

1988

Yilgarn: Good country for hardy people: The landscape and people of the Yilgarn Shire, Western Australia

Lyall Hunt (Ed.)

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Hunt, L. (ed). (1988). *Yilgarn : good country for hardy people : the landscape and people of the Yilgarn Shire, Western Australia*. Southern Cross, Australia: Yilgarn Shire in association with the Western Australian College of Advanced Education.

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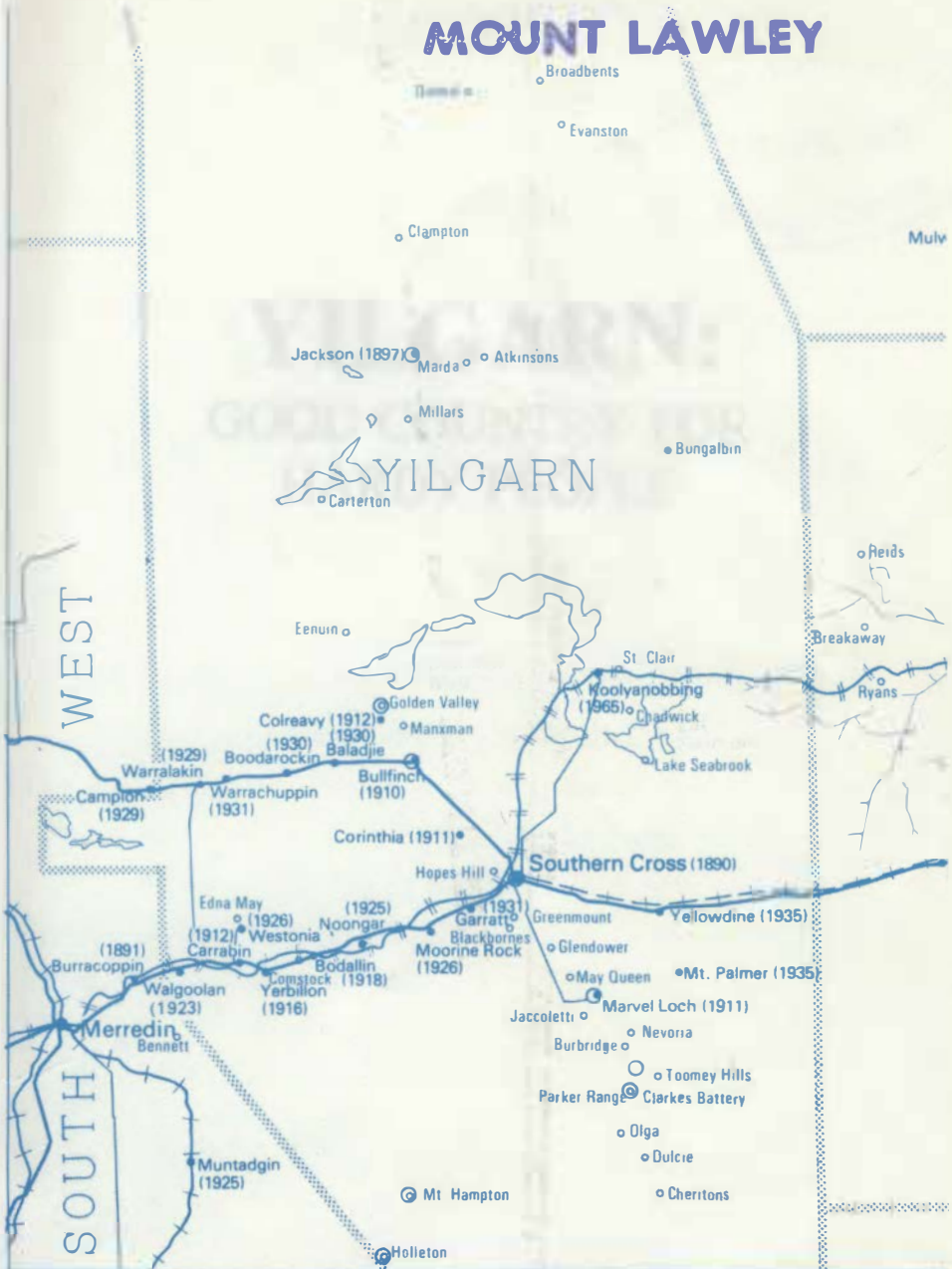
YILGARN: GOOD COUNTRY FOR HARDY PEOPLE



COVER ILLUSTRATIONS: Two murals painted by Vic Felstead, a long term Yilgarn resident, for the Eastern Districts group of agricultural societies Royal Show display. Now housed in the Southern Cross History Museum.



MOUNT LAWLEY



YILGARN GOLDFIELD - LEGEND

Significant Centre
Other Centre
Mining Centre (current)
Mining Centre (old)
Battery Site

● Southern Cross
• Koolyanobbing
• Corinthia
○ Glendower
○

Primary Road
Secondary Road
Other Road
Railway Standard Gauge
Railway Narrow Gauge
Disused Railway
Timber Railway
Goldfield Boundary



Note: In general the more significant old mining centres have been shown

YILGARN:
GOOD COUNTRY FOR
HARDY PEOPLE

MOUNT LAWLEY



YILGARN: GOOD COUNTRY FOR HARDY PEOPLE

**The Landscape and People of the Yilgarn Shire,
Western Australia**

**Lyall Hunt
Editor**

**Published by the Yilgarn Shire, Southern Cross, W.A.
in association with the
Western Australian College of Advanced Education**

To: Erna Lindsay Forrester, B.E.M.

First published in 1988 by the Shire of Yilgarn, Southern Cross, W.A., 6426.

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National Library of Australia card number and ISBN.
ISBN 0 9588657 5 2

Wholly set up and printed by South West Printing & Publishing Company Limited, Bunbury, Western Australia, 6230.

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FOREWORD

“Yilgarn: Good Country For Hardy People” was commissioned by the Shire Council on behalf of the people of the Yilgarn. The book celebrates the centenary of the discovery of gold in 1887 and honours the work of the pioneers of the district.

To write the book, the editor, Lyall Hunt, himself a product of the Yilgarn, drew together a team of scientists and historians. Through their dedication and enthusiasm they have created a detailed and lively account of the landscape and history of the shire. This is not an official history: Each chapter is the work of an individual author who is responsible for the particular content and interpretation. What is pleasing is that the chapters combine to form a comprehensive study of the Yilgarn, just as the people and industries of the district mesh to form the shire.

Writing is not easy. Painstaking research is needed to recreate events from sketchy detail. The authors have drawn not only on documentary records and field work but also on the reminiscences of the people of the Yilgarn both past and present. By so doing they have pieced together a graphic picture of the Yilgarn’s climate, flora, fauna and geology. More than that, they have highlighted the tenacity of the district’s pioneers, while recording the loneliness of the outback, especially for women, the despair of depression, drought and disaster, the jubilation of gold discoveries, the excitement of farming achievement and the exuberance of life itself in a pioneering community.

The Yilgarn today is rich in agriculture: prosperous and adventurous in its mining activities. The shire is unique in that it sparked the flame of the gold-rushes to the east, and also stands as the gateway to the rich agricultural region to the west. It will continue to play an important role in the development of Western Australia.

I thank the authors for their work and extend my appreciation to Dr Douglas Jecks of the Western Australian College of Advanced Education for his co-operation in the production of the book. I feel sure that it will challenge and enlighten readers and provide inspiration for the future.

ROMOLO PATRONI, J.P.
Yilgarn Shire President

Editor's Acknowledgements and Introduction

This study of the environment and people of the Yilgarn region of Western Australia grew from a decision of the Shire of Yilgarn to commemorate the centenary of the discovery of commercial deposits of gold in the district in 1887-1888. The idea stemmed from the vision of Mr Romolo Patroni who saw the need to record the experiences of Yilgarn pioneers. He convinced the shire council under Cr Kenneth Beaton, president, 1972-1982, to publish a history of the district. The plan was fostered by Cr John Panizza, who became shire president in 1982 and brought to fruition by Cr Patroni who took the presidency in 1987.

An approach by the shire to the Mount Lawley College of Advanced Education for advice on the project was opportune. As head of the college's Social Sciences Department, I had been looking for an opportunity to involve students in field studies at undergraduate level, particularly in history, geography and sociology. This method of involving students in research had been pioneered by Jim Faull of Hartley C.A.E. in South Australia who, with a group of students and colleagues had written *Melrose, Child of the Mountain*, which was published in 1979. Dr Neil Stewart, the director of Mount Lawley C.A.E., backed the proposal enthusiastically and as a consequence, an agreement was reached between the college and the shire to write a book on the Yilgarn district.

From the start it was intended that the study would be well illustrated and lively in tone and would avoid becoming too theoretical in its content. However, it was decided to avoid a purely popular approach by investigating the Yilgarn from a range of perspectives both scientific and behavioural in nature. The consequence is this book which includes three scientific studies by Graham Pike, Lindsay Hunter and Bill Foulds and seven chapters contributed by historians Neville Green and John McKenzie; sociologist, Lynne Hunt; economist, John Prestage and geographers, David Murray, Dennis Rumley and Alan May, in addition to my own historical chapter. I have very much appreciated the scholarship and co-operation of my colleagues in producing this work.

The advantage of building a book from the contributions of several authors is the broad scope of the study which is possible. Potential disadvantages include lack of continuity and duplication. I hope that in the present study the advantages outweigh the disadvantages and that the content is not repeated except as necessary to establish each writer's argument. As it is, each chapter stands alone and is the sole responsibility of the author. The result is that the chapters can be read individually, yet they combine to provide a picture of the Yilgarn landscape and of the experiences of its people.

Because of the way the book was written, some discrepancies in statistical data have

been allowed to stand, for example, differences in gold production between figures supplied by the Mines Department and by the Australian Bureau of Statistics. Their inclusion may alert readers to the difficulty of utilizing data drawn from different sources. The spelling of place name in the main accords with *Map and Gazetteer of Western Australia*, second edition, 1980, except where a registered name differs from the official spelling, for example Enuin Station, but the Eenuinn district, or where usage warrants an exception, for example Parker's Range locality but Parker Range topographical feature.

Research on the Yilgarn almost foundered in 1982 following the absorption of Mount Lawley College into the Western Australian College of Advanced Education. The project was saved by the support of College Director, Dr Douglas Jecks. He confirmed the role of the institution in the project and generously made available transport, typing facilities and graphic support.

The historical chapters in this book could not have been written without the work of Southern Cross identity, Erna Lindsay Forrester, B.E.M. Her contribution was four-fold: firstly, she helped preserve the Forrester farm records which are a valuable record of farming practice from 1903 to the present; secondly, over many years she collected information on the Yilgarn, including the reminiscences of old identities; thirdly, she worked through the Pioneers Women's Committee to collect stories of the lives of Yilgarn women; and finally, her work led to the establishment of the Yilgarn History Museum and the Southern Cross Historical Society which now houses a valuable documentary collection as well as artefacts from the pioneering years. Mrs Forrester generously made available her records. In addition, staff and students benefitted from her advice and hospitality. This book is dedicated to her in recognition of her selfless work.

Students who took part in this study are acknowledged in particular chapters. I thank them for their work, particularly: Robert Arnold, Joy Christmass, Helen Clarke, Rodney Clark, Selina Chrimes, David Espie, Peter Fairclough, Joyce Girdlestone, Jessie Hardy, Carol Hook, Michelle Kelly, Judy Miller, Gretta Sauta, Bronwyn Smith, Pauline Dossett, Shirley Leahy, Jan Matthews, Daphne McGinley, Kieran Motherway, Yvette Alger, Deborah Eldridge and Jeanette Rowley. In addition, I offer my thanks to a number of people who undertook special research for individual chapters. Some of them were former students of Mount Lawley College who grew with the project to make significant contributions which are indicative of the benefits which can accrue from involving students in research. Particular acknowledgement is made of the following:

Judy Cockram, Mount Lawley College: demography.

Wendy Braddow and Jessie Hardy, Mount Lawley College: oral history.

Christopher Berry, a post-graduate student and Anthony Hunt, University of Western Australia: documentary research on politics.

Mary McKenzie: gold-rush history.

Ian Lantzke, lecturer, Western Australian College of Advanced Education, Ken Newbey, consultant botanist and Peter McMillan, environmentalist: the environment and conservation.

Anne Tumac: photography and research on landscape.

Special thanks are extended to the following people who offered advice and provided information:

John Smith, Western Australian Agricultural Department.

Norm McKenzie, Department of Conservation and Land Management.

Barry Muir, Department of Conservation and Land Management.

Ned Mippy, Moora.

Cliff Humphries, Kellerberrin.

Greg Elliott, Solar Research Institute, Curtin University.

Ray Lisignoli, Acting Mining Registrar, Yilgarn Goldfield.

Douglas Clive Markey, historical geographer.

Patricia Lawton, Mount Lawley, who generously made available the unpublished memoirs and photographic collection of her late father, P. T. McMahan.

In the production of the book professional assistance was provided by the following persons whose contributions are gratefully acknowledged:

Diane Milton, Geography Department, University of Western Australia: cartography for David Murray and Dennis Rumley.

Bill Adams, Western Australian College, Churchlands: cartography and graphics for Neville Green, Graham Pike, Alan May and Lyall Hunt.

Mark Bannister and Cathie Allan, Western Australian College, Claremont: cartography and graphics for Bill Foulds.

Rodney Bruce, Western Australian College, Churchlands: graphics for Lindsay Hunter.

Geoff Lovell, photographer, Western Australian College.

Margaret Medcalf and the staff of the Batty Library, Perth.

The manuscript was typed by the following persons whom I thank for their careful attention to the task: Sandra Giangulio, Isobel McMath, Marjorie Williams, Sylvia Horner, Gayle Carlson, Irene Beattie, Jill McIntosh, Lyn Black, Christine Cameron, Lyn Flockton, Beverly Ross, Jo Hadley, Janie Parish, Beverly Blades, Anne Faulkner and Jill Barnes.

The title was suggested by a comment by south Yilgarn farmer Richard Steel, "This is good country for hard people. There is no room for softies". I thank him for the inspiration.

Finally, I should like to thank the people of the Yilgarn: the Shire Councillors and, particularly, Mr Romolo Patroni and Senator John Panizza, whose faith in the project never wavered; Mr Ray Mangini and the staff of the Yilgarn Shire; and those residents and former residents who gave oral evidence, provided documents and allowed photographs to be copied. Only one person declined to be interviewed because, as she put it, the memories of battling years in the Yilgarn were too painful. For the rest, their pride shone through in their work to tame a difficult environment. I hope they see this book as testament to their pioneering spirit.

Lyall Hunt,
Nedlands,
August 1987.

YILGARN IN THE SPRING

Red of the quondong beckons in the green,
green in the sandplain where the scrub is grey,
and though the hungry roots must stalk the winter,
and though the fickle harvest shuns the tree,
I still will search and find the wayward quondong,
the strong red kind that is a kiss for me.

Land with so little but so much to bring,
this is the Yilgarn, Yilgarn in the spring.

Bees that endured the winds and frosts of winter,
bushes that fought the gravel and the rain,
explode together in a storm of flowers,
dance with the yellow sun across the plain.
And now the breath of earth is steeped in honey,
gold from a million flowers is hived again.

Land with so little but so much to bring,
flows in the Yilgarn, Yilgarn in the spring.

Here where the morrels saunter up the ridges,
where the small specks have nestled at the roots,
I loamed the gullies and the slopes before me,
followed them up and up to where they came,
hiding in grass and prisoned in the stone,
gold in the black dish leaping like a flame.

Land with so little but so much to bring,
gift of the Yilgarn, Yilgarn in the spring.

Red soil by rounded granites shield the orchids,
and bronze-wings water at the gnamma holes.
They cut a morrel where my camp is set,
and its five fingers sift the mid-day sun.
And when I sleep the full moon watches me;
here I belong and I am young again.

Land with so little but so much to bring,
my home the Yilgarn, Yilgarn in the spring.

Vic Williams. Feb. 8.

Chapter 1

The Yilgarn: An Overview

The Land and Its Potential

The term “Yilgarn”, an Aboriginal word for quartz, is widely used in the southern part of Western Australia. For geologists the “Yilgarn Block” designates the dominant geological feature, the massive Precambrian slab of granites, gneisses and mineral rich greenstones that forms the base of the southern half of the state. “Yilgarnia” is used at times to refer to this part of the Australian continental structure. The Yilgarn Goldfield — the title probably derives from the Yilgarn Hills — is smaller than the Yilgarn Block. It comprises the Yilgarn and Westonia shires together with parts of Menzies and other adjacent districts. Other bodies, for example the Electoral Commission and Education Department, apply the word Yilgarn to their administrative units. However, the most important use is to designate the Yilgarn shire, which was proclaimed a local government road board in 1891.

The boundaries of the shire have varied over the years. Originally the district coincided more or less with the southern part of the Yilgarn Goldfield. There were exceptions: Hatter’s Hill, for example, was within the road board district but outside the Yilgarn Goldfield. More significantly, between 1892 and 1918, Southern Cross was administered as a separate municipality — the smallest in the State — before being absorbed into the road board. There were small transfers of land to the Yilgarn from the Merredin road board in 1913 and from Kulin in 1923. Over the years, however, the dominant trend was for the district to shed land to its neighbours: to Kulin (1923), Merredin (1931), Westonia (1932), Phillips River (1933), Naremben (1948) and Kondinin (1962).

Today, the Yilgarn shire occupies an area of 30,556 square kilometres on the Great Western Plateau. Its principal centre, Southern Cross, lies at an altitude of 356 metres some 300 kilometres distant from the Indian and Southern Oceans. The country is gently undulating but with several residual ranges and monadnocks of low elevation that reflect the north-south orientation of the geology.

These hills are too low to affect the climate which results from two factors — the region’s latitudinal relationship to the world’s climatic zones and wind patterns, and its continentality: Extremes of temperature ranging from frosts in winter to summer heatwaves above 40°C are normal in the Yilgarn. Moreover, because of the distance from the sea, rainfall is scanty, coming mainly in winter but with erratic late summer falls under the influence of tropical cyclones. Southern Cross averages 281mm per year. Precipitation

decreases gradually towards the north-east where reliability, particularly during the growing season, also decreases and sets the economic limit to arable land.

Despite the small variation in rainfall across the district there are marked variations in flora and, hence, in fauna. These are due mainly to the soils all of which are phosphate deficient. They vary from high level sandplain carrying low scrub to heavier soils and well timbered country in the broad valleys which attracted the first wheat farmers in the 1920s.

