduced Tasmanian blue gums and Western Australian jarrah, as well as acclimatisation experiments with European oaks, elms, ashes, poplars, walnuts, sycamores and willows. Golden wattle was grown to harvest the bark, used in tanning leather. (Lewis 1975, pp. 15-16) Among the early plantings were stands of radiata pine, later to become the staple of the Australian softwood timber industry. Goyder, seemingly expert on almost every subject, personally recommended that *Pinus radiata* be tested. (Kelly 1963)

Bundaleer North Forest Reserve was the first State forest in South Australia, and the first forest planting by any government in Australia. A second eucalypt plantation at Wirrabara Forest was commenced in 1877. (Malone 1971; Cole 1972) No-one had ever attempted forestry on this scale in Australia, and there was a lot to learn about the climate, soils and seasons of the Upper North region. Not all the plantings were a success, and drought, frosts and fires also took their toll. But the foresters persevered, and learned to mix their tree plantings with wheat growing and sheep grazing.

The Conservator of Forests, John Ednie Brown, held a view fashionable at the time, that planting forests would cause the rainfall to increase, and proposed establishing huge plantations across the arid northern lands. In his *Practical Treatise on Tree Culture* he expounded his plausible-sounding but mistaken theory that tree plantings could modify the climate. Brown entitled a chapter of the book "The Benefits which would accrue to the Soil and Climate of the Colony from a general System of Tree Planting", prominent among which was: "More Rain would Fall." (Brown 1881, p. 7) To Goyder, chairman of the Forest Board, this was unscientific nonsense, and he insisted that commercial timber production remain the chief aim of the State forests. Goyder was painfully aware that Brown’s views were only a variation of the 'rain follows the plough' beliefs which had prompted the excesses of the later Strangways land reforms. It was in part concern over Brown's misguided enthusiasm which prompted the government to disband the Forest Board in 1882 and replace it with the more practically-minded Department of Woods and Forests. (Williams 1978 p. 17; Jones 1999)

In the early decades the harvested logs were the chief product of the forests, and they were sold commercially for milling. The hardwoods found a ready market for underground mine timber at Broken Hill. Then in 1910 the Verran government, with its program of State enterprise, built a sawmill at Bundaleer so that sawn timber could be marketed. In 1935 the Butler government expanded the mill, installing seasoning kilns, and more sophisticated sawing and planing plant. The forests which formed the basis of State forestry in the 1870s have been continuously cultivated to the present, and still contribute significant economic activity to the Upper North.

The Smelters

An event which was to have a profound impact on the development of the Upper North region was the discovery of silver-lead-zinc ore at Broken Hill in far western New South Wales in 1883. It was apparent within only a few years that the ore deposit in the Barrier Ranges was among the great mineral discoveries of the world. The initial attraction of the field was the value of its silver, but even after this crashed in value in the early 1890s, the mines of the Barrier went on to produce millions of tons of lead and zinc, becoming by far the most productive and profitable base metal mining field in Australia.

South Australia effectively stole the economic benefits of Australia's greatest mining field from New South Wales. This was done very simply by extending the Port Pirie-Petersburg railway to Cockburn on the New South Wales border in 1887, creating a rail link with the privately-built Silverton Tramway from that point to the mines of Broken Hill. The new line was a gamble, and political support for it was the result of effective representation by the local member for the Northern Areas, Dr John Cockburn, long-term mayor of Jamestown and Minister for Education in the Downer government. His bronze bust in the main street of Jamestown expresses the region's gratitude for his foresight.

Once the Cockburn rail link was opened, all fuel and other supplies going into Broken Hill, and all mineral products coming out, had to pass through Port Pirie, bringing greatly increased shipping and railway activity to the economic benefit of the Upper North region. Along the railway, Petersburg, Yongala, Jamestown, Gladstone and Crystal Brook all shared some of Broken Hill's prosperity. Then in 1889, one of the mining companies, British Broken Hill Proprietary Coy Ltd, took the process a step further by building a smelter at Port Pirie. The major company, Broken Hill Proprietary Coy Ltd (BHP), built its own lead refinery at Port Pirie the same year, and also took over the British company's smelter in 1892. (Green 1977) Siting the smelter at the coast saved the cost of railing fuel to Broken Hill, but added the cost of railing ore to Port Pirie. This only made economic sense when more efficient treatment processes enabled the waste rock to be discarded and metallic ore to be concentrated, so that a relatively small amount of rich concentrate was railed to the smelter. (Blainey 1968, p. 64) Some companies continued to smelt on the field, but Port Pirie benefited in any case, as it railed them their fuel.