Botanically, the Yilgarn occupies an intermediate zone between the moist South-West and the more obviously desert lands to the east. The region supports a wide variety of plant species, many of which feature great displays of flowers. Many plants, and animals species too, survive here under stress as they are at their extreme limits of distribution. By world standards this is semi-desert — the margin of the good earth. However, several extensive nature reserves have helped preserve native flora and fauna.

The Yilgarn's agricultural zone constitutes the outer edge of the central Western Australian wheatbelt. Wheat cultivation is the principal land use in the south-west of the shire. Only in Libya is wheat grown under drier conditions and there costs are heavily subsidized. To the east the district is unoccupied. The northern section supports sheep, but pastoralism is inhibited by the complete absence of permanent, natural fresh water in the shire. Animals can be grazed only where catchments have been constructed on farms and at granite outcrops, or where distributaries extend from the goldfields pipeline.

The theoretical potential of productivity in any region depends upon the physical limitations of climate, soils, vegetation, ground water and mineral deposits. The actual output depends as much on human endeavour as on the environment. Despite its limited natural resources the Yilgarn has often been bountiful, both to the Aborigines before white occupation and to farmers and miners in the last 100 years. However, the results were obtained only after very great effort under trying conditions. Because of this it has been called "good country for hard people". Even so, the district's economic output has been variable — a reflection of its marginality.

The Yilgarn was opened up by gold mining, but its long term future is likely to be in agriculture. Mining experienced four booms: the great Gold-Rush of 1888-1920, which peaked during the Great War; the Revival of 1933-41; the Great Western Saga of the 1950s; and, the New Boom of the 1980s. Yet mineral deposits are finite. Inevitably they will be exhausted and mining will cease to be important. The renewable and sustainable resources of soil and water offer the best prospect for long term human habitation. However, the exact forms of sustainable farming and grazing best suited to the Yilgarn may not yet have been determined. As it is, the changes in farming in the 65 or so years of large scale agriculture have been dramatic. The emphasis changed from wheat in the 1920s, to sheep from the mid 30s to the 1950s and back to wheat in the 1960s. The managerial and technical skills required to utilize the western Yilgarn for large scale wheat cultivation in association with sheep already exist in its 161 farmers. The gross value of agricultural production in 1985-86 — \$31,377,000, was testament to that. The doubts arise from the unknown factors: world market forces in an unplanned, unregulated economy which will set economic limits to wheat cultivation; and the medium term climatic consequences of the greenhouse effect and other environmental trends that may compound the region's climatic marginality.

The History

The Moving Frontier

Stand at the western entry to the Yilgarn at Boodalin Soak or at Yerbillion siding and watch the procession of human inhabitants — the Aborigines, the sandalwood cutters, the pastoralists, the prospectors and miners, the farmers. As an outer edge of settlement in Western Australia, the Yilgarn attracted waves of people. The United States historian, Frederick Jackson Turner, noted a similar pattern of expansion to the American west. He called this phenomenon the “moving frontier” in which fur trappers/traders, cattlemen and miners in turn moved westwards displacing the American Indians. Each region experienced a succession of occupants until farmers predominated. They were followed by manufacturers.

Because of similarities between American and Australian land settlement, Turner’s frontier thesis may be useful in interpreting the recent history of the Yilgarn. Certainly the sequence of occupation was remarkably similar: An aboriginal population was displaced, initially by those who simply collected saleable items (sandalwood) and then by pastoralists, miners and farmers. However, Turner’s broad analysis cannot explain the detail of history as affected by a particular environment, group values and individual initiative. Moreover, it fails to account for the rise of social classes. Nevertheless it provides a model for the analysis of the Yilgarn experience.

Turner not only described the form of the frontier, he also analysed the characteristics of frontier society. He noted that these regions tended to attract the young and adventurous, the discontented and economically depressed. Migrant groups were often present, attracted by the free land. Over time the different ethnic groups fused and produced new values which affected the whole society. The values of the frontier became the values of the nation. He called this process “Americanization”. It produced both a national outlook and sectional views etched by economic and geographical influences.

According to Turner the frontier was characterized by intellectual and religious vigour. Above all, it promoted self-reliance, liberty and democracy. He seemed to define these in terms of rugged, unbridled individualism and antipathy to control rather than as economic and political egalitarianism. However, he did see that in arid and isolated frontiers individuals could not supply all of the services necessary to development. Co-operative activity, for example through government initiative, would be needed to ensure water supplies, transport and capital beyond the reach of the small farmer. In short, “the physiographic province itself decreed that the destiny of the new frontier should be social rather than individual”.

Another American historian, Walter Webb, broadened the concept of frontier to include all of the new lands opened up by European overseas settlement, noting the movement of migrants attracted by resources and cheap land, and the flow of wealth back to Europe. His theory placed Western Australia in a broad framework of European expansion.

In this context the Yilgarn is seen as a small part of the Western Australian wheatbelt the whole of which could be said to have been a frontier in the first half of the twentieth century. While it is a microcosm of the wheatbelt frontier, the Yilgarn has unique

characteristics, particularly the co-existence of the gold mining and wheat industries. Moreover, the marginal nature of the region's resources could support only a small and unevenly distributed population — approximately 6000 people at its maximum in the late 1930s and only 2039 in 1986 at a density of 0.06 per square kilometre. These special characteristics affected the particular way in which Yilgarn society evolved; and the small population precluded the rise of manufacturing.

Turner's thesis is a tool for analysing the spread of capitalism in new lands in which the original inhabitants are pushed aside. It shows how frontier resources are exploited by a succession of economies. However, it offers little to the understanding of the history of a traditional Aboriginal society which changed very slowly and did not seek to produce a marketable surplus from its use of resources.

To the Aborigines the Yilgarn was marginal, transitional country reflecting the climate. They used it for perhaps 30,000 or 40,000 years. Yet, except in periods of major climatic change it is unlikely that there was ever enough water to sustain continuous occupation. Rather, they advanced and retreated on a seasonal basis, using locations for ceremonial purposes. They left little evidence of their occupation and after initially guiding the white explorers were to be dispossessed by what Turner called "the disintegrating forces of civilization".

After the British settlement of Western Australia in 1829 the Yilgarn quickly assumed the character of a frontier. It lay well to the east of early farms in the Avon Valley but soon attracted the attention of pastoralists and sandalwood cutters. Gregory, Dempster, Clarkson, Lefroy and Hunt all crossed the district seeking pastures but found little to keep them in the Yilgarn. Hunt's track running from gnamma hole to soak across the district was the great legacy of exploration. It became the conduit for those who followed.

Sandalwood cutters were the first Europeans to utilize the Yilgarn's resources. They blazed trails into the district to collect the aromatic wood for export to China. The trade was lucrative but little is known of the cutters' experiences as they left few records.

Pastoralists later settled in the Yilgarn, but grazing was not to become a major industry due principally to the lack of water. Numerous attempts were made to establish sheep stations, notably by the Clarkson brothers, but the climatic conditions and poor wool prices limited the number of people involved. The industry persisted but did not significantly influence the character of the Yilgarn.

The Mining Frontier

Richard Greaves discovered payable gold in the Yilgarn in 1887. A rush resulted attracting many thousands of diggers. Most were unemployed men escaping the depressed eastern Australian colonies. Some found gold. Many more became wage labourers for mining companies as a direct consequence of being unable to survive as diggers due to the lack of alluvial ground and the difficulty of hard rock mining for men without capital. More still used the Yilgarn as the jumping off point for the rushes to Coolgardie and Kalgoorlie.

The Yilgarn mining frontier was part of the great wave of Australian gold-rushes described by Geoffrey Blainey as "The Rush that Never Ended". This frontier did not advance uniformly but leapt forward creating isolated settlements. In the Yilgarn the first

rush quickly waned but was reinvigorated by the Bullfinch rush of 1910 and by the mining revival of the 1930s when the Yilgarn attracted unemployed people from the farms and towns of Western Australia.

Throughout this period, Southern Cross remained pre-eminently the chief administrative and supply centre of the district. It jealously guarded its status and, until 1918, its separate municipality. Internally, however, it was divided between the business interests at the southern end of town near Fraser's mine, and Railway Town adjacent to the station to the north. There was considerable speculation in shares and profiteering from town land sales. Living conditions were harsh but were eased by the construction of the government railway from Perth in 1894 and the water pipeline from Mundaring in 1902. Men were in a significant majority, as would be expected in a mining region, but many women were pioneers and took primary responsibility for home making and child rearing under difficult conditions.

The broader frontier of the Eastern Goldfields, of which the Yilgarn was part, exhibited considerable political and economic vigour. Particularly during the federal campaign of the 90s, the goldfielders adopted a national stance and virtually forced Western Australia into the Australian federation in 1901. The behaviour was analogous to the nationalism noted by Turner in the American west. The conscription campaigns of the Great War also produced vigorous debate but divided the community on a class and ethnic basis.

Political debate was fuelled by "Bull-ant" McIntyre and to a lesser extent "Sticky" Courtayne, successive editors of *The Southern Cross Times*. They exemplified a vigorous and often irreverent local press, bent on campaigning both on national issues and to secure improved services in the district which felt isolated and disadvantaged precisely because of its frontier position.

There was a coarse vitality about life in the mining frontier of the Gold-Rush and the Revival. Sport was popular. Excessive beer drinking, illegal gambling and prostitution all flourished and were tolerated by the police. Ethnic tension boiled periodically. Fisticuffs settled many a dispute, and were sometimes favoured by the police themselves. Gold stealing was rife, probably reaching a peak at Mt Palmer in 1935-40. Direct action by citizens was seen as the solution to problems — witness the boycott of hotels during the Revival to force down beer prices.

Yet there was also cultural and idealistic facets to the mining frontier. The same newspapers that vilified politicians regularly published the works of local poets. The Christian denominations were all active, but without the fundamentalist enclaves characteristic of the United States. These did arise in the W. A. wheatbelt in modern times. Theatre flourished, particularly while Southern Cross was a stopover for companies visiting Kalgoorlie. Above all there was a strong belief in human equality and the dignity of working people.

The mining industry was dominated by outside economic influences. Mining collapsed in the 1920s as the gold price declined relative to costs. It revived in the 1930s when the price rose, only to collapse again as labour was drawn off during the World War. The later revivals of mining, due to the injection of capital and new technology from outside the district in the 1950s and 1960s, and during the gold boom of the 1980s, were to be very different in character.

The Farming Frontier

By the eve of the Great War the farming frontier of the wheatbelt, expanding eastwards, had reached the borders of the Yilgarn. It pushed across the district in the 1920s as men clamoured for cheap land. They included war veterans, British migrants and a large number of ex-miners left unemployed by the mining recession. After about 1927 governments refused, on economic grounds, to release more land east of Ghooli and East Bullfinch. The western Yilgarn was to be the last frontier in the central wheatbelt.

Development of marginal farming lands was beyond the scope of individual initiative. Here, as in other parts of Australia, the government was to play a key role. Its aim was to put men without capital on the land. To this end Crown land was released and railways were built; technical advice was provided and, most importantly, loans were advanced through the Agricultural Bank.

The vitality and optimism of the farming frontier in the 1920s were reminiscent of the gold-rush. Men and women with high hopes worked long hours. Sport was popular and facilitated interaction with the mining community, but social life tended to be more family oriented and conservative than in mining towns. There was considerable interest in literature. Cyril Goode published both short stories and poetry with Yilgarn settings and several other farmers described their experiences in verse.

The generous loans available to farmers in the 1920s were meant to see the settlers through to economic independence. Instead, they proved to be millstones. When wheat prices collapsed in the Depression, the debts became impossible burdens. Farmers saw little possibility of paying their interest and no chance of owning their own farms. Many walked off, abandoning up to ten years of development of their blocks. Some families hung on in grinding poverty. A small minority survived, particularly on the better lands of the western Yilgarn, by switching to sheep and taking advantage of improved wool prices.

Families did not succumb easily to the Depression. Their first reaction when wheat prices collapsed in 1930 was to increase plantings to maintain gross income. Simultaneously, men worked collectively through the Wheat Growers' Union to pressure governments to guarantee wheat prices. Their efforts culminated in the wheat strike of 1932, when farmers boycotted the delivery of grain to sidings. They achieved nothing. In desperation, the men then began selling their own wheat privately when the Agricultural Bank held a lien over it. Most were to be convicted of wheat stealing. Only then did they begin to drift from the land. In many areas, particularly on the eastern fringe of settlement, every settler walked off.

Abandoned land was taken up by newcomers. Most were Italian migrants who were prepared to exist virtually as subsistence farmers in order to satisfy their desire for land. Many of the men worked in the mining industry after 1933 to supplement their incomes leaving their wives to run their farms under considerable privation. Few farms would have survived the Depression without the labour of women.

So it was that the interwar period was dominated by the rise of agriculture in the Yilgarn and by the revival of mining in the 1930s. For a time the two frontiers existed simultaneously and interacted. One of the most significant features was the movement of men from mining into farming and then back to mining. It was an era of economic equality in the district and of vigorous political activity. The equality arose because most

miners and farmers were usually “broke”. Even Aborigines and non-English speaking migrants were, comparatively, not that much worse off than the average inhabitant. This common status and the shared experiences of the people produced a sense of common purpose, particularly at the level of social interaction. However, there was competition for scarce resources in the provision of local services such as roads and electricity. This led to serious political conflict between town, mining and farming interests.

Modern History

Dramatic changes in the lifestyle of Yilgarn people commenced in the 1950s. Unemployment virtually disappeared. Farm income leapt. Improvements were manifested in rising living standards in the following decades: greatly improved housing with access to water, electricity, septic sewerage, refrigeration, telephones, radio, television, heating and cooling; improved nutrition and health; and a more mobile society with virtually every family owning a car. Distance remained a great influence affecting both the cost of living and the cost of primary production but family isolation became a thing of the past, helped by the work of groups like the Country Women’s Association.

Changes in the living standards of the rural population followed the wool boom associated with the Korean War. High wool prices benefitted farmers who had survived the Depression by diversifying into sheep. Debts were soon paid off and capital was invested in farm machinery and land clearing.

Farm consolidation which had commenced in the late 1930s grew apace but the number of farms actually increased as vacant land was taken up. Governments were pressured — usually unsuccessfully, to release more land. Farmers now had the capital to develop larger areas and to reap the benefits of economies of scale. The rewards came in the 1960s with greatly increased wheat production and higher profits. The trend towards larger farms and extensive methods was the opposite of that noted by Turner in the American mid-west in the nineteenth century when labour intensive farming developed. The difference lay in the marginal nature of the Yilgarn climate and technological change.

The good years drew to a close in the 1970s under the impact of poorer seasons and significantly increased farming costs stemming from rising fuel prices. The cry arose to “get big or get out” that is, to cut marginal costs by cropping even larger areas. Many farmers who heeded the advice did well. However, those who had to borrow in order to pay for expensive land and machinery soon suffered the consequences. Interest rates rose dramatically in the 1980s while wheat prices fell. Farmers were caught in a cost-price squeeze. In the mid 80s some of them were forced to take jobs in the mining industry as their fathers had done in the 1930s. They were fortunate to be able to take advantage of the close association between mining and agriculture which was a feature of the Yilgarn economy.

Changes in mining were equally dramatic in the post-war era. Wage labour had always been a feature of gold mining in the Yilgarn although in the Gold-Rush and the Revival there were many prospectors in the bush. In the 1950s the prospectors began to disappear as inflation eroded the real price of gold. A few innovative individuals still did well but overwhelmingly it became the era of capital intensive mining using large equipment and a small labour force.

There were three separate booms in post-war mining: Great Western Consolidated, owned by Western Mining Corporation, set the modern pattern when it opened the largest gold mine in the history of the Yilgarn at Bullfinch in 1952; Dampier Mining, a subsidiary of B.H.P., developed a large scale iron ore mine at Koolyanobbing in 1967; and, finally, when the gold price rose in the 1980s, three large mines were opened in the south Yilgarn by Kia Ora at Marvel Loch, Great Victoria at Burbidge and Southern Goldfields at Nevoria. These became the most profitable mining companies in the history of the district. Production outstripped output in the earlier booms and was boosted when Broken Hill Metals opened its Corinthia-Hopes Hill mine in 1988.

To attract labour in periods of full employment these companies not only had to offer high wages but also good amenities. Both Great Western and Dampier Mining built company towns with subsidized housing and messes and a wide range of amenities. It was a far cry from the old rushes when families had to provide for their own needs.

The modern Yilgarn economy has intensified class differences, although these were always latent. It may be that class lines were not fixed while people without capital could obtain cheap land or find payable gold. These opportunities have largely disappeared. The result has been the polarization of economic society: unionized mining labourers have interests very different from capital intensive farmers — even if farm debts are large. This is not to say that the groups cannot mix socially.

Class structures with consequential differences in political attitudes do not form part of the frontier thesis. Nor does it take cognizance of feminist perspectives. These are significant deficiencies. Turner envisaged only the emergence of sectional economic interests. While these may partly account for the political activity of wheat growers and the rise of the Country (National) Party, they fall short of explaining political differences in the Yilgarn where mining and town workers traditionally vote Labor while farmers support conservative parties.

The debt and marketing problems of farmers in the 1980s emphasized their ambivalent attitude to individuality and liberty — Turner's "democracy". Australian agriculture has always been protected and assisted through agrarian socialism. Yilgarn farmers have been as quick as any to seek government help in adversity. At the same time they are critical of government controls and tariffs, noting with irony that highly profitable mining companies are tax free whereas battling farmers compete with subsidized European and U.S. grain, while facing high taxes, interest rates and fuel charges.

Overall, farmers remain committed to rugged individualism and freedom from restraints, but the extent to which they can be unfettered is restricted by the marginal climate and the state of the market. The long term trend is likely to be towards further farm consolidation and the emergence of fewer and more capital intensive farmers. Sheep may increase in importance if wool prices remain high.

While the Yilgarn's population has decreased slowly in recent times there has been an improvement in ethnic relations. At least until after the World War, relations between ethnic groups, particularly between Australians and Italian migrants, were often strained. These tensions later eased considerably. People inter-married and the cultures merged. In the broader Australian context these changes were akin to the emergence of new American values from the melting pot of ethnic groups on the American frontiers.



Turner's frontier thesis offers useful insights into the history of the Yilgarn, explaining the sequence of occupation and much of the character of the district until after the World War. The mining and farming frontiers attracted vigorous, self-reliant, innovative, politically active people including many migrants. Egalitarian values at first prevailed. Idealism and nationalism were important influences, but sectional economic interests and social classes emerged to dominate politics.