There was a third option; some of the Broken Hill companies did not smelt at all, but sold their concentrate to smelters in Europe - mostly in Germany - for treatment there. This practice ended abruptly when the First World War broke out in 1914, because Germany and the other Central Powers were inaccessible, and all commercial shipping worldwide was disrupted. Unsaleable concentrate began to accumulate in large stockpiles at Port Pirie; paradoxically, this was happening just as wartime demand was driving the price of metals up to unprecedented levels. In the face of this emergency, the Broken Hill companies acted in co-operation for the first time. In May 1915 five of the largest companies combined to form Broken Hill Associated Smelters (BHAS), which took over BHP's Port Pirie smelter and enlarged it into a joint venture.

Port Pirie had progressed through five roles, each rising in economic importance: first a sleepy wool port, second a bustling grain port, third a regional railway terminus, it then became the port for Australia's most important base metal mines. With the arrival of BHAS it entered its fifth phase: by 1918, Port Pirie was the second-largest city in South Australia, and its smelters were the largest in the world. (Blainey 1968, p. 79)

BHP sold the Port Pirie smelters because it was moving out of Broken Hill into the iron and steel industry at Newcastle and Port Kembla, and later Whyalla. Under BHAS, the smelters have operated to the present, with several major changes in their operating technology. In 1925 a Royal Commission investigated the incidence of lead poisoning or plumbism among the workforce, and lead toxicity from smelter waste is still of concern to the Port Pirie community today. During the uranium boom of the 1950s, the smelters diversified, installing a plant to extract uranium oxide from ores mined at Radium Hill. In recent decades, production at the

Broken Hill mines has been steadily dropping, with obvious implications for the future of Port Pirie.

The Dams

In a colony as chronically short of water as South Australia, the rainfall in the coastal ranges of the Upper North was too precious to be allowed to run out into the Gulf, but a large population had to exist in the region to justify the cost of dams and pipelines. The initial impetus for a water catchment scheme came from the copper mines of the upper Yorke Peninsula, where there were three towns totalling some 25,000 people in a district with no surface water whatever.

Field investigations by the Hydraulic Engineer in 1885 identified a gorge suitable for damming in the Beetaloo valley near the head of Crystal Brook, not far east of Port Pirie. The Waterworks Department made the daring decision to build the dam of concrete, a material never before used on this scale in Australia. The Beetaloo Dam and its associated earthworks and pipelines were built between 1886 and 1890, with the pouring of concrete for the wall taking from February 1888 until July 1889. (Willshire & Ellis 1981, p. 10) When the arched wall at Beetaloo was completed in 1889 it was the largest concrete dam in the southern hemisphere. (Lewis 1988, pp. 5 & 63) Reticulated water was connected to the Copper Triangle in 1890.

While the Beetaloo Dam was under construction, Port Pirie was chosen as the site for smelters by two of the Broken Hill mining companies, increasing population and railway traffic throughout the region, so that the industrial and domestic water demands of the Upper North increased rapidly. By the 1890s Beetaloo had become inadequate for its purpose; at the beginning of the 1897 summer, it held only 25% of its capacity. A Royal Commission in 1897 recommended that a new dam be built to supply the Upper North.

The site chosen was immediately alongside John Bristow Hughes' old Bundaleer homestead and the long-closed Wheal Sarah, on a tributary of Bundaleer Creek, not far from its junction with the Broughton west of Spalding. The country here was much flatter than at Beetaloo, so the new water supply scheme was technically less demanding, but more complicated. A simple earth dam provided the catchment, but water was diverted to it from a system of weirs and aqueducts from Bundaleer Creek, Freshwater Creek and the Broughton River. Work commenced in 1898 and the scheme was completed in 1902. (Hartvigsen & Warneke 1981) Elsewhere in the region, dams were built at Nectar Brook in 1899 and Baroota in 1921. Port Pirie was supplied with water from a dam on Napperby Creek in the Flinders Ranges, and a large reservoir was built south of Yongala in 1880 to supply locomotives on the Petersburg line.

The Twentieth Century

The economic pattern of the Upper North was established by the 1890s, and the staple industries and population centres have not changed fundamentally since. Wheat is still the main farming crop throughout the region, supplemented by sheep grazing. Port Pirie's economy is still based around lead smelting, and the State forests and dams function as they did when they were established. Indeed the region's geography has remained remarkably stable: the area under agriculture is still much as it was in the late nineteenth century, and a list of towns in the region still reads much the same, with very few towns abandoned, and few new ones created. However, more has changed than is apparent on the surface.

There was a further episode of land resumption at the turn of the twentieth century, this time intended to resolve some of the anomalies left by the abrupt cessation of the Strangways surveys in 1880, which had left large areas of well-watered agricultural land still locked up on pastoral runs. The *Closer Settlement Act 1897* provided for the resumption and subdivision of such land, first on a perpetual lease basis, then after an amendment in 1902, by purchase over six years. The Closer Settlement farms can still be seen on the survey maps as blocks of small subdivisions, usually close to major creeks; not many of them are occupied today. Some of the old pastoral runs enjoyed a new era of prosperity brought about in part by good seasons and partly by the compensation paid for the Closer Settlement blocks. Bundaleer was split into two, and the most impressive homestead in the region was built on the new Bundaleer North property in 1909. At Munduney, the modest nineteenth century homestead was extended into a fine Federation-style mansion in 1913.

The two World Wars brought several impacts to the region. The First World War took away much of the farmers' labour, while paradoxically increasing demand for their wheat. The combined effects of this experience tended to hasten mechanisation, although its full impact was not felt until after the Second World War. Like all of Australia, the Upper North suffered the brutality of trench warfare on the other side of the world, as hundreds of volunteer soldiers from the region never returned home, and each town erected a solemn war memorial in their honour during the 1920s. In Adelaide, the Nomenclature Committee took its revenge on the Kaiser by grimly erasing from the map of South Australia all the placenames given by immigrants from the Kingdom of Prussia in the nineteenth century and used by their honest and loyal descendants for generations since; Petersburg in the Upper North was accordingly translated into English as Peterborough.

A new wave of farmers arrived in the 1920s, returned soldiers who had drawn lots for blocks under the *Discharged Soldiers Settlement Act 1917*, simply a variation on the Closer Settlement scheme of twenty years earlier. Their reward was usually marginal land, which had not been taken up by anyone else in the fifty years since the Strangways Act. The government set up a Training Farm at Mount Remarkable homestead near Melrose to train hundreds of soldier settlers in the arts of farming, but inexperience was not their only problem; they were about to face a decade of drought and falling wheat prices, on farms that were under-capitalised and mostly too small. (Love 1986)

The 1920s brought rural depression to much of Australia, as commodity prices fell while labour costs were rising. Some farmers responded by mechanising their operations, a process which usually began with the purchase of a tractor for ploughing and harvesting. A few small tractors had appeared in the Upper North from about 1910 onward. At first they were little more than a novelty, but by the 1920s, many farms were being ploughed by tractors, and horse teams were diminishing in numbers. This meant that farmers could cut costs by employing less labour, and at the same time they found they had the capacity to till even more land than before, and began looking for extra land to cultivate.

This was a crucial episode in shaping the rural economy of the Upper North, for it commenced the process of separating large farms from small. From about 1870 to 1920, there was little change in the agricultural pattern which the Strangways Act established in the region. Certainly fluctuations in the seasonal rainfall caused adjustments at the margins, but in the more viable farming areas throughout that period there were always roughly the same number of farms, and those farms remained about the same size, and employed about the same number of people. Now as the economic downturn increased the pressure on some farmers, there were others who were eager to expand their holdings. Farmers below a certain viability threshold were being forced to sell their land, just as those above that threshold were altering their farming methods to deal more efficiently with larger areas. The natural result was a transfer of land from less-successful farmers to those who wanted larger fields for their new tractors to plough. The first abandoned farmhouses set amid large wheatfields began to appear in the rural landscape.