However, the frontier thesis falls short of explaining the particular way in which the Yilgarn developed. The marginal nature of the shire's climate and resources affected directly the way in which the economy grew. It led relatively quickly to the rise of capital intensive mining and farming and, inevitably, to the emergence of a class based, post-frontier society.

The co-existence of mining and farming has also been a special feature of Yilgarn history and gives it a unique character. The booms and busts of these industries point to the dominant influence of world economic forces in a region dependent on primary industry.

Finally, there has been some fusing of cultures in the Yilgarn, and modifications of political institutions in the wheatbelt. The extent to which these affected Australian society, along the lines predicted by Turner, lie outside the scope of this study. However, in the broad context of world history, the great frontier of European settlement of the Americas, southern Africa and Australasia wrought profound economic change and caused millions of people to migrate to new lands. In this sense the history of Australia is a history of the frontier. The Yilgarn is a small part of that story.

Lyall Hunt

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THE MINED MIND

On the genesis of things . . .
to recall the scrubsprinkled country towns
the fencepost diggers
the hotel verandah postsupporters
rusty black faded satinbacked waistcoats
uncollared flannel shirts
and cracked elasticside boots . . .
is to see my numbedskull
opened up like a gravelpit for the gouging

and the ruststreaked shapes
of discard things . . .
the whitening bones the squint
of bottle ends and bursted boxes
and the swollen shoes . . .
these litter the memory
sharp as reminiscences

on the cutfeed of recall
I limp back
into that world once known
how lost?

Glen Phillips

Chapter 2

Climate and Landscape

This chapter on the climate and landscape of the Yilgarn is divided into four sections. The first deals with the importance of location and how it relates to climate, a major factor that influences the landscape and pattern of human responses. The next three sections: Ranges and Hills, Rolling Countryside and System of Salt Lakes, involve a systematic treatment of the major landscape assemblages and some of the human responses to these environments. Figure 8 indicates the location of these broad divisions and because the Rolling Countryside accounts for approximately 80% of the shire, its two main components, the high level sandplains and the broad valleys, are also shown on that diagram.

The availability of fresh water is of critical importance to this district and it forms the recurring theme in this chapter. This particularly applies to the way in which the people have responded to the landscape and highlights the significance of granite outcrops as important sources of fresh water in this difficult environment.

Location and Climate

The shire of Yilgarn is situated on the semi-arid, eastern margin of the Western Australian agricultural zone. The district has a long narrow shape, extending some 290 kilometres from the extreme northern corner to the southern boundary which it shares with the shire of Kondinin. From west to east, the main body of the district varies from 100 to 145 kilometres in width.

The largest town and administrative centre, Southern Cross (Latitude 31 degrees 13 minutes South, Longitude 119 degrees 19 minutes East), is located close to the middle of the district on the Great Eastern Highway and the main east-west railway. From this point, roads radiate out to the surrounding farming and mining settlements.

In 1986, it was estimated that 2100 people lived in the 3,055,597 hectares (30,555.97 square kilometres) of the shire giving an overall density of one person per 1455 hectares. However, in reality, most of the population is concentrated in the few towns and the agricultural south-western portion of the district.

An overall impression of the Yilgarn's climatic pattern can be gained through an examination of Figure 1. This shows the average data for Southern Cross in terms of: temperature, rainfall, evaporation, humidity, rainy days and frost. Specific details relating to these phenomena can be found in Tables 1, 2, 3, 4 and 5. From this information it can be seen that the people of the Yilgarn have to contend with a climate that is characterised by extremes of temperature, high potential evaporation and low erratic rainfall.

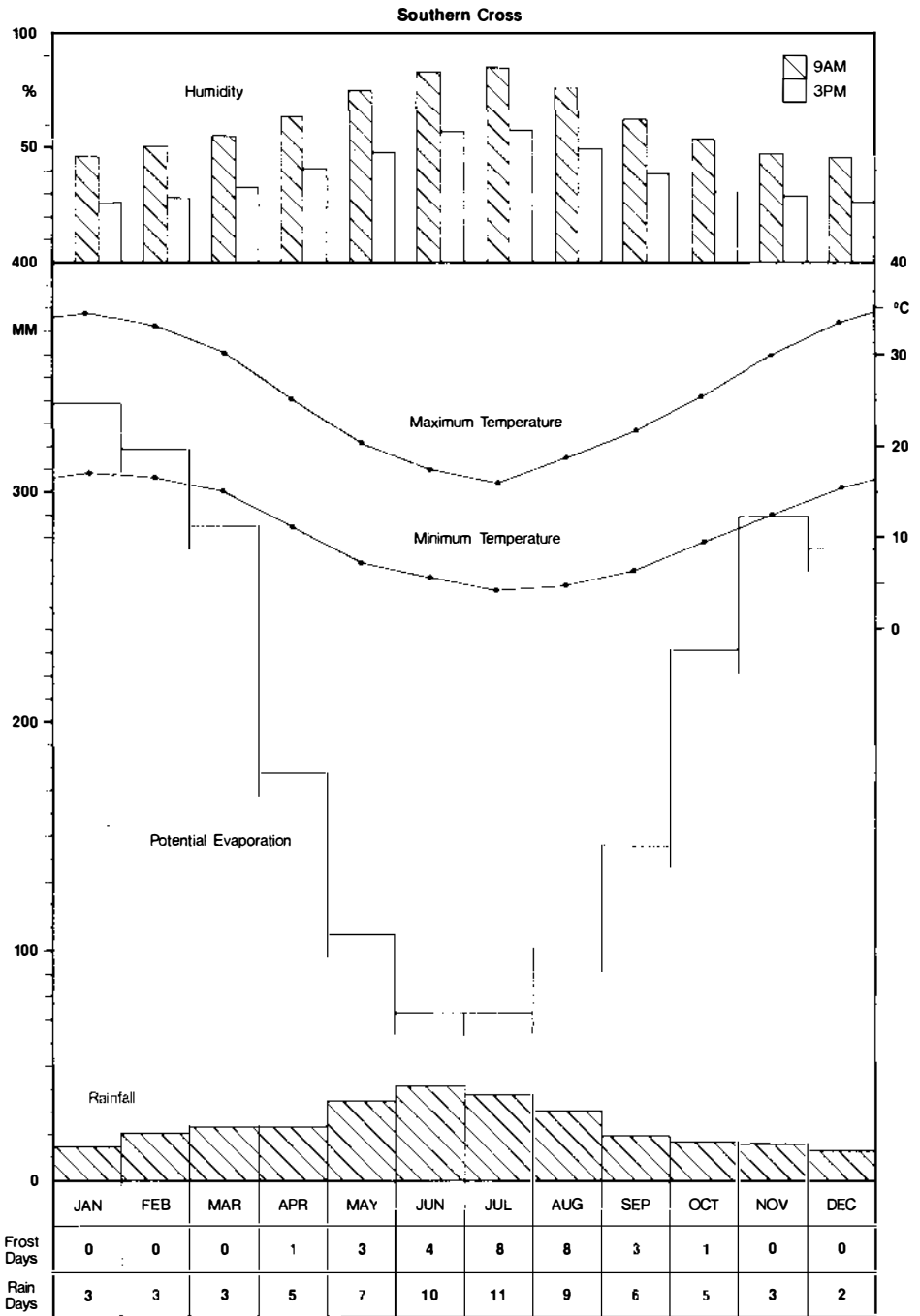


Fig. 1: Southern Cross: Average Climatic Data.

While the climate of any place is largely a product of its location, there are two particular aspects of the Yilgarn's situation that are significant in understanding its weather patterns. These are latitude and distance from the sea. A discussion of these two factors forms the basis of this section, and a foundation for the remaining parts of the chapter.

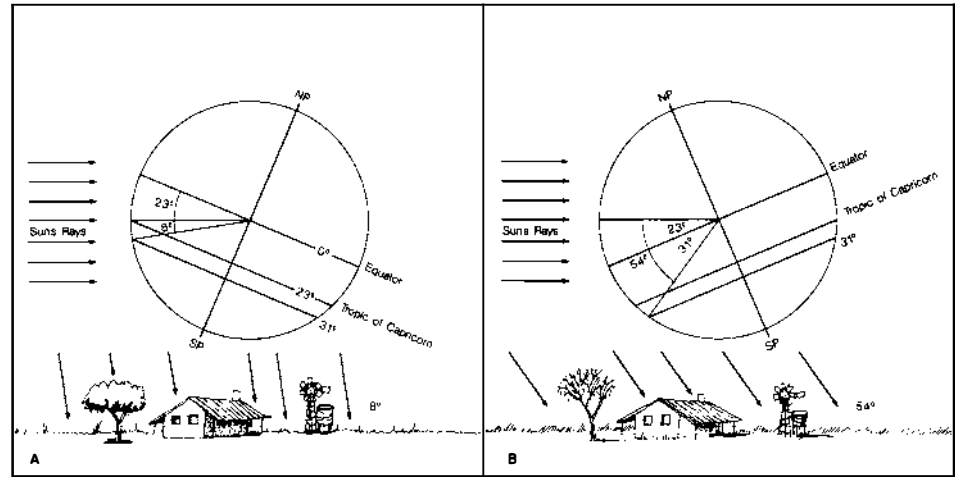


Fig. 2: Angle of the Sun's Rays at A: Noon, 21st December, and B: Noon, 22nd June.

The significance of latitude is that it determines the angle at which the sun's rays strike the surface of the earth. As the shire of Yilgarn straddles 31 degrees south latitude, the angle of the sun varies from approximately 8 degrees from the vertical in mid-summer (noon on or about the 22 December each year), to approximately 54° from the vertical in mid-winter (noon on or about the 21 June each year). Figure 2 demonstrates this relationship and, because the heating effect of the sun on the earth's surface increases with its angle above the horizon, it follows that solar radiation levels received in the shire range from extremely high in summer to quite moderate in winter. The potential solar radiation levels received on flat surfaces under cloudless conditions for different latitudes have been calculated by Wolfgang and the data for 30 degrees south latitude has been incorporated into Table 6. This demonstrates that a relationship exists between the length of day, the angle of the sun in the sky at noon and the resultant potential solar radiation levels for flat surfaces. As a direct extension of this, it can be seen that during the summer months there is a potentiality for very high evaporation rates from open bodies of water such as dams and salt lakes, and enormous moisture loss from plants and animals. This data also reveals the importance of wide verandahs that surround many traditional farm houses. Besides keeping the rain off mud brick walls, and providing pleasant places to sit, they are also important for the temperature moderation of homes. This particularly applies to the north and west faces of buildings where, if the overhangs are well designed, they not only protect walls and windows from summer heat, but also allow winter warmth and sunlight to enter rooms.

A significant factor influencing the effectiveness of solar radiation levels is the

direction and slope of the land surface. While much of the Yilgarn shire has a gently undulating topography, the north facing slopes of prominent hills and valleys receive more direct radiation than south facing slopes. This factor of aspect, that is, the slope of the surface relative to the angle of the sun, can significantly affect surface temperatures, soil moisture levels and vegetation patterns. While there is no readily available data for Southern Cross, Table 7 indicates the radiation levels received on various sloped surfaces at Perth. This information shows that in high summer, when the sun is almost directly overhead, near flat surfaces receive the highest levels of radiation. However, during the winter months, when the sun is low in the sky, north facing slopes of between 55° and 65° from the horizontal are much more efficient absorbers of energy. Given that high winter absorption rates are critical for solar hot water systems, it is important that these units be mounted more steeply than the pitch of most roofs. This ensures maximum winter efficiency and minimizes the danger of overheating during summer. As Perth has a latitude similar to Southern Cross, the available data gives some indication of the district's solar radiation potential. However, conditions in the Yilgarn are exaggerated by hot dry easterly winds, high ground temperatures and low moisture levels. All of these conditions are directly related to the factor - distance from the sea.

On both a daily and an annual basis the temperature range of the sea is usually quite moderate. For example, the temperature of the ocean at Fremantle varies from 23°C in summer to 17°C in winter, with a daily range in the vicinity of 1°C . In contrast to this, the land surface heats up and cools down more quickly, and as Figure 3 indicates, the air above experiences a greater range of temperatures. It follows therefore that the closer a place is to the sea, the greater will be the modifying effect of the constant temperature of the ocean on the extremes of land temperatures - the maritime effect. Conversely, the further a place is from the sea, the less will be the modifying influence of the ocean - the

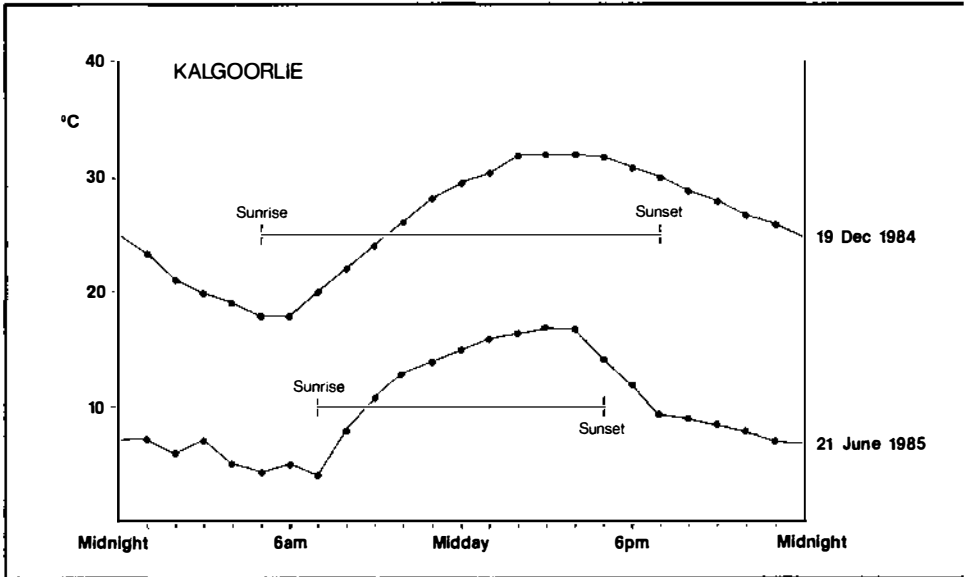


Fig. 3: Twenty four hour temperature and sunlight periods, June and December.

continental effect. Southern Cross, lying 350 kilometres from the Indian Ocean and 310 kilometres from the Southern Ocean is largely insulated from these modifying influences. However, particularly in the southern portion of the shire, summer evening temperatures are sometimes lowered by a breeze from the south. This is similar to the Esperance Doctor that is experienced on the Eastern Goldfields.

The range of summer and winter temperature patterns that are typical of a place that experiences a continental climate are shown in Figure 3. Unfortunately, continuous temperature readings for Southern Cross are not readily available, so data for Kalgoorlie, the closest appropriate station with that facility, have been used to illustrate the point. Figure 3 demonstrates that, not only is there a considerable difference between the summer and winter patterns, but also between the daily extremes. It is also interesting to note the lag times for both maximum and minimum temperatures, that is, the delays behind midday and midnight for the maximum and minimum temperatures to be reached. This particularly applies in winter when it takes all day for the temperature to reach its maximum and all night for it to reach its minimum.

The impact of increased distance from the sea is illustrated in Figure 4 which shows a climographic transect across the southern part of Western Australia from Rottnest to Kalgoorlie approximating 31° south latitude. Details of the data used to construct this diagram can be found in Table 8. The range between the maximum and minimum temperature lines on this figure demonstrates that the maritime effect diminishes rapidly between Kalamunda and York. Further east of the Avon Valley the temperature range opens out into a pattern that is typical of continental climates.

Beyond the average temperature conditions depicted in Figures 1, 3 and 4 there have been some extraordinary maximums and minimums recorded at Southern Cross. Table 1 shows details of the average monthly maximums and minimums for 1895-1984 and the individual highest and lowest temperatures in the period 1957-1984. It can be seen from this information that the average monthly maximums and minimums vary considerably and that individual temperatures have ranged from 45.6°C on 5 February, 1962 to -3.8°C on 1 June, 1964.

While distance from the sea influences the range of temperatures in the district, it also has a significant impact on the rainfall patterns. For places located at 30° south latitude, the overall weather pattern is dominated by the system of low pressure cells and associated cold fronts that move from west to east around the earth. This belt responds directly to the changing angle of the sun in the sky. In winter, the whole system migrates northwards to the region of 30° S latitude and, in summer, it migrates southwards to approximately 40° S latitude. This is demonstrated by Figures 5 and 6 which show the consequences of this seasonal movement on the Australian weather pattern in general and the Yilgarn in particular. Figure 5, based on the weather map for 3.00 pm on the 29 June, 1980, shows an intense low pressure system at approximately 35° south latitude sweeping cool air up from the Southern Ocean to meet warm air from over the Australian continent. In this case, the warm air contained a high moisture level, (see Table 4 for the June humidity levels) and the resultant well-developed cold front was associated with good falls of rain over most of the south-west of the State. Unfortunately, many cold fronts are weaker than the one depicted in Figure 5 and are not strong enough to penetrate the 300 kilometres to the Yilgarn. Added to this problem of distance from the sea, Figure 4 shows

that there is no substantial increase in plateau elevation east of the Darling Scarp. Consequently there is little or no orographic effect, that is, rainfall that results from the cooling of moisture laden air as it rises over mountain barriers. In contrast to Figure 5, Figure 6 shows the weather chart from 3.00 pm on the 4 December, 1980. This typical summer weather pattern indicates that the band of high pressure cells has migrated southwards to the level of the Great Australian Bight and the low pressure cells have moved further to the south, in the region of 40°S latitude. Under these conditions, hot dry easterly air is swept unimpeded from the centre of the continent towards the west coast bringing high temperatures and dry conditions to the Yilgarn.