The depression of the 1920s was worsened by drought late in the decade, and then by the general economic collapse of the 1930s. The *Drought Relief Act 1928* empowered the State Bank to keep farms going by making loans of seed wheat, sacks or fertiliser, which farmers were to repay in cash. But many of them saw no cash for years, so three years later the *Farmers Relief Act 1931* allowed the bank to secure the loans with a lien on the crop itself. In the 1930s many farmers were receiving their seed, superphosphate and even food for their families from the State Bank, to produce a crop which then became the bank's property. (Dyer 1976) This was the grimmest period yet in the history of the Upper North, and the region's population decline began to accelerate as farmers were forced off the land. In the wheat towns, businesses whose customers had no money also began to close their doors. Mechanisation at sea also changed the character of the wheat ports; steamships were taking over the international grain trade, and the last windjammer to load wheat from the Upper North was the Erikson line barque *Archibald Russel* which sailed from Port Germein in 1939. (Sundberg 1998, p. 25)

Between the wars, the way of life in rural Australia was also changed dramatically by the mechanisation of road transport. Rapid developments in the efficiency and load-carrying ability of motor trucks during the First World War, and the popularisation of private cars in the following decade, made all forms of road transport steadily cheaper and more accessible. The implications of this for the railways which had been the mainstay of the region's transport for fifty years were clear to everyone. But the ease which with road transport was to take over from the trains in later decades was facilitated by the Upper North's geographical imperatives which operated once again to shape the new roads; virtually all of the wider, straighter roads which were built in the twentieth century ran parallel to and immediately alongside a railway line. (Jennings 1973, p. 144)

During the Second World War, there was again an exodus of young people, balanced partly by an influx of internees who were formed into the Civil Alien Corps to provide labour to the State forests and other projects. (Malone 1971) In the Wirrabara Forest, charcoal burners among the Italian prisoners of war put their traditional skills to work providing fuel for South Australian motorists' gas producers. The railway towns experienced three busy years during the war in the Pacific, as troop trains and military supplies travelled across Australia. A journalist's scoop gave Terowie, of all places, a small part in wartime legend as the town where General Macarthur publicly promised the Philippines, 'I shall return.'

In 1942, faced with the possibility of enemy air attack or invasion, the Allied Works Council established a strategic network of aviation fuel depots dispersed along the main interstate railways. Three of these Inland Aircraft Fuel Depots were built in the Upper North region, at Port Pirie, Gladstone and Crystal Brook. By the time these were all functioning in 1943 the threat of attack had diminished. There was also an explosives depot established in the Beetaloo Valley. These wartime measures brought a flurry of construction activity in the years 1942 to 1945, but no large numbers of personnel were based at any of the military facilities in the region.

BHP commenced steelmaking and shipbuilding at Whyalla across the Gulf in 1941, and this brought a direct benefit to the Upper North when the Morgan to Whyalla pipeline was built through the region, opening in 1944 and allowing many of the residents in the region to have their water supply augmented. Smaller diameter pipelines snaked off from the main pipe to each of the major towns, and a region which had been dependent for a hundred years on an unreliable annual rainfall to fill its dams and rainwater tanks discovered the convenience and health benefits of reticulated chlorinated water. During the post-war decades this changed the appearance of the towns as lawns, street trees, public parks and domestic gardens all flourished for the first time.

Soldier settlement after the Second World War was more successful than after the first. The Commonwealth played a greater part in the process, and the Rural Reconstruction Commission closely coordinated the various state's efforts to settle soldiers on the land. The South Australian *War Service Land Settlement Agreement Act 1945* provided credit to returned soldiers to take up resumed land on similar terms to those of the 1920s, but the act was administered more cautiously, the number of new settlers was smaller, and the seasons and the economy were both kinder to them. (LeLacheur 1968)

During the post-war years there was an economic upturn across Australia. The price of some agricultural products increased by as much as ten to twenty times between 1939 and the early 1950s. Wool and wheat, boosted in part by military buying for the Korean War, rose to "freakishly high prices" (Blainey 1994, p. 203), giving rise to the greatest era of prosperity that farmers in the Upper North had seen for eighty years. The rural prosperity of the 1950s was expressed in new farmhouses, and new civic and commercial buildings in the towns. Many towns which still looked much the same in 1950 as they had in 1890 suddenly had a new supermarket, a couple of service stations, bank branch offices and a new district hall, usually built in cream brick in geometric modern styling. The most conspicuous developments were the tall concrete silos beside the railway stations. Drive-in theatres seemed to march across the rural landscape in step with the new silos. It was the last prosperous period the region was to experience.

The principal changes of the last fifty years have been all inter-related, all driven by economic and political forces outside the region, and all tending to be negative in their effects on the Upper North, in reducing its population, its industrial diversity and its social and economic health. They can be summed up as: (a) mechanisation of the wheat industry, (b) the general decline in the value of rural products, (c) the winding down of the Broken Hill mines, and (d) the closure of the railways.