The rapid fall off in annual precipitation that occurs with increased distance from the west coast is illustrated in Figure 4. This diagram also shows the average pattern of

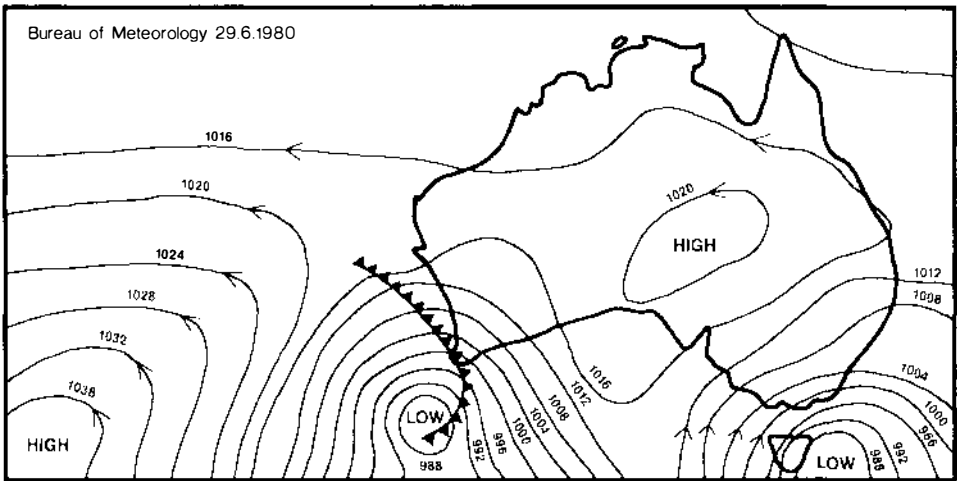


Fig. 5: Typical Winter Pattern of Weather, based on 29th June 1980.

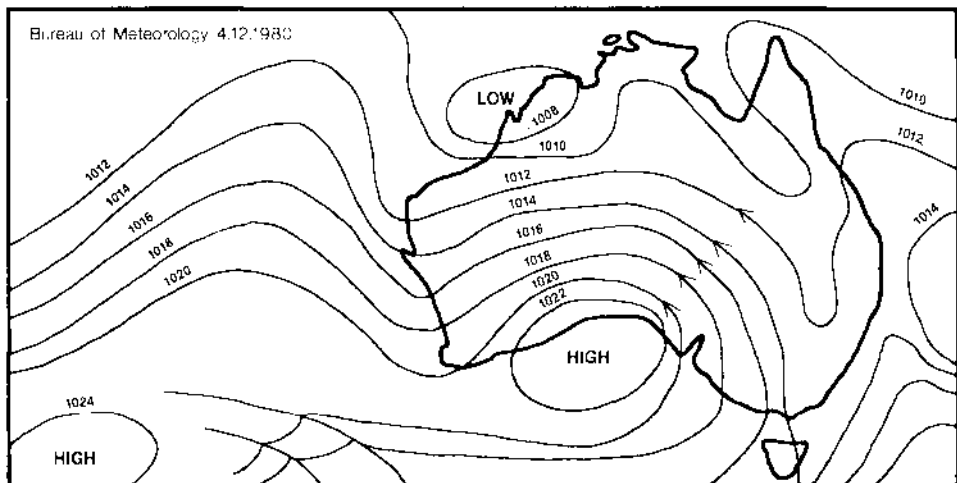


Fig. 6: Typical Summer Pattern of Weather, based on 4th December 1980.

rainfall for the months of January and July. The data for these months have been drawn up with exaggeration factors built into them so they can be more easily read and interpreted. In the case of July the exaggeration factor is five, while for January the factor is fifty. From this diagram it can be seen that the profile for July closely follows the average annual pattern. This demonstrates the importance of the winter westerly fronts in the overall rainfall component of the Yilgarn's climate. On the other hand, the January pattern is interesting because, although the quantity of rain is quite small (see Table 8), it has a pattern that is the reverse of the annual profile: that is, a high summer rainfall in the east

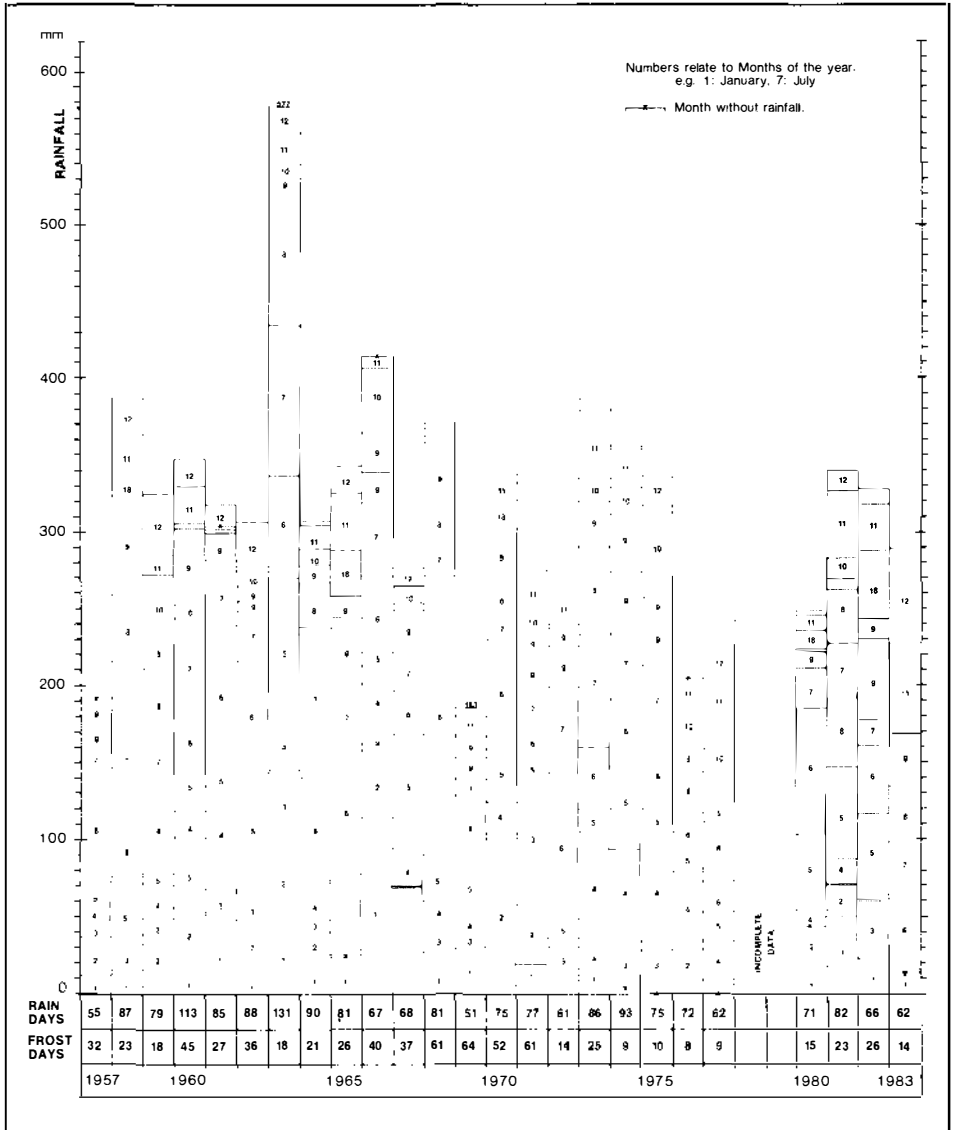


Fig. 7: Southern Cross: Total Rainfall — Years and Months.

which diminishes towards the west. This pattern results from summer cyclonic rain-bearing depressions which sweep down from the north west at irregular intervals bringing short periods of heavy rain. This summer rain can be of vital importance for the replenishment of water supplies based on surface catchment and for the pastoral industry. However, it is of little direct benefit to the farmers, except that some late summer rain may be retained in the soil to assist early germination. Unfortunately, as the size of the parts of the bars numbered 1, 2 and 12 (January, February and December respectively) in Figure 7 indicate, and the variations for the same months in Table 2 demonstrate, this rainfall is very unreliable.

The wettest days experienced at Southern Cross in the years 1957 to 1983 are shown in Table 9. This demonstrates that for the twenty-four years that data is readily available, twelve of the wettest days occurred during the winter months and twelve in summer. However, it is interesting to note that the wettest twenty-four hour period occurred in a summer month (17 February, 1970), with a massive 77 millimetres. In fact, six of the ten wettest days occurred in either January or February, with rainfall in excess of 32 millimetres. Consequently, as the rainfall component of the climograph, Figure 1, and the data in Table 2 indicate, Southern Cross has two precipitation peaks, a major in June and a minor in February, reflecting the two systems of rainfall that affect the district.

The long term average rainfall for Southern Cross has been calculated at 283mm. However the *Southern Cross Times*, 10 February, 1939, published a rainfall profile for the years 1891 to 1938 with an average of 10.51 inches or 267mm. Not only is there a considerable variation in the annual quantity of rainfall received (Table 2), and when it occurs (Figure 7), but also in its distribution throughout the shire. While the isohyets indicate that annual average rainfall decreases from south-west to north-east across the district, the year to year pattern can vary enormously.

The low average rainfall is in itself not a serious problem for the agricultural community. In fact, quite reasonable crops can be grown provided the rain comes at the right time. However, in the Yilgarn the disadvantage of a small average precipitation is compounded by three factors. Firstly, as Figure 7 indicates, there is a very low level of reliability in both the summer and winter rainfall systems. Consequently, the break of season, the length of season and the amount of rainfall that can be expected are all quite unpredictable. Secondly, the area does not have the advantage of any natural large-scale, reliable, supplementary source of fresh water. In other parts of the world, more fortunate low rainfall areas can draw on either constant snow-fed rivers or reliable underground water supplies. Thirdly, the region has an extremely high evaporation rate. Unfortunately, there is no readily available evaporation information for Southern Cross and estimates have had to be made from data derived from Merredin and Kalgoorlie. Table 3 indicates the pan evaporation figures for these two stations, the difference between the two and the calculated potential evaporation rates for Southern Cross. This has been compared with the rainfall information and the degree to which potential evaporation exceeds precipitation. This data has been incorporated into Figure 1, and demonstrates all too clearly the frightening imbalance - an average annual potential evaporation in excess of 2500mm which contrasts with an average annual rainfall below 300mm. From this information there can be little wonder that the area is classified as semi-arid; that the huge salt lakes have large concentrates of soluble salts; that freshwater catchments need to be covered or

at least dug deep so to reduce the relative surface area; and that the flora and fauna of the region have to be able to adapt to these conditions in order to survive. Fortunately, most of the soils of the shire, particularly those found in the broad valleys, have a substantial fine fraction which helps retard the evaporation of precious soil moisture.

In the hundred years since initial European settlement, the people of the Yilgarn have battled with these difficult climatic conditions. Even before the settlement of the area, the explorer C. C. Hunt made some astute observations about the climate. His journeys were made mainly during the winter months in an attempt to ensure adequate supplies of feed and water for his horses, however he quickly discovered that the winter rains were very patchy and unreliable. He also found that the winter nights were exceptionally cold and described white frosts on several occasions.

The newspapers of the district have recorded some of the climatic extremes that have occurred. Summer storms have been reported quite frequently. These are usually associated with strong winds, thick clouds of dust, thunder and lightning. They frequently bring falls of hail and drenching rain. The *Southern Cross Times*, 5 January, 1915, reported just such a storm with 65 points (16mm) of rain in 15 minutes and some 232 points (58mm) throughout the day. Heavy hail damage often occurs and the *Southern Cross Times*, 28 February, 1925, referred to hail stones as big as eggs. Cloud bursts sometimes cause short periods of flooding. For instance, the *Southern Cross Times*, 21 January, 1938, referred to a short storm, during which the water ran two metres deep in the lower part of town. The strong winds associated with these storms have caused damage to many of the main buildings in Southern Cross. Several have been de-roofed at one time or another; the Southern Cross school was damaged in January 1945, the Club Hotel lost its balcony in January 1915 and the Railway Hotel its balcony in February 1925.

Summer heat waves have also been recorded. An extreme case was reported in the *Yilgarn-Merredin Times* during February 1921. On that occasion, the Southern Cross post office recorded the following run of maximum temperatures:

Saturday 19,	102°F	(38.3°C)
Sunday 20,	105°F	(40.5°C)
Monday 21,	109°F	(42.7°C)
Tuesday 22,	100°F	(37.7°C)
Wednesday 23,	97°F	(36.1°C)
Thursday 24,	102°F	(38.8°C)
Friday 25,	87°F	(30.5°C)

(Note: C° equals 5/9 (°F-32))

In the face of all these climatic hardships, the men and women of this district have persevered. Despite the fact that some of the seasons have been horrifyingly bad, when they have been good, they have been exceedingly bountiful. There is little doubt that it is the continued faith in the occurrence of these good years that has sustained the farmers and graziers of this difficult environment.

Ranges and Hills

Most of the Yilgarn is characterised by broad valleys and divides interspersed with a few significant ranges. The height above sea level of these ranges is not particularly notable and most are really rows of low hills. However, in contrast to the surrounding rolling plain, they offer distinct landscape comparisons and some excellent vantage points. The significant aspect of these ranges and hills is that they are the erosional remnants of the minerally important greenstone series.

The physiography of this region has been described by Gee (1982) and Chin and Smith (1983) as being entirely underlain by an ancient Archaean granitoid and greenstone block. Over countless millions of years this block has been eroded to form a great plain which is an eastern extension of the Darling Plateau. The greenstone series of this plateau are of particular significance to the Eastern Goldfields of Western Australia and have been the subject of continual geological research. This series takes the form of broad belts that have an overall north by north-westerly lineation and consists of a sequence of sedimentary and igneous materials that have been variously metamorphosed and eroded. Chin and Smith have noted that of all the materials that are involved in this sequence, it is the banded iron formations that stand out as prominent ridges outlining the major structures of the layered greenstone sequence. They have also pointed out that these banded iron formations vary considerably in form, mineral composition and scale. Consequently, in the far north of the shire, where the formations are quite massive, the associated ranges stand out clearly from the extensively eroded surrounding plain. Where less resistant rock types predominate, the greenstones have been extensively eroded along with the rest of the plateau. Between these two extremes, lines of subdued hills, often associated with minor banded iron formations, protrude above the general level of the rolling plain.

During the Tertiary geological period, most of the Western Australian Plateau, including this area, was covered by a blanket of duricrust. It is generally agreed that this layer formed as a result of deep weathering of the plateau surface under climatic conditions that were considerably wetter than those experienced today. Chin and Smith suggest that several ranges comprising banded iron formations have relief greater than the duricrust surface and cite Bungalbin Hill (681m) in the Helena and Aurora Ranges as an example. An implication that can be drawn from this is that the duricrust formed on the moderately sloped plateau and subdued hills, but not on the steeper upper bluffs of the massive banded iron ranges. Further to this proposition, it is interesting to note that at Mount Holland (477m), a well developed banded iron outcrop near the southern boundary of the shire, small remnant pockets of duricrust can be found on the upper slopes of the hill.

Since the Tertiary period, the duricrust blanket has been extensively eroded to form the broad valleys and sandy uplands which are the subject matter of the next section of this chapter. This part deals with eight readily identifiable ranges and rows of hills that are associated with the greenstones series. These include: Mount Jackson Range, Yokradine and Die Hardy Ranges, Helena and Aurora Ranges, Hunt Range, Yendelberin Hills, Koolyanobbing Range, Highclere Hills and Parker Range. The broad outline of the greenstone belts in which these ranges occur is shown in Figure 8, with the location of the

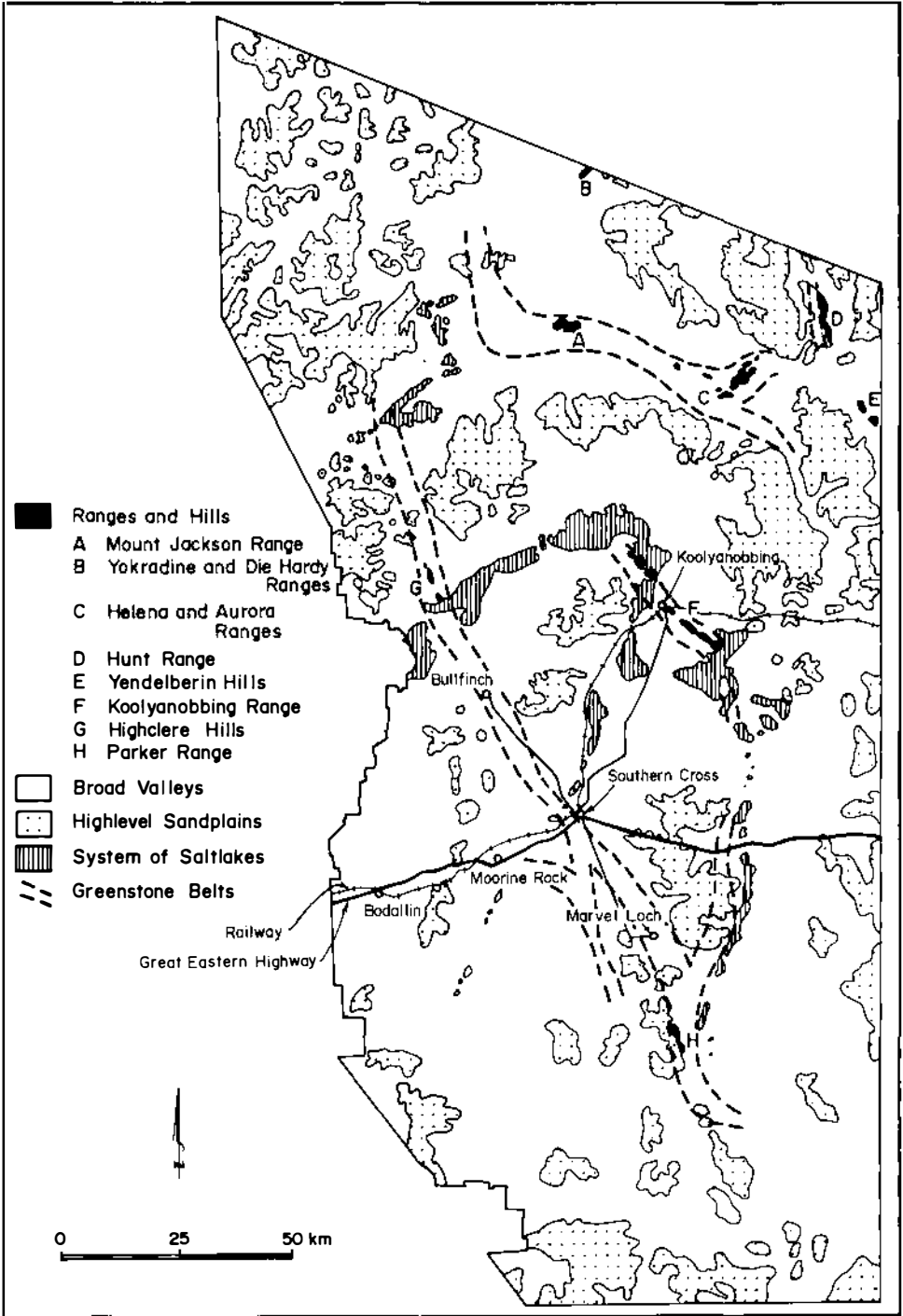


Fig. 8: Yilgarn: Landform Divisions.

eight ranges. Figure 9 shows the cross sections of six of the ranges discussed in this section. Because the overall profile of most of these ranges is very low, an exaggeration factor of five has been used in the drawings to contrast the changes in elevation.

The Mount Jackson Range was named by the explorer A. C. Gregory in 1846.

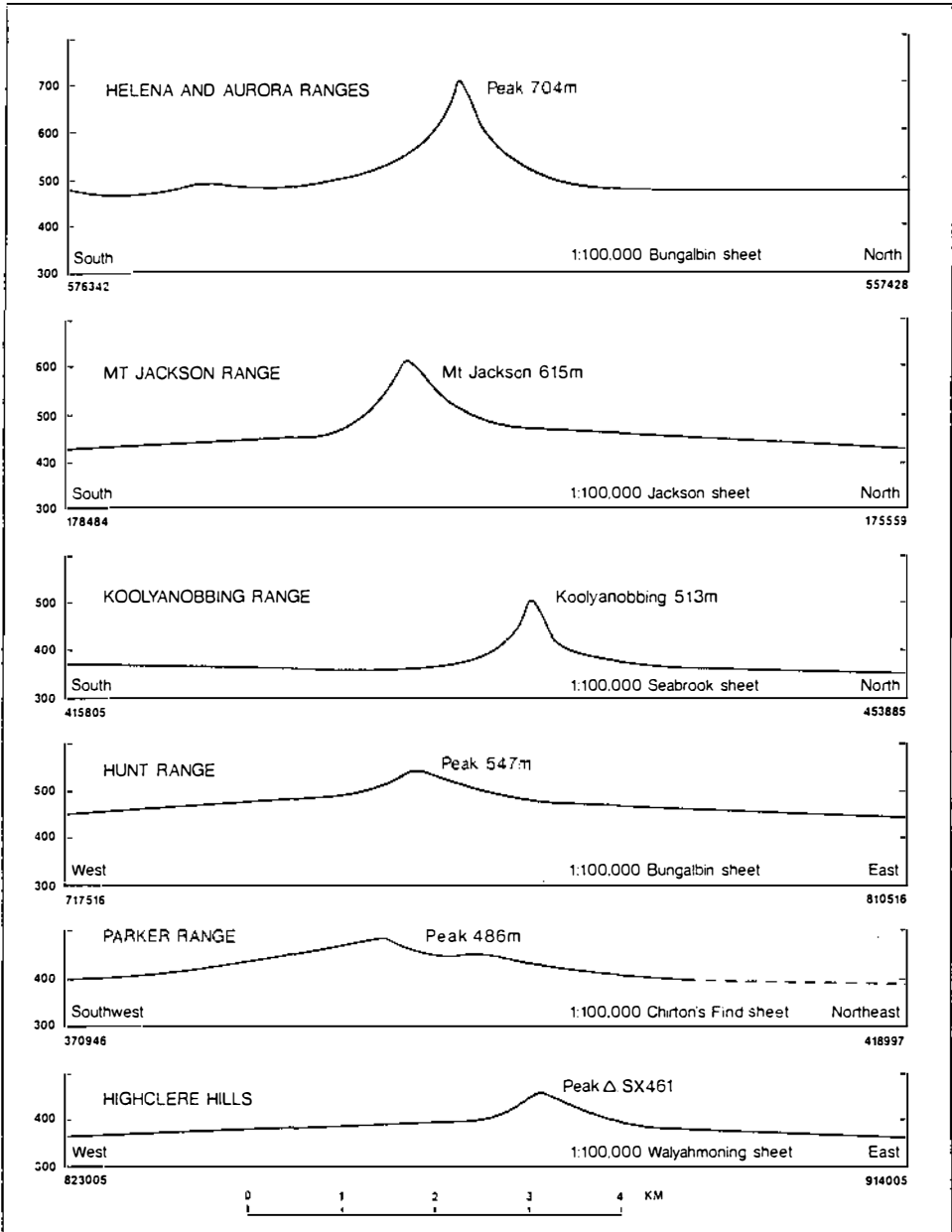


Fig. 9: Profiles of Selected Yilgarn Ranges.

Located in the far north of the shire, it is based on well-developed banded iron formations that have an east-west lineation. As the profile in Figure 9 indicates, the peaks stand out some 150 metres above the 420 metres of the surrounding plateau. Significant peaks include Mt Jackson (617m), Muddarning Hill (588m), Yenyanning Hill (558m), Yeeding Hill (556m) Curagibbin Hill (550m) and Boondine Hill (550m). From the ridge of this range and the associated isolated peaks, there is a well developed radial pattern of gullies. Due to the low rainfall in this area, the streams are normally ephemeral. That is, they act as gutters and flow only after it has rained. Most of these gullies quickly disperse into the apron of colluvial and gravelly soils at the base of the range and it is mainly in this material, five to eight kilometres north of Mt Jackson, that the early gold diggings were located. The only major exception to this pattern is a mine close to the peak of Boondine Hill. Some of the more significant workings in the history of this area include: Atkinson's Find (Butcher Bird), Allen's Find, Marda, Great Unknown (Riedel's Find), Boondine and Burgoose. Most of these are located in proximity to Marda Tank. Mining in this locality commenced in the 1890s and attracted many people to the area. However, today, very little remains of the original mining camps.

Twenty-five kilometres north of Mt Jackson a row of low unnamed hills can be found close to the northern boundary of the shire. These have spot heights of 523m and 564m and stand out from the 400m elevation of the surrounding plain. It is highly probable that local Aborigines, prospectors and pastoralists gave names to these peaks but they have not been designated on the current topographic map series. With Windarling Peak (509m), seven kilometres to the south, and Muddahdah Hill (480m), eight kilometres to the west, these hills form a southern extension of the Yokradine Hills and Die Hardy Range in which Mt King and Mt Geraldine are prominent peaks. The remains of a few isolated diggings occur in this area, mainly round Olby and Mt King.

The Helena and Aurora Ranges are located 35 kilometres to the east of Mt Jackson and have the highest elevations in the shire. Bungalbin Hill (684m) on the southern extremity of the range is the most prominent peak but the topographic map of the district indicates that it is surpassed by a spot height of 704m in the middle of the range and by another of 700m at the eastern end. In addition to these, there are three lesser peaks, all of which are in excess of 600m above sea level. As the associated map (Figure 10) and section (Figure 9) indicate, this range stands out in bold contrast to the 450 metre elevation of the surrounding plain. The chain is associated with a well developed banded iron formation, but the topographic map of the area indicates that there are only two major sets of diggings, one slightly north of Bungalbin Hill and the other at the extreme eastern end. Both of these sites are well up in the ranges, which contrast with the diggings in the Mt Jackson area which are at a lower level. The map of the area, Figure 10, also indicates that this range has an extremely contorted shape. Chin and Smith suggest that this reflects the intense structural deformation that occurred in this area during the formation of the greenstone series. The map also shows the indeterminate pattern of drainage in the area which typifies this thirsty landscape of low rainfall and high evaporation.

The Hunt Range is located north-east of the Helena and Aurora Ranges but unlike the ranges previously discussed, the axis of this formation lies north-south and is based on less well-developed banded iron formations. Consequently, as Figure 9 indicates, this row of hills is not very pronounced and has been heavily eroded, particularly on the eastern

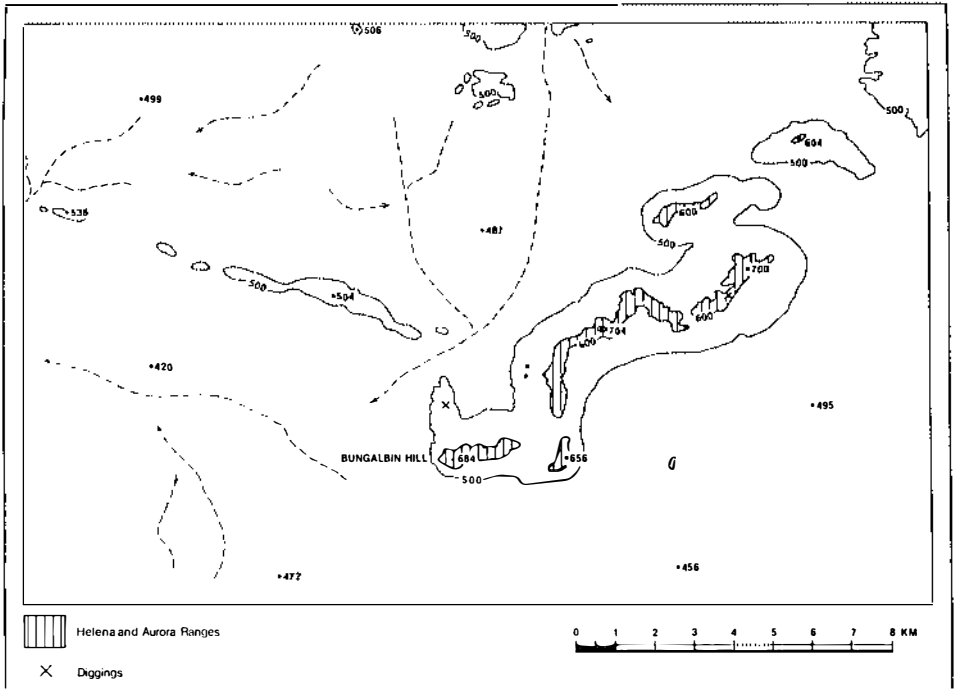


Fig. 10: Helena and Aurora Ranges.

slopes. With peaks of 547m, 540m, 538m and 530m, the formation presents only a mild contrast to the 460m elevation of the surrounding plain. This range was named after, but not by, the explorer C. C. Hunt who penetrated the area in the 1860s. While neither the topographic nor the geological maps indicate any evidence of diggings in the area, there are two rock holes in this otherwise waterless landscape. One is located on the west side, the other, Kurrajong, on the east side, both on the Ullaring track. No doubt that these were of considerable importance to the early explorers of this isolated part of the district.

The Yendilberin Hills, with Mt Dimer (545m), are a southern extension of the formation that includes the Hunt Range. In this area the banded iron formations are poorly developed and most of the area is blanketed by laterite. These subdued hills have a peak of 554m at the western end and a Trig station (NM/F/398) of 516m in the centre. The 1:100,000 topographic sheet, Bungalbin, indicates one isolated set of diggings on the eastern slope at the northern end of these hills.

The Koolyanobbing Range is based on well developed banded iron formations and, as Figure 11 indicates, has an overall north-west lineation. The main section of the range extends from Lake Seabrook to Lake Deborah East and includes peaks of 473m, 511m and the Koolyanobbing trig point which has an elevation of 513m. The north-western extension of this range, in the hook of Lake Deborah East, contains peaks of 492m, 474m and 472m. Dowd Hill, in the centre of the whole formation, originally 436m in elevation, was the location of the Broken Hill Propriety (BHP) iron ore mining operations in the

area. As Figure 9 indicates, this range provides a commanding vantage point over the surrounding plains and Lake Deborah East which is approximately 340m above sea level.

The discovery of iron in this range is thought to have been made in 1887 by the gold prospector Henry Dowd. However, the transcript of C. C. Hunt's 1864 journal contains an interesting observation:

During the day we have procured some very fine specimens of ironstone but too bulky to carry and impossible to break — doubtless these hills from the appearance on the surface contain millions of tons — it seems the heaviest I have ever seen. This is found at the western side of the Koolyanobbing Range (C. C. Hunt 1864, Battye Library transcript: 16).

Evidently the range had been named by a previous expedition and this observation by Hunt could well be taken as a reference to what is now known as Dowd Hill, where iron ore was mined intensively by BHP in 1967 — 1983. Plate 2 shows the iron loading facilities, the red soils of the countryside and the rest of the range in the distance.

While large scale open-cut iron ore mining has been the major land use in this range, there was also some gold mining activity in the surrounding colluvial deposits. These include diggings at St Clair, three kilometres east of the Koolyanobbing townsite, and at Chadwick seven kilometres to the south-east.

The Highclere Hills are located in the north-western sector of the shire on the northern shore of Lake Deborah West. The track connecting Mt Jackson station with Bullfinch skirts the western side of this formation. These hills represent a significant section of a long greenstone belt that extends from north of the Hamersley Lakes at

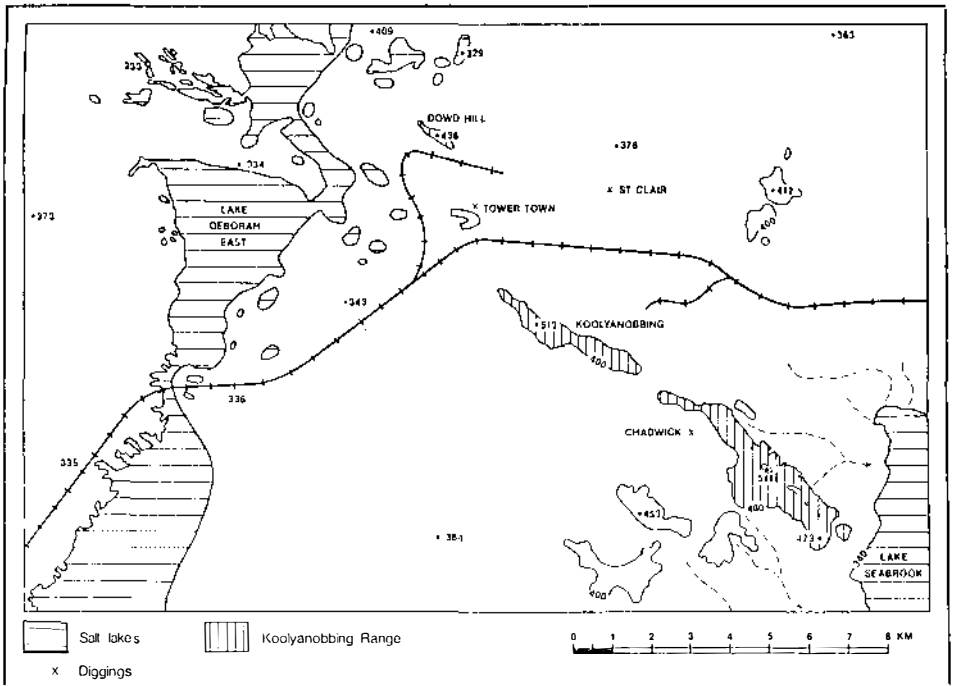


Fig. 11: Koolyanobbing Range.



*Plate 1: Dulyalbin Tank collects run-off from Dulyalbin Rock.
(Photo L. J. Hunt)*

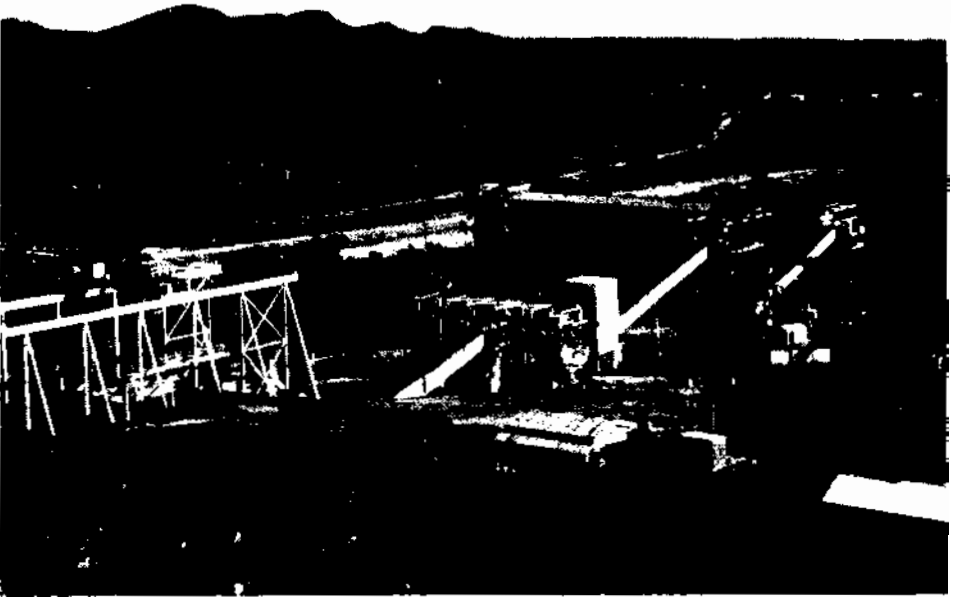


Plate 2: B.H.P. facilities in Koolyanobbing range.

Nierguine Rock (446m), south through the Woongaring Hills (peak 402m), through Mt Correl (peak 487m), into the Highclere Hills and then south of Lake Deborah West into the fabled Golden Valley area. From there the belt continues south-east through Bullfinch to Marvel Loch and beyond. The banded iron formations in this belt are generally not as well developed as those in the far north of the shire, consequently the outcrops in this arrangement have been extensively eroded into a series of subdued profiles. In that part of the belt which lies to the north of Bullfinch, the Highclere Hills constitute one of the more significant areas of outcrops with trig marker peaks SX at 461m and HK48 at 392m above sea level.

The Golden Valley region south of Lake Deborah West has also been eroded into a series of steep hills and gullies. Peaks in this area include Mt Woodward (trig 410m), Mt Huggins (396m), Mt Colreavy (395m), Hughes Hill (422m) and the Sisters (410m). These provide some excellent views over nearby Lake Deborah West which has an elevation of 320m. The whole of this area has been extensively prospected for gold. However, with a few exceptions, such as at Newfield (Carterton), south of Woongaring Hill, and at Eenuinn, in the middle of the Highclere Hills, most of the early diggings were located in the Golden Valley area. It was here that mining in the Yilgarn commenced in 1888 and the area includes such famous workings as Marie's Find (Redwing), Colreavy, Radio, Hank's Find, Rowan Find, Mornington, Day's Find, Miseltow, Manxman and the Copperhead at Bullfinch.