The Silos

Surprisingly, in view of its early technological leadership, South Australia was one of the last major wheat-producing regions in the world to adopt bulk grain handling. The first Australian grain elevator constructed of reinforced concrete in a vertical cylindrical form was built at Mittagong in Victoria in 1905, and silos and water towers of similar design were becoming common throughout the country from 1910 onward. (Lewis 1988, p. 18) Bulk handling in South Australia was first recommended by a Royal Commission in 1908, and in 1914-15 the State government considered the Metcalf plan to build country elevators along Canadian lines, with shipping terminals at Port Lincoln, Port Pirie, Wallaroo and Port Adelaide, but nothing happened. It was not as though South Australians were unaware of the new technology; modern cylindrical concrete silos for bulk grain were built at the Mount Remarkable Training Farm in the Upper North in 1919, and at the Kent Town brewery in Adelaide by the South Australian Brewing Company in 1920. The Commonwealth offered special funding for the construction of bulk handling facilities in the 1920s; it was taken up eagerly by New South Wales, Western Australia and Victoria, but South Australia did not respond. Yet another enquiry in 1934 pondered the issue, but no South Australian grain was handled in bulk for nearly twenty years afterward. (Lamshed 1962, p. 6)

This strange reluctance to do away with bagged wheat may have been something to do with maintaining employment in country areas. Whatever the reason, it ended as a result of a series of events after the Second World War. In 1948 BHP applied for State approval to build a 3,000 feet long jetty at Ardrossan to load bulk dolomite from its new quarry, which was to be shipped as a flux to its steel furnaces. The Playford government approved the new jetty, but stipulated that its design must also be suitable to handle bulk grain. The Australian Wheat Board built a million bushel timber horizontal silo at Ardrossan in 1952, and bulk handling began on a trial basis in the northern Yorke Peninsula and part of the Upper North. (Lamshed 1962, p. 8)

The success of this experiment led to the *Bulk Handling of Grain Act 1955*, which provided for the establishment of South Australian Co-operative Bulk Handling Ltd to oversee the new technology. (Thomson 1969, p. 2; Lamshed 1962, p. 9) Country silos spread outwards along the railways from Ardrossan; the first local silo in the State was built at Paskeville and opened in January 1956. Bute followed a few months later. They took two forms: horizontal silos were built at Balaklava, Snowtown, Blyth, Hoyleton and Brinkworth, and vertical concrete elevators at Nantawarra, Redhill and Gulnare; the tall white cylinders were towering landmarks that could be seen from every farm in the Hundred and beyond. This first generation of silos all fed the Ardrossan terminal. With the construction of bulk handling terminals at Wallaroo in 1956 and Port Pirie in 1957, the way was open for silos throughout the region. By 1962 there were silos at Andrews, Gladstone, Laura, Hallett, Jamestown, Caltowie, Yongala, Booleroo, Melrose, Orroroo and Wilmington. (Lamshed 1962, p. 19) In most of these towns the silo was the largest structure that had ever been built in the district.

The Recent Past

Mechanisation of the wheat industry proved to be a double-edged sword. On one hand, bulk handling of grain reduced production costs, and allowed the farmers to remain competitive for much longer on a world market where customers were to become increasingly hard to find. But its effects would also drastically reduce the region's population and virtually eliminate economic diversity. After 1945, the last horse teams were retired, and all tillage was done by tractors. Farms grew in size as the old one square mile blocks were amalgamated into larger holdings more suitable for the ever more powerful generations of farm machinery.

Michael Williams has quantified these changes. In the Northern Areas between 1925 and 1970, the number of farms fell by 44% from 3,623 to 2,002. But the area farmed actually tended to increase slightly in the same period, as individual farms grew in size by an average of 37% from 690 acres to 946 acres in the coastal County of Victoria (centred on Gladstone) and by 138% from 1,118 acres to 2,670 acres in the drier County of Dalhousie (centred on Black Rock). Most tellingly, in that forty-five year period nearly two-thirds of the region's farm employees disappeared. The number of farm workers fell by 64% from 5,442 to 1,984. (Williams 1974b, pp. 4-8)

But the changes were not only happening on the farms. There was no longer any work for the seasonal labour force which had once lumped wheat bags; the railways and the wharves employed fewer people as a result of mechanisation, so that not as many people lived in the towns. As horses disappeared, stables, blacksmiths, farriers, harness makers and feed merchants went out of business. In the post-1945 era the roads became better, and served progressively bigger trucks, so that fewer businesses used the railways to haul freight. More and more people owned motor cars, so that they could drive long distances to shop, and the railways carried fewer passengers. South Australian Railways began to close down stations and workshops and refreshment rooms, and laid off porters, shunters and signalmen throughout the region. Local farmers no longer bought their supplies in Gulnare or Georgetown, because it was so easy to drive to Jamestown, or Port Pirie, or even to Adelaide.