That part of the extensively eroded greenstone belt that lies to the south of Bullfinch has two main transverse sections: a western arm in the Moorine Rock — Mt Rankin area, and an eastern arm that extends south from Mt Palmer around the Ghooli Dome, intersecting the main belt in the vicinity of the Great Victoria mine. From that point, the main belt sweeps south through Mt Caudan (452m) to the Parker Range. (See Figure 8). With the exception of Mt Rankin (443m) and South Mt Rankin (trig 465m), there is little topographic evidence of the underlying geology until the Toomey (Blue) Hills (403m) and the Parker Range with a peak of 486 metres. This is the highest point in the southern half of the shire but, as Figure 9 indicates, these southern rows of hills are quite subdued in comparison with the northern ranges. Here, however, this extensively eroded greenstone belt has provided considerable scope for prospectors and the whole of this southern section is littered with the remnants of gold mining activity. Many of the communities associated with the early diggings came and went very quickly. Some, such as Parker Range and Mount Palmer, showed considerable promise and briefly attracted capital investment. However, of most of them, very little remains apart from the scars on the landscape.

The provision of adequate supplies of fresh water has been the major problem faced by all the mining communities in this district. The country rock that comprises these ranges and hills consists of a variety of material, most of which has been heavily fractured and weathered. Consequently, dams constructed in these areas frequently have poor water-holding capabilities. When heavy rainfall is experienced, particularly in the summer months, there are often short periods of substantial stream flow. However, most of this water either soaks into the weathered rock or quickly evaporates. In an attempt to overcome these problems, some catchments, such as the Parker's Range Tank, were lined with concrete, while others, like the Dulcie Tank, were roofed. But, all too often, the

concrete cracked when the tanks dried out and fouling frequently affected water quality in the covered tanks. Consequently, when mining ceased to be economically viable, there was little incentive for people to remain in these dry isolated areas. In contrast, it is significant to note that the communities at Marvel Loch and Bullfinch, both of which are connected to the Goldfields Water Supply, have been able to survive the ups and downs of the gold mining industry.

The Rolling Countryside

The rolling countryside is the major landscape component of the shire of Yilgarn. It is only interrupted by the ranges and rows of hills discussed previously and the system of salt lakes which is treated in the next section.

This gently undulating countryside is part of a huge plateau that dominates the southern part of Western Australia. It contains some of the oldest rocks found anywhere in the world and has been extensively eroded to its present regular surface. Almost the entire area lies between 350 and 500 metres above sea level, and the greater part of it is between 400 and 450 metres in elevation. While there is an apparent sameness to this countryside, there are some interesting subtle differences in landscape and landforms. This section concentrates on four of these aspects: the laterite formations and associated breakaways; the high level sandplain; the broad valleys; and the granite outcrops.

The key to understanding the rolling landscape and the various assemblages that it contains, lies in an appreciation of the blanket of lateritic duricrust that was laid down during the Tertiary period. As mentioned earlier, this duricrust formed over the existing eroded plateau under climatic conditions that were more tropical than at present. The circumstances surrounding the mode of formation and the precise age of this lateritic material has been the subject matter of considerable ongoing research and discussion in the geomorphic literature. However, it is generally agreed that as a result of the climatic conditions of that period, deep weathering and leaching occurred. This resulted in a concentration of ferruginous material into duricrust layers, usually overlying a minerally deficient kaolinized country rock — the pallid zone. However, the situation is far from uniform throughout the shire. Bettenay and Hingston suggest that this pallid zone can be up to 30 metres thick under the major valleys of the inland drainage systems, but much shallower beneath the sandplains of the divides. There is also some likelihood that some of the original Tertiary deposits may have been reconstituted into new horizons in comparatively more recent times. As a consequence of this, Mulcahy has warned that residual lateritic outcrops “cannot be uncritically accepted as any kind of time marker or datum”.

Since the Tertiary period, there has been further lowering of the countryside. This has generally taken place through erosion of the higher levels and the deposition of material onto the slopes of the broad valleys. As a consequence of this, the upland remnants of the original lateritic blanket take the form of gently rolling sandplains, small plateaus of laterite above breakaways and gently inclined lateric slopes that lens down into the valleys. In the lower reaches of the broad valleys the duricrust is covered by varying thicknesses of detrital material. However, in the lower reaches of some of the broad valleys that coincide with the ancient pre-Tertiary drainage basins, lateric deposits have been exposed by erosional processes associated with recent salt lake activity. Of the

original blanket, Chin and Smith suggest that, for the area north of Southern Cross, as depicted on the Jackson 1:250,000 geological survey sheet, about half of the original gently undulating lateritic duricrust has been removed by Quaternary erosion.

The map depicted in Figure 8 indicates the general position of the major sandplain deposits and is based on the work of Chin and Smith (1983) and Gee (1982). Most of the sandplain (that constitutes the divides) occurs in association with the residual upper level Tertiary duricrust and breakaway formations are frequently to be found on the margins of these deposits. It is interesting to note that almost all of these sandplain deposits lie above 400 metres and that the great majority are above 420 metres.

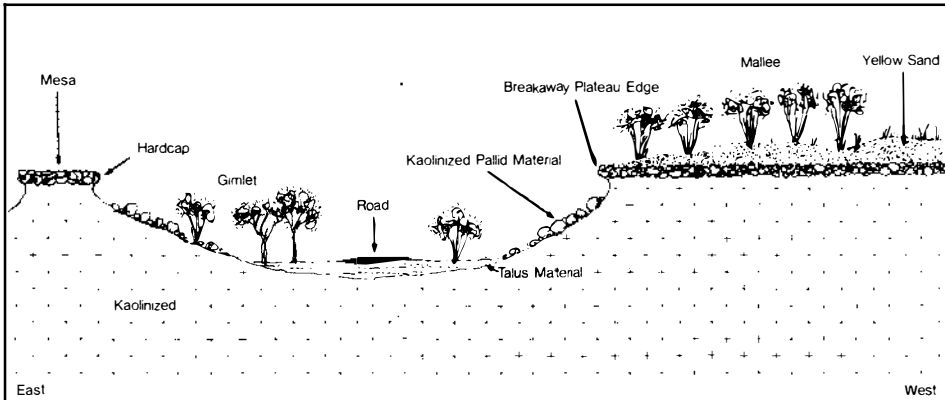


Fig. 12: Breakaway Formation, Centenary Group.

Since the Tertiary duricrust was laid down over the pre-existing undulating topography, and because there has been a considerable amount of subsequent cut and fill, outcrops of laterite tend to be found at points of active erosion. In the Yilgarn these tend to be in two major situations. The first is towards the divides, on steeper slopes, featuring characteristic breakaways. Figure 12 is a stylised transect across a breakaway formation near the Centenary mining group in the Parker Range area. As the diagram illustrates, the almost level lateritic hard cap is truncated abruptly, usually with a pronounced visor over the more easily eroded pallid material. Below this there is often a steep slope in the kaolinized material, frequently strewn with remnant lateritic talus. Ground water seepage probably plays a large part in the formation of these undercut structures. In the example depicted in Figure 12, a small remnant mesa is situated approximately 300 metres to the east.

The variation in the vegetation sequence across these breakaway formations is quite marked. The red soils at some distance down slope frequently support substantial open woodland. Closer to the breakaways this deteriorates as the soil changes into kaolinized material where there is very little vegetation at all. The exposed laterite cap rock often supports some scrubby mallee which improves as the soil cover thickens then deteriorates into a scrubby heath as the depth of sandplain increases. It is interesting to note that from the air, in the remote northern part of the shire, the white apron of the pallid zone stands out clearly and indicates the position of breakaway formations. (See Plate 3) The second area of active erosion that has exposed some laterite formations lies, as mentioned above,

at the base of valleys adjacent to salt lakes. The erosional processes associated with the lakes will be taken up in the next section of this chapter, however it is interesting to note that, typically, these lakeside lateritic formations occur on the western margins of the lakes and not on the eastern shores. These profiles are more subdued than the upland breakaways, but the orange-brown hardcap with an undercut over pallid material has a great deal of similarity. One of the most accessible of these exposures is located where the Southern Cross-Bullfinch road crosses Lake Koorkoordine. This outcrop can be clearly seen from the road on the south-western side of the causeway and a close examination reveals clear evidence of the kaolinized material beneath the hardcap.

In all duricrust landforms, undercutting and bluffing of the pallid zone is a common feature. In some cases, where the hard cap layer is massive, huge residual bluffs remain. Plate 4 shows Halfway Rocks, near Corinthia on the Southern Cross — Bullfinch road, complete with graffiti. In other cases the removal of the pallid material can leave the laterite suspended in arches. Plate 5 shows an example from the Dulyalbin area to the west of the Nulla Nulla South Road.

As a consequence of the deterioration of the duricrust mantle, the rolling countryside has two quite distinct landscapes: the high level yellow sandplains associated with the valley divides which have been described as leached, sandy textured, slightly acid and largely kaolinitic; and the alluvial and colluvial, fine textured, calcareous, red solinized soils found on the slopes of the broad valleys. The pattern of vegetation reflects the changes in soils and slopes: Bettenay and Hingston have described in considerable detail

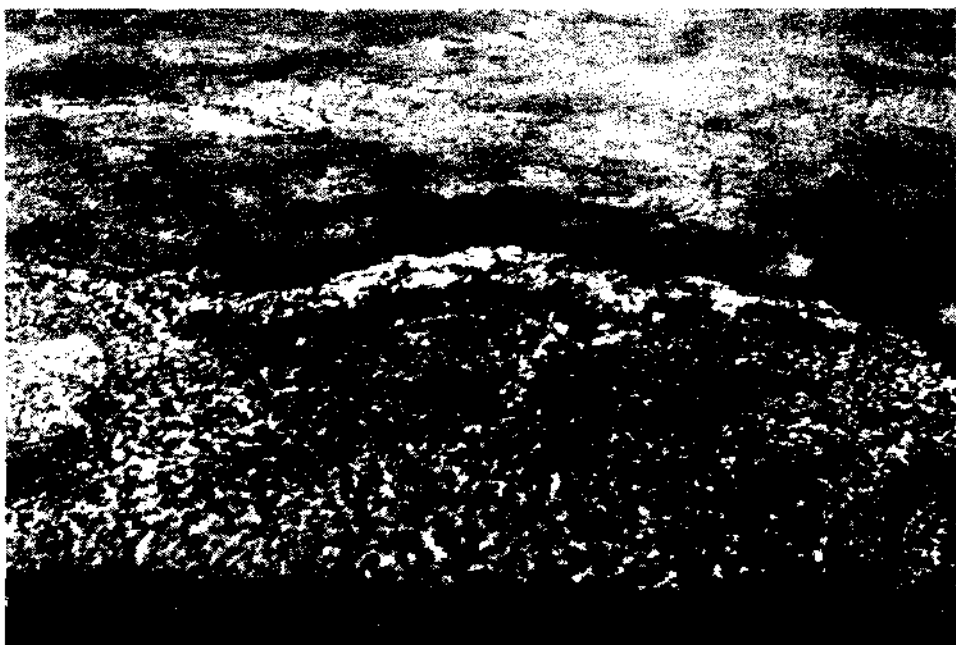


Plate 3. Breakaways in the far north of the Yilgarn Shire. Note the absence of vegetation on the clearly visible pallid zone and the contrast between the scrubby heath on the upper yellow sand plain and the open woodland on the lower red soils.



Plate 4: Massive breakaway bluffs, Halfways Rocks, Southern Cross-Bullfinch Road.



Plate 5: Laterite arch, Nulla Nulla South Road, Dulyalbin.



Plate 6: Rolling upland sand plain near Ghooli.

the numerous species involved. They have identified the open sclerophyllous woodland (adapted to long hot dry summers) with species such as Salmon Gum (*E. salmonaphloia*) and Gimlet (*E. salubris*) in the valleys and numerous species of mallee on the slopes leading up to the sandy divides. On the sandplain, acacia and casuarina heath species predominate. Bettenay and Hingston provide a detailed description of the physical and chemical properties of the major soil groups found in the area and their findings indicate that there are considerable differences between the soils of the two landscapes. One of the most significant differences is in the porosity of the soils. In a simple comparative test involving a 100mm column of each type, to which 200mls of water was added, after 50 seconds water penetrated through the yellow soil and twelve hours later 95% of the water had drained through the column. In the red soil sample, it took 6 minutes 20 seconds for the first water to appear through the column and twelve hours later 30% of the water still remained in the profile. The finer fractions of the red soils ensure greater water holding capability and, given the high evaporation characteristics of the area, this is of considerable importance for farming. However, it can also work the other way. After periods of quite moderate rains, earth roads in red soil areas can quickly degenerate into boggy pools. As an example of this, the road from Yellowdine to Marvel Loch, particularly the southern section close to the lakes can rapidly become waterlogged and impassable. In contrast to this, the road south from the Ghooli repeater station to Marvel Loch is almost entirely on the upland sandplain and remains open after quite heavy rains.

As examples of the two main landscape types in the rolling countryside, Plate 6 shows some of the upper sandplain heath in the Ghooli area. In contrast to this, Plate 7 shows the broad valley open woodland country near the Parker Range Tank.



Plate 7: Broad valley landscape near Parker Range Tank.



Plate 8: Broadacre farming on the rolling countryside of the Yilgarn.

The quest for new grazing lands brought explorers and later, the pioneer pastoralists into this landscape. Of special significance in opening up the district were the journeys of C. C. Hunt in 1864, 1865 and 1866. The first pastoral property, Eenuinn, was established north-west of Bullfinch in 1887, however, unreliable rainfall, high evaporation rates, soil deficiencies and unstable wool prices have caused the stations in this area to lead highly chequered existences. Agriculture came into the broad valleys with the advent of mining. The first lots were opened up in an attempt to provide fodder for the stock used by travellers and townspeople associated with the gold mining activity. By the 1920s, with increasing mechanization, a better understanding of fertilizers, specialised wheat breeding and immigrants hungry for land, broad acre cereal farming rapidly moved eastwards across the southern part of the State into the red soil areas of the Yilgarn.

The story of the expansion of agriculture in the Yilgarn is taken up elsewhere in this book. It is sufficient to note here that wheat farming in the shire of Yilgarn involves a massive scale of operations. As Plate 8 illustrates, the machinery, paddocks, investments and risks are all huge in scale.

The availability of reliable supplies of fresh water is a matter of constant concern for the people who live on the rolling countryside of the Yilgarn. To meet their needs, the granite outcrops of the area have been of particularly significance. These outcrops have been termed *inselbergs* by Jutson and *bosses* by Mulcahy. They are masses of mainly acidic, igneous material that have proved more resistant to erosion than the surrounding countryrock. Grey granite predominates in the western shield and unlike red granite which is found in parts of Scotland and Tasmania, it is highly deficient in phosphate. Consequently, successful farming on most of the Western Plateau requires the application of large amounts of phosphate to overcome this soil deficiency.

An interesting feature of the granite outcrops is that, with very few exceptions, their crests lie below the level of the sandy divides. In fact, very few exceed 450 metres in elevation. However, in relation to the surrounding broad valleys, they often stand out quite prominently. The best example is Baladgie Rock (374m), a well known landmark on the western border of the shire. This massive outcrop is close to Lake Baladgie (310m) and provides an excellent vantage point for views across the surrounding landscape. In contrast to this peak, Karalee Rock, with a crest of 454 metres, lies closer to the divide and has only 15 metres of vertical exposure.

In broad descriptive terms, these granite outcrops can be categorized into three groups depending on the level of exposure. The first is the pancake type which features large flat areas of exposed granite with very little elevation above the surrounding plain. An example of this form is Strawberry Rock (407m) on the Parker Range Road. The second is the frying pan type which has greater relief than the pancake form. Broad in area, gently sloping but still low in profile, somewhat like an upturned frying pan, this form is often obscured by the surrounding woodland. Examples include Yellowdine and Caroling rocks. The third type has been termed elephantine because it is massive in appearance. Often very large in height and area, the slopes are usually quite steep. Mt Clara, with an elevation of 431m above the 400 metres of the surrounding plain, is an example of this form. One of the more interesting examples of this group is Dulyalbin Rock (410m). In this case, part of the steep slope resembles an overhanging wave that rivals the famous Hyden example (see Plate 9). The smooth and sometimes steep slopes of

these rock outcrops are almost certainly due to subaerial erosion processes, that is, the erosion of the rock by chemical processes before exposure above the surface of the surrounding soil. With the gradual lowering of the surrounding plain, and the exposure of these residual outcrops, other physical types of erosional processes join in the general rock destruction.

From a distance these granite domes appear to be barren, but in reality they are virtual oases in the rolling countryside. A close examination reveals a considerable variety of vegetation thriving in the soil and moisture traps both on and around the base of the outcrops. Because granite is highly impervious, rain water runs off the surface and large quantities are caught in fissures within the rock, in hollows, and in the shallow soils surrounding the base of these structures. Wells, such as that found at Frog Rock, have often been dug in the soils close to the outcrops, to utilize this resource and have been the mainstay of Aborigines, gold prospectors and farmers of the district. As there are no freshwater rivers or artesian springs in the Yilgarn, the importance of this source of water cannot be over emphasised.

The System of Salt Lakes

The central section of Yilgarn is dominated by a chain of large salt lakes. These should be more correctly termed salt pans because for the most part they have dry, salt surfaces. This central chain of lakes forms a huge arc that starts on the outskirts of Southern Cross at Lake Polaris, with a lake floor level of 335 metres above sea level. This connects to Lake Koorkoordine, then to the south branch of Lake Deborah East which has



*Plate 9: Dulyalbin Rock, north face, showing wave-like structure.
(Photo L. J. Hunt)*

a spot height of 322 metres. Lake Seabrook, with spot heights ranging from 335 to 339 metres, is not directly connected to the main system by a surface channel, but is considered to be part of the main chain. The system then continues into the main body of Lake Deborah East, then to Lake Deborah West with a western end bench marker of 320 metres. From there the chain connects to Lake Baladgie with a spot height of 310 metres. These lakes appear to be part of a much larger, though incomplete system linked to Lake Brown and from there to the Swan-Avon River. This major chain, which extends from the town of Southern Cross to Baladgie Rock, involves some 150 kilometres of connected salt pans with an overall 25 metre drop in elevation. This is a fall of approximately 1:6000, but in reality each of the major pans forms a series of low profile steps. Because of the contorted shape of most of these lakes it is difficult to describe their dimensions in terms of length and breadth, however, to give some indication of the proportions involved, Lake Seabrook has a surface area in excess of 100 square kilometres and a northerly axis of 20 kilometres. Other pans, such as Lake Deborah East, are even larger in extent.

Several lesser chains of smaller lakes and pans are connected to the central major chain described above. In the far north of the shire, the Hamersley Lakes have a westerly trajectory and although not directly connected by surface channels, are probably part of an ancient drainage system that linked to Lake Brown. To the east, Lake Seabrook acts as a sump for two minor chains. The first rises in the Olga Rocks area, south of the Parker Range at approximately 380 metres elevation, and interconnects in a northerly direction via Yellowdine. The other chain flows into Lake Seabrook from the north-east, via Lake Eva. A less well-defined and connected minor chain rises in the Mount Hampton Reserve area, near the south-western boundary of the shire. This system follows a northerly trajectory to Moorine Rock, then eastwards into the main system at Lake Koorkoordinate.

Due to the Yilgarn's low seasonal rainfall, exceptionally high evaporation rates and shallow lake profiles, the chains of lakes seldom flow as a complete system. Rather, they act as a series of evaporation sumps for surface run-off. However, there are two aspects of the system's interconnectivity that are important. The first is that the lakes follow the path of an older palaeo-drainage system, that is, an ancient river system that was probably established before the Tertiary period. Following a drying of the climate and possible uplift and tilting of the western plateau, the system has clogged with sediments to form the present series of loosely connected pans. Both Gee and Pilgrim suggest that many of these are connected by ground water flow through the adjoining sediments. An example of this occurs between Lake Seabrook and Lake Deborah East, 15 kilometres south of Koolyanobbing. The second aspect is that after exceptionally heavy and prolonged rains, some of these ponds do connect. As a result, particularly in the minor chains, considerable quantities of salt and other minerals are flushed westwards out of the system. Mulcahy suggests that if the flow persists for some weeks, as it did in 1955 and 1963, the salinity values can fall to as low as 60 milli-equivalents of chloride per litre. However, he notes that the aquifers of these broad valleys have salinity levels ranging from 400 to 600 milli-equivalents of chloride per litre. Consequently there are huge reserves of salt in the old valley structures below the more recent cut and fill soils of the present broad valleys.

The size and shape of the salt lakes in the region varies enormously. Most of the larger pans are irregular in shape, but usually have an elongated axis. This probably reflects the influence of geological formations and the pre-Tertiary drainage system. On



Plate 10: Eastern shore, Lake Deborah East.



Plate 11: Gethin Road, lake and granite outcrop.

the other hand many of the smaller lakes and pans are almost circular in shape. In some cases, as at Mount Palmer and the Miners' Settlement, these flat, clay surfaces were used as sporting venues for football, cricket and cycling. An interesting feature of most of the lakes in the main chain, and of the larger lakes in the minor chains, is the distinctive difference between the eastern and western shorelines. The eastern shore is usually smooth in shape while the western shore is usually crenulated (see Figure 11). It has been suggested that this is a result of the gradual migration of the lakes from east to west. The suggested process for these formations is as follows. During periods of heavy rainfall, sedimentary material may be flushed into the larger lakes. In summer the surface water evaporates from these sumps leaving fine grained deposits on the surface of the lake pan. The dominant westerly winds deflate (pick up and carry away) the material from the surface of these lakes, sort it into common minerals by specific gravity and deposit it on the eastern shores. This material clogs the eastern side of the lake causing the next infill of water to be displaced to the west. Subsequent run-off over the eastern shore deposits also causes some of the material to be washed back into the lake. It is also highly probable that when the lakes are filled by summer floods, strong easterly winds set up waves in the brine which attack the western shores causing further migration to the west.

Several aspects of this theory bear further comment. When the material is blown from a lake surface and sorted, a characteristic sequence of deposits develops. This comprises gypsum dunes close to the lake edge (kopi), then sandy lunettes and, further away, finer textured sheet deposits known as lake parnas. Mulcahy has described this parna as discontinuous layers up to a few inches thick which may extend several kilometres downwind from the lake. He also describes the material as being clayey and silty in fraction — calcareous and high in soluble salts. One of the most accessible examples of these eastern shore sequences can be found seven kilometres south of Koolyanobbing. This deposit has probably caused the isolation of Lake Seabrook from Lake Deborah East. In this case the road from Southern Cross to Koolyanobbing runs parallel to a well developed lunette. Figure 13 is a stylized profile across the formation. These lunettes are dune structures which usually have a ramp-like windward side and a steep lee side resulting from material being rolled up from the lake by the wind. Typical of most dune structures, the natural vegetation of the area tends to stabilize the leading faces

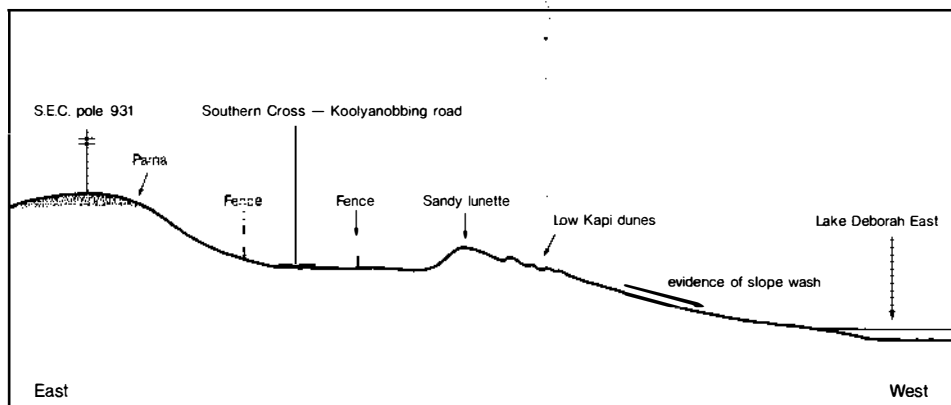


Fig. 13: East Shore Profile, Lake Deborah East.



Plate 12: Dulyalbin area: Lake shore west of the Nulla Nulla South Road.



Plate 13: Broad valley with salt lake, south of Moorine Rock.

of these formations. They are called lunettes because, from above, they display a characteristic crescent shape paralleling the eastern outline of the associated lake. Plate 10 is a view south-east along the eastern shore at Lake Deborah East. In the foreground the low kopi dunes can be seen together with the backwash channels into the lake. In the background, a lunette obscures the open woodland that lies beyond.

The western shores of these salt pans can be taken to be the wave attack shores. There are several interesting examples in the shire. As mentioned earlier, the low-level laterite deposits on the western shore of Lake Koorkoordine have been exposed and are probably being cliffed by this process. Further north on that lake, in the vicinity of the golf club, a rocky shoreline has emerged showing considerable evidence of erosion. In the Gethin Road area, in the south-west of the shire, a smallish lake lies hard against a granite outcrop and as Plate 11 shows, on the western shore active erosion appears to be taking place. However, a more interesting example is to be found in the Dulyalbin area, on the north-western shore of the lake crossed by the Nulla Nulla South Road. A superficial examination of the area suggests that the lake has been larger than it is at present, and that remnant erosion benches have been left in the granite. Figure 14 is a stylized profile of the formation. Three clearly identifiable benches can be seen, with the possibility of another two further up the slope. Plate 12 is a general view westwards across these benches.

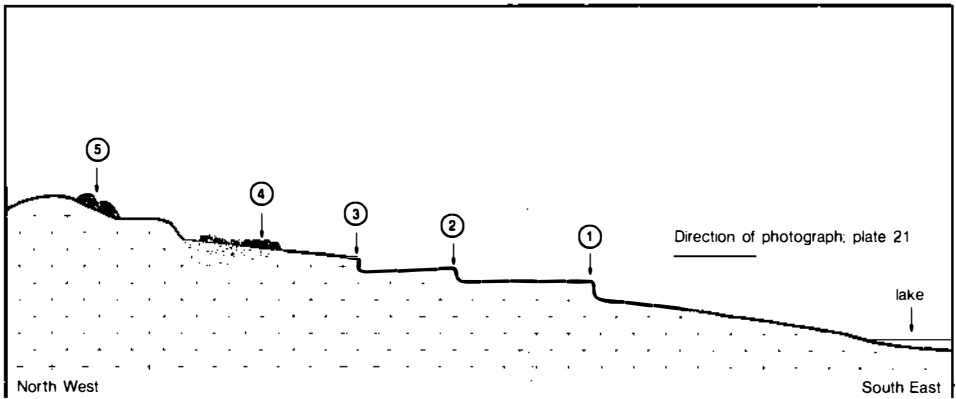


Fig. 14: Benches in Weathered Granite, West of Salt Lake on the Nulla Nulla South Road, near Dulyalbin.

Most of the salt lakes in the shire, especially the big lakes of the main chain, have well established communities of salt tolerant plants such as samphire. However some lakes, particularly those in the upper reaches of the minor chains of the south, have substantial numbers of dead trees both in the water and on the margins. This could be taken as evidence of changing salinity levels and it has been suggested that the clearing of deep rooted natural vegetation and its replacement with grasses has caused the saline water table to rise and in some cases flood low lying areas. However, in the Mt Holland area, well removed from cleared farming land, a similar pattern of dead trees in broad hollows is not uncommon. There is considerable debate as to exactly how this salinizing mechanism takes place and how it should be controlled. Plate 13 is a general view east across a broad valley four kilometres south of Moorine Rock. It shows a small salt lake in



Plate 14: Stream channel crossing the Bullfinch-Mount Jackson station road.

a valley which has been extensively cleared. The lake contains dead trees and in the foreground an interceptor bank can be seen.

There is little in the way of stream drainage in the shire of Yilgarn. The creeks that are associated with run-off from the ranges and outcrops either rapidly evaporate or soak into the colluvial soils. Consequently most stream channels are poorly developed and sheet flooding is quite common. Plate 14 shows such a channel that crosses the Bullfinch — Mt Jackson station road.

There are some short gullies that flow into the salt lakes. These are at best intermittent, that is they flow for only a short period of the year, usually during and immediately after the rainy season while the water table is comparatively high. However, most are ephemeral and usually have poorly defined channels. When they do flow into the lakes, the combination of flood debris and the warm saline conditions of the lake, often result in delta formations. Plate 15 shows a well developed delta on the margin of Lake Deborah West.

Throughout most of the shire, when water does flow in the channels, the lower reaches rapidly becomes saline. Therefore, if they are to be used for freshwater catchment, dams must be constructed as close to the headwaters as possible. Because of this factor, some of the best potential sites are close to seepage areas immediately below the breakaways associated with the upland divides. In the early years of settlement at Southern Cross the town faced severe water shortages. Because it is located on a greenstone formation, there are no granite outcrops close at hand that can be utilised for water catchment. New Zealand Gully, three kilometres to the south was found to be the only site suitable for the construction of a dam. In this case, the headwaters originate from

a narrow laterite ridge, Wimmera Hill, above Lake Polaris, but the quality of the water was found to be indifferent and the supply unreliable. A similar catchment from a breakaway formation, was constructed on the Merrill Gully for the Parker's Range settlement.

The gold boom of the 1890s placed enormous stress on the available water resources and this led to the establishment of giant condensers on the shores of salt lakes close to where water was required. Many of these were privately operated, but the government was also persuaded to construct some units, particularly along the desolate track to Coolgardie after gold was discovered further east.

There were several condensers operating around Southern Cross and one of the largest in the district was Turnbull's Condenser at Southern Cross on the edge of Lake Polaris. Because of the fear of flooding, and in an attempt to filter the water, the brine was usually collected in a well dug in sand, a little distance from the shore. The salt water was boiled, the steam collected and cooled in long condensing jackets and the fresh water stored and sold. However, the system had several deficiencies. The equipment was mainly constructed of galvanized iron because it was strong and portable. While the iron facilitated prefabrication and transportation, it was prone to corrosion and as a result required constant repair and frequent replacement. A common makeshift method of repair involved saturating pieces of cloth in a flour and water solution, moulding the cloth round the damaged section and allowing it to dry. While there was always a danger of flooding for those plants constructed too close to the lakes, there was also the problem of drought. Often when the water was most needed, the lakes dried up and the level of brine fell below the bottom of the wells. The high cost of the equipment, the expense of transporting the

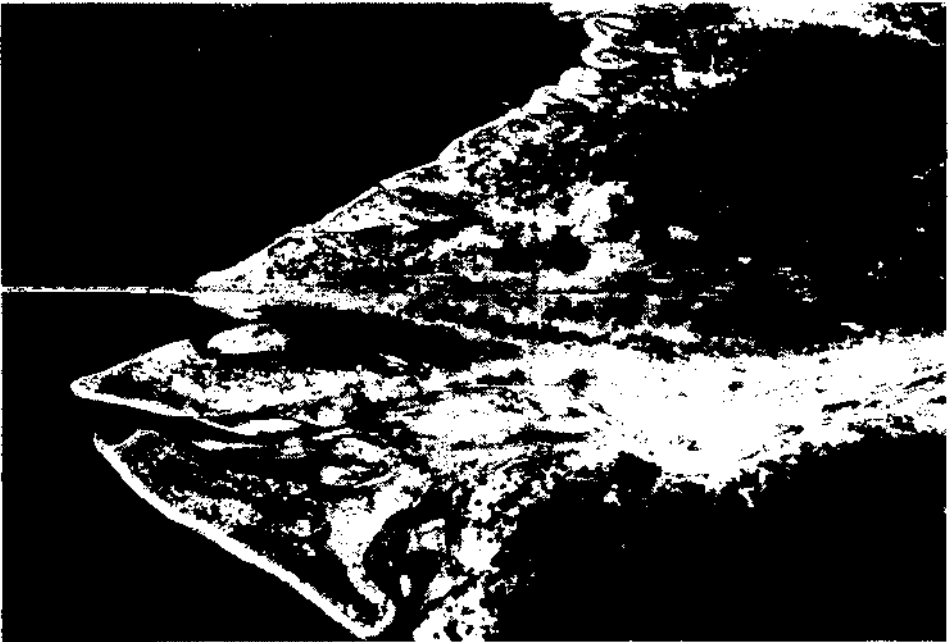


Plate 15: Salt lake delta, Lake Deborah West.



Plate 16: Bullfinch-Mount Jackson station road across the Hamersley Lakes.

plant to the sites, the constant repairs and the need to acquire large amounts of timber for fuel kept the cost of operations high. However, in a land where water was as precious as gold, the prospectors had little alternative but to pay the asking price. This normally was in the vicinity of five cents per gallon or waterbag full, but in desperate times, as cited in the *Southern Cross Herald* of September 1894, the price often escalated to ten cents a gallon.

The long system of large salt pans that dominates the central section of the shire has formed an effective barrier to free land movement. The original railway skirted the lakes wherever possible. Route 94 (Great Eastern Highway) still follows that original path to the east and the standard gauge railway line, via Koolyanobbing, is also forced to skirt the lakes north of Southern Cross. Crossing the lakes has always presented problems because even when they appear dry, the crisp salty surface conceals a muddy sub-surface. On tracks that have infrequent traffic and consequently do not warrant much expenditure, this is a particular problem. Plate 16 shows the old Bullfinch — Mt Jackson station road where it crosses the Hamersley Lakes. In this case, rafts of saplings have been used to provide a solution to the problem, however, for heavier, regular traffic, considerable earth works would be required.

Throughout the length and breadth of the Yilgarn the way in which the people have responded to the environment has always been influenced by the availability of fresh water. There is very little information on the numbers of Aborigines who lived in the district prior to European settlement in the district, however from the accounts of early explorers, it would appear that the countryside could support only small migratory bands.

These groups responded directly to both the seasonal variations and to the long term cycle of droughts. As the explorer C. C. Hunt observed:

Water is very scarce in this district. Natives use the meagre supplies in crevices in rocks — but in really dry times they move back west, to Yerdanie and Borabin in extreme cases — they all seem to know the direction and names of these places. (Hunt 1866: 46).

The explorers relied heavily on the Aborigines to direct them to the available water supplies and quickly appreciated the importance of granite outcrops, and the limitations of the ranges and rows of hills. As Hunt commented while on his first expedition into the area in 1864:

Throughout the whole of these hills we cannot find sufficient water to make tea for ourselves. (Harris 1942: 36).

As well as the water supplies associated with the granite outcrops, the Aborigines also used gnamma holes. These are narrow entranced, vertical opening rock holes, often in hardcap, that act as cisterns. While these supplies were sufficient for small wandering groups, they were quite inadequate for the huge influx of Europeans that followed the discovery of gold. Given the variability in the quantity and quality of the available water and the temperature extremes experienced in the area, it is not surprising that the explorers suffered considerable privations. Hunt was quite ill during the latter part of his 1866 journey and died in 1868 at the age of 35.

The descriptions of the countryside, and the information pertaining to water supplies, recorded by the early explorers were of invaluable assistance to the pastoralists and prospectors who followed them into the district. These groups, in turn, placed enormous pressure on the available resources. Surface catchments and condensers were built wherever possible, but severe water shortages were common. During the height of the gold rush, the urgency of the situation was forceably brought to the attention of the Forrest government. The immediate response was the construction of catchments wherever the terrain was suitable. In the case of Southern Cross, the towns first dam was completed at New Zealand Gully in 1895, however, as indicated above, the catchment of water in areas other than at granite outcrops is fraught with difficulties.

The completion of the railway to Kalgoorlie solved the immediate communication problems and cut the demand for water used by transport teams. However, the locomotives had an insatiable thirst for high quality water which resulted in a renewed spate of dam and catchment construction along the goldfield route. At Yellowdine (Reen's Soak), Moorine Rock (Parker's Road) and other sidings, catchments were constructed on suitable granite outcrops. The most impressive of these was built at Karalee which means, green grass where the water flows. This was a favourite Aboriginal site and Hunt established a dam there in 1865. Then in 1896-97 the Public Works Department constructed an elaborate catchment system on two granite outcrops totalling 56 hectares. Nearby, a 48,000 kilolitre capacity dam was dug. The two were linked by a steel flume 81 metres in length and a steam pump was established to pipe the water 3100 metres to an overhead tank by the railway line. Close to this water supply a hotel was established in 1897 and, later, railway barracks and a locomotive turntable were constructed. The hotel and railway facilities have now gone but the water catchment, flume and dam remain as a monument of those difficult pre-scheme water days.

Despite these efforts, the need for a reliable supply of water remained a constant issue. Two solutions to this problem were widely and sometimes wildly debated. The first was to drill for artesian water, an endeavour that proved to be both expensive and futile. The second suggestion, the piping of water from the Darling Range, was implemented in 1902 and this provided security of supply for the residents of Southern Cross. Subsequently, distributory lines were run to Bullfinch, Marvel Loch, Burbidge, the Miner's Settlement and Koolyanobbing, but for communities not serviced by the pipeline, the supply of water still remains a critical problem.