The consequences of the new era for the Upper North region were that while the wheat farms were becoming even more productive, the towns were shrinking. Recently there has been a debate over the phenomenon called 'dying town syndrome' but its effects have been visible in the Upper North since the 1920s, and accelerating rapidly since the 1960s. A downward spiral set in as people moved away, businesses closed down, and as a result even more people moved away, most of them going south to larger towns. As populations dropped, hospitals closed, doctors and pharmacists left, bank branches closed their doors, and the Education Department closed the schools. These were all crucial thresholds for a few people in every community: elderly people wouldn't stay when the doctor had gone, businesses couldn't survive without a bank, families needed a school. Towns that had sprung into life as a result of the Strangways Act in the 1870s were dwindling away a hundred years later, although they were still surrounded by flourishing wheatfields.

Then the railways began to close. In 1975, by agreement between the State and Commonwealth governments, all non-metropolitan railway lines in South Australia were taken over by Australian National Railways. This brought a fundamentally different set of values to the management of the railway network. Whereas for a century the provision of rail transport had been seen as a government service essential to the economy, like roads or water supply, the new organisation's charter required it to make a profit. At first some rural services were identified as Community Service Obligations, and continued to be funded by the Commonwealth, but by the mid-1980s the policy was to operate only those lines which made a commercial profit. (Donovan & O'Neil 1992) Australian National began closing down unprofitable services, which meant nearly every railway in the State. (It seems appropriate that the word 'Railways' was dropped from the organisation's name at about the same time.)

The Riverton to Spalding line closed in 1984, then the Hallett to Peterborough and Gulnare to Gladstone lines in 1988. The inland north-south links into the region were being cut off one by one. The Wilmington to Gladstone, Balaklava to Gulnare and Burra to Hallett lines all closed in 1990. (Donovan 1992) Towns where the railway had been a major industry for over a century were devastated. The railway network of the Upper North was reduced to two lines, from Adelaide to Port Augusta, and from Port Pirie to Broken Hill, and these lines were upgraded, bypassing the intermediate towns wherever possible. All local passenger and general goods services closed by 1991, leaving only the wheat trains running. Long-distance freight trains and the Ghan and Indian Pacific still pass through the region, but the only station where they stop is Port Pirie. This is the only town in the region which derives any economic benefit from the railways today, but even there the future is uncertain. In 1988 BHAS merged with other Australian lead and zinc producers to form Pasminco Limited, which now operates the smelters. The Broken Hill mines have progressively shrunk over the last few decades, and only a limited operation by Pasminco is still in production. In February 1999 it was announced that even this would close in the year 2006, leaving the fate of Port Pirie and its smelters difficult to foresee.

The last forty years in the Upper North have seen a period characterised by orderly retreat and consolidation, as traditional industries have concentrated on efficiency and economy in order to survive new economic circumstances. The towns in particular have learned the meaning of 'down-sizing'. Of course, there had been too many towns too close together in Goyder's model from the outset, and inevitably they had to reduce in number. The agricultural skill and know-how which made the Northern Areas a success in the nineteenth century have moved on to transform the region's industry into lean, highly-mechanised forms. Technological innovation, once loudly cheered for bringing growth to the community, is now praised when it causes the population to shrink even further.

The effects are visible in the landscape, where unoccupied houses surrounded by wheatfields are a common sight. Michael Williams calculated that between the 1930s and the 1970s, an average of three houses were abandoned each month in the Northern Areas - another empty house every ten days. Twenty-five years ago he estimated that about half of the region's houses were unoccupied, and about one in six was in ruins: 'With about half the dwellings either abandoned or in ruins it is little wonder that one of the most abiding impressions of the North is of the decay of habitations, but most of it has occurred since 1920.' (Williams 1974b, p. 10)

If Henry Strangways and George Goyder were to visit the Upper North today, they would not be the least bit surprised by the luxuriant wheatlands their legislation and settlement policies created, because that was exactly what they intended, but they would be amazed to see what a small number of people there are living in the region. Economic change in the twentieth century has undone most of the nineteenth century reformers’ efforts to people the rural landscape.