The problem of the inability of the local environment to provide reliable supplies re-emerged in the 1920s, with the advent of agriculture. To meet these requirements, pressure was brought to bear to develop small catchments on granite outcrops to assist the local farmers and an excellent example of this type of facility is at Dulyalbin Rock (See Plate I). At Mt Clara, isolated in the eastern section of the shire, a small dam at the base of a huge granite dome is still used as a source of water. In the far north on the lonely Mt Jackson homestead track, the well at Currajong Tank is dependent on water collected from low profile granite outcrops. In other areas, where granite outcrops were not available, roof catchments were organised. Examples of these include the Mt Holland tank (now deroofted) and the Dulcie Jean tank south of Parker Range.

In an examination of the climate and landscape of the Yilgarn, it is easy to be overawed by the environmental difficulties. The physical isolation, low unreliable rainfall, extremes of temperature, extraordinary evaporation rates and major water storage problems all combine to make human habitation quite precarious. And yet, for all the desolation of the long summers, the winters are a vivid contrast. From May through till late September the days are sharp and the nights are crackling cold. And when the season does break, and the anxiously awaited rain washes the leaves and cleans the dust from over the rolling plains, then this hard land softens, and shows its enormous potential.

Lindsay Hunter

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SOUTHERN CROSS — TEMPERATURES

c Units: Degrees Celcius	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean Daily Maximum:												
Average, 1895-1984	34.7	33.7	30.7	25.7	20.6	17.0	16.3	18.1	21.9	25.5	29.8	33.3
Highest	37.9	38.0	34.5	30.1	24.8	19.4	19.0	21.8	25.9	30.3	33.6	36.4
Year	(1956)	(1921)	(1940)	(1902)	(1934)	(1914)	(1977)	(1914)	(1914)	(1895)	(1957)	(1905)
Lowest	30.7	29.6	26.2	20.9	17.7	13.7	14.2	15.9	19.4	21.5	24.6	29.6
Year	(1925)	(1981)	(1927)	(1900)	(1931)	(1955)	(1958)	(1968)	(1973)	(1975)	(1981)	(1981)
Highest Temperature:												
Temperature, 1957-1984	45.6	45.6	42.3	38.3	32.7	26.0	26.7	30.6	34.0	39.3	42.1	44.4
Date	(22.1.61)	(5.2.62)	(17.3.64)	(10.4.58)	(3.5.72)	(12.6.65)	(31.7.69)	(10.8.60)	(28.9.80)	(27.10.61)	(25.11.62)	(16.12.57)
Mean Daily Minimum:												
Average, 1895-1984	17.1	17.0	15.0	11.2	7.4	5.6	4.3	4.7	6.3	9.1	12.7	15.5
Highest	19.8	20.0	18.0	14.6	10.9	9.2	7.4	7.7	8.7	13.1	16.3	18.7
Year	(1932)	(1912)	(1930)	(1945)	(1921)	(1964)	(1949)	(1982)	(1938)	(1914)	(1982)	(1977)
Lowest	14.5	14.0	11.9	8.2	4.6	2.3	1.0	1.9	3.3	5.3	10.5	12.7
Year	(1927)	(1946)	(1903)	(1954)	(1899)	(1908)	(1925)	(1956)	(1919)	(1925)	(1971)	(1952)
Lowest Temperature:												
Temperature, 1957-1984	9.0	8.3	5.0	0.6	-3.3	-3.8	-3.0	-2.7	-1.6	-1.1	1.1	3.4
Date	(15.1.66)	(25.2.68)	(26.3.72)	(30.4.60)	(28.5.64)	(1.6.64)	(13.7.69)	(2.8.75)	(3.9.77)	(7.10.64)	(1.11.68)	(2.12.73)

Data extracted from "Bureau of Meteorology" records. Station O12074 Frames D11, E11, G11, K11, L11 and M11.

Table 1: Southern Cross — Temperature.

SOUTHERN CROSS — RAINFALL

MM Units: Millimetres	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Total Rainfall:												
Average, 1889-1985	14.0	20.0	22.0	22.0	34.0	41.0	38.0	30.0	19.0	16.0	15.0	12.0
Highest, 1957-1984.....	112.8	135.0	78.8	82.8	90.1	182.7	106.8	88.1	65.4	59.4	58.2	62.8
Year	(1966)	(1978)	(1971)	(1973)	(1963)	(1968)	(1958)	(1963)	(1958)	(1977)	(1983)	(1983)
Lowest, 1957-1984.....	0.0	0.0	0.0	0.7	1.6	14.7	6.2	8.6	2.4	0.0	0.0	0.0
Year	(1977)	(1974)	(1966)	(1982)	(1964)	(1960)	(1976)	(1962)	(1980)	(1979)	(1961)	(1976)
Rain Days:												
Average, 1889-1985.....	3	3	3	5	7	10	11	9	6	5	3	2
Highest, 1957-1984.....	8	11	8	11	24	20	25	18	13	11	10	9
Year	(1971)	(1963)	(1974)	(1975)	(1963)	(1970)	(1960)	(1963)	(1960)	(1976)	(1965)	(1983)
Lowest, 1957-1984.....	0	0	0	1	2	7	4	5	2	0	0	0
Year	(1977)	(1974)	(1980)	(1962)	(1983)	(1969)	(1957)	(1969)	(1957)	(1979)	(1961)	(1976)
Highest Daily Rainfall:												
Amount, 1957-1984	63.0	77.2	25.9	37.8	42.6	42.7	28.7	40.2	24.6	36.0	38.0	19.1
Date	(2.1.66)	(17.2.70)	(28.3.71)	(15.4.61)	(24.5.82)	(7.6.68)	(13.7.63)	(24.8.82)	(30.9.58)	(31.10.77)	(17.11.83)	(20.12.59)

Data extracted from "Bureau of Meteorology" records. Station 012074, Frames B13, C13 and D13.
Average Annual Rainfall 283mm. Average number of rain days 67

Table 2: Southern Cross — Rainfall.

SOUTHERN CROSS — POTENTIAL EVAPORATION

MM Units: Millimetres	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Daily Pan Evaporation:												
Merredin Average.....	12.4	11.4	9.5	5.8	3.2	2.2	2.1	2.6	4.1	6.7	9.1	11.7
Kalgoorlie Average.....	13.0	11.4	8.9	6.1	3.8	2.7	2.7	3.8	5.6	8.2	10.1	12.4
Difference Merredin-Kalgoorlie.....	0.6	0.0	-6	0.3	0.6	0.5	0.6	1.2	1.5	1.5	1.0	0.7
Southern Cross Average	12.7	11.4	9.2	5.9	3.5	2.4	2.4	3.2	4.8	7.4	9.6	12.0
Monthly Pan Evaporation:												
Southern Cross Average	339.7	319.2	285.2	178.5	108.5	73.5	74.4	99.2	145.5	230.9	288.0	373.6
Monthly Rainfall:												
Southern Cross Average	22.5	23.6	14.9	24.8	32.7	57.7	41.2	30.9	20.1	17.6	19.1	13.6
Monthly Ratio of Evaporation over Rainfall:												
Southern Cross Average	15.1	13.5	19.1	7.2	3.3	1.3	1.8	3.2	7.2	13.1	15.1	27.5

Data extracted from "Bureau of Meteorology" records:

Merredin evaporation — Station 010093 Frame C04, 1972-1984

Kalgoorlie evaporation — Station 012038, Frame N04, 1968-1985

Southern Cross rainfall — Station 012074, Frame B13, 1957-1983

As there is no readily accessible evaporation data for Southern Cross the data for Merredin and Kalgoorlie has been averaged.

Southern Cross estimated average annual potential evaporation 2570.2mm.

Table 3: Southern Cross — Potential Evaporation.

SOUTHERN CROSS — HUMIDITY

Units: per cent	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean Relative Humidity, 1936-1984:												
9AM Average	45	50	55	63	73	82	83	76	61	52	46	43
3PM Average.....	25	28	31	39	47	56	56	48	37	30	27	24

Data extracted from "Bureau of Meteorology" records. Station 012074, Frames D14 and E14.

Table 4: Southern Cross — Humidity.

SOUTHERN CROSS — FROST DAYS

Units: Number of Days	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Average.....	0	0	0	1	3	4	8	8	3	1	0	0
Highest	0	0	0	7	11	14	22	23	16	4	1	0
Year				(1970)	(1968)	(1969)	(1969)	(1968)	(1968)	(1972)	(1968)	
Lowest	0	0	0	0	0	0	0	0	0	0	0	0

Data extracted from "Bureau of Meteorology" records, Station 012074, Frame H12.

Table 5: Southern Cross — Frost Days.

CHANGING ANGLE OF SUN — LENGTH OF DAY AND RADIATION LEVELS FOR 30° SOUTH LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Sunrise, average time.....	5.30	5.59	6.20	6.41	7.01	7.16	7.12	6.47	6.08	5.30	5.06	5.07
Sunset, average time.....	19.24	19.01	18.27	17.49	17.24	17.19	17.33	17.52	18.11	18.32	18.58	19.21
Length of Day, average hours.....	13.54	13.02	12.07	11.08	10.23	10.03	10.21	11.08	12.03	13.02	13.52	14.14
Sun-rays Angle, angle from vertical	12°	20°	33°	44°	48°	54°	48°	44°	33°	20°	12°	8°
Solar Radiation, average Keal cm ² month.....	23.9	21.8	18.6	14.9	11.9	10.6	11.1	12.1	17.0	20.1	23.0	24.6

Table 6: Changing Angle of the Sun — Length of Day and Radiation Levels for 30° South Latitude.

RADIATION RECEIVED ON VARIOUS SLOPED NORTH FACING SURFACES — 32° SOUTH LATITUDE — PERTH (Mega Joules/SQM)

SLOPE	HZL	5°	10°	15°	20°	25°	30°	35°	45°	45°	50°	55°	60°	65°	70°	75°	80°	85°	VERT
January.....	882	878	869	855	838	818	793	766	737	704	667	628	585	541	497	453	408	362	321
February.....	724	730	733	731	725	715	702	687	668	647	622	593	562	528	492	454	414	375	335
March.....	651	671	687	699	708	712	713	709	702	691	676	657	635	610	581	549	515	478	439
April.....	432	455	476	494	509	522	532	539	543	544	542	538	530	519	506	489	471	450	426
May.....	356	384	410	434	456	476	493	507	518	526	531	534	533	529	522	513	500	484	466
June.....	296	330	362	393	422	448	471	492	510	525	536	545	550	551	550	545	536	525	510
July.....	313	341	367	392	414	434	451	467	479	489	496	500	501	499	495	487	477	464	449
August.....	392	416	438	458	476	491	503	513	520	524	525	523	518	511	500	487	472	453	433
September.....	519	536	550	562	571	577	580	580	577	571	562	550	536	519	499	477	453	427	399
October.....	654	661	666	666	664	659	650	638	624	608	589	567	543	516	488	457	425	392	358
November.....	796	794	788	779	766	749	729	708	684	657	627	594	558	520	481	444	404	364	326
December.....	887	880	868	852	833	810	783	754	723	688	650	609	565	521	478	433	387	345	305
ANNUAL.....	6902	7076	7214	7315	7382	7411	7400	7360	7285	7174	7023	6838	6616	6364	6089	5788	5462	5119	4767

This data has been extracted, with kind permission from: Roy G. G. & Miller S. C. 1980 Data Handbook for Australian Solar Energy Designers. U.W.A. Press. Nedlands —
Tables on pages 257 through to 269.

This text is highly recommended for those who have a serious interest in solar radiation.

Table 7: Radiation Received on Various Sloped Surfaces — 32° South Latitude — Perth.

CLIMATIC DATA: ROTTNEST-KALGOORLIE

STATION	LATITUDE	LONGITUDE	ELEVATION METRES	TEMPERATURE °C				PRECIPITATION mm			Rain Days
				Ave Daily Max	Ave Daily Min	Ave Jan Max	Ave July Min	Year	Jan	July	
ROTTNEST	32° 0'S	115°31'E	46.3	21.5	15.0	26.4	11.9	736	6	153	123
FREMANTLE	32° 3'S	115° 45'E	14.3	22.2	13.8	27.7	10.2	775	7	155	128
PERTH	31° 57'S	115° 51'E	18.6	23.5	13.5	30.3	9.2	883	8	174	119
GUILDFORD	31° 55'S	115° 58'E	17.1	24.1	12.1	31.3	7.9	837	6	170	122
KALAMUNDA	32° 0'S	116° 4'E	317.0	22.0	11.8	29.3	8.5	1069	11	186	114
BAKERS HILL	31° 45'S	116° 28'E	304.0	22.8	10.7	31.5	6.6	618	7	127	116
YORK	31° 53'S	116° 46'E	173.4	25.0	10.5	34.0	5.3	454	9	88	88
CUNDERDIN	31° 59'S	117° 14'E	240.2	24.8	11.6	33.8	6.4	370	9	65	78
KELLERBERRIN	31° 38'S	117° 43'E	247.2	24.9	11.4	33.9	6.1	339	11	55	77
MERREDIN	31° 33'S	118° 12'E	317.6	24.5	11.1	33.7	5.6	309	12	49	77
SOUTHERN CROSS	31° 14'S	119° 19'E	356.6	25.7	10.7	35.0	4.6	283	14	38	67
KALGOORLIE	30° 47'S	121° 27'E	359.7	25.3	11.5	33.6	6.7	252	24	34	63

Table 8: Climatic Data: Rottnest-Kalgoorlie.

SOUTHERN CROSS — WETTEST DAYS 1957-1983			J	F	M	A	M	J	J	A	S	O	N	D	
YEAR	RAINFALL mm	DATE													
1957	18.0	Feb 18		X											
1958	24.6	Sep 30									X				
1959	22.4	Aug 11								X					
1960	18.8	Nov 9											X		
1961	43.7	Jan 27	X												
1962	30.7	Jun 23						X							
1963	28.7	Jul 13							X						
1964	18.8	Jan 2	X												
1965					Incomplete data										
1966	63.0	Jan 2	X												
1967	61.7	Jan 23	X												
1968	42.7	Jun 9						X							
1969	26.7	Jun 16						X							
1970	77.2	Feb 17		X											
1971	32.8	Feb 6		X											
1972	32.3	Jun 22						X							
1973	28.4	Apr 9				X									
1974	28.4	Apr 4				X									
1975	23.2	Oct 15										X			
1976	22.0	Apr 21				X									
1977	36.0	Oct 31										X			
1978					Incomplete data										
1979					Incomplete data										
1980	35.5	Jun 21						X							
1981	27.0	Jan 13	X												
1982	42.6	May 24					X								
1983	38.0	Nov 17											X		
			5	3	—	3	1	5	1	1	1	2	2	—	
			Summer 12			Winter 12									24 years

Notes: Of the study period of 24 years, 12 of the wettest days occurred in summer and 12 in winter.

In Winter the wettest days occurred in April and June and the average of these wettest days is 30.8mm.

In Summer the wettest days occurred in January and February and the average of these wettest days is 42.8mm.

Table 9: Southern Cross: Wettest Days 1957-1983.

Chapter 3

Geology and Mining

Introduction

The Yilgarn shire is situated near the centre of a 650,000 square kilometre slab of the Earth's crust which, unlike most places on the Earth, has not experienced a major mountain building event since the Archaean Era about 2.5 billion years ago. This geologically stable portion of the crust is in fact one of the largest intact segments of Archaean crust on the Earth and is known world-wide in geological literature as the Yilgarn Block. (Figure 1.)

Within the Yilgarn Block geologists have recognised four major regions or provinces which show distinctive characteristics in terms of their major rock types and geological history. The area encompassed by the Yilgarn shire lies in the Southern Cross Greenstone Province which is characterised by north-westerly trending belts of banded gneiss and greenstones that have been intruded by voluminous discrete and coalesced granitoids.

The term greenstone refers to a metamorphosed sequence of predominantly basaltic lavas and their associated coarser grained intrusive equivalents, whereas granitoid is a term used to describe a large body of medium to coarse grained crystalline rock with a granitic mineralogical composition of predominantly quartz, feldspar and biotite mica or hornblende. Granitoids may arise from igneous or metamorphic processes or from a combination of them.

The formation of the greenstones, their subsequent metamorphism and deformation together with the intrusion of the granitoids was the result of a series of mountain building tectono-thermal events. These events occurred mainly over the period 2.6 to 2.8 billion years ago during the Archaean Era. Erosion since that time has gradually worn down these Archaean mountains to form the present landscape typified by isolated hills, low ridges and broad flat valleys. Most of the rock debris eroded from the ancient mountains has been carried to the oceans as sediment by rivers and streams which at one time or another traversed the area. However, in geologically recent times the prevailing dry climate has resulted in the sediments remaining in the area to form gently rolling sand dunes and thin sheets of unconsolidated alluvial sand and clay. These loose surficial deposits cover about seventy per cent of the shire thus obscuring much of the underlying solid Archaean basement rock types. The surficial deposits form the soils in which most of the area's crops are grown whereas the bulk of the gold production has come from zones where the basement rocks are exposed.

A broad interpretation of the distribution and structure of the major Archaean rock

types that form the basement to the shire is shown on the map in Figure 2. This map indicates that most of the region is thought to be underlain by granitoid plutons. The economically important greenstones form minor but well defined, thin, arcuate belts which in many instances appear to wrap around the margins of major plutons. This feature is well illustrated by the greenstone belt which runs from Yellowdine through Mt Palmer, Marvel Loch and Southern Cross as it wraps around a granitoid pluton named the Ghooli Dome.

With the exception of a few granitoids most of the Archaean rocks show evidence of metamorphic change. When a rock is exposed to both heat and pressure during a tectono-thermal event, the minerals present in that rock may undergo physical and chemical changes which are sufficient to alter the rock's mineralogical composition and cause many of the new minerals to become aligned parallel to each other. The aligned minerals may give the rock a foliated or lineated texture. Where such metamorphic changes are extreme, the resultant metamorphic rock may have insufficient evidence of its original features to enable a reliable interpretation to be made of its pre-metamorphic nature. Such rocks can only be described by their metamorphic features and given a metamorphic rock name. However, in many instances, despite the fact that metamorphism has profoundly altered a rock, sufficient relict features may remain to enable a reasonable interpretation to be made of both the nature and origin of the original rock. In such cases, the rocks are named using pre-metamorphic rock names but with the prefix "meta" or "metamorphosed" attached to indicate the altered state of the rocks. The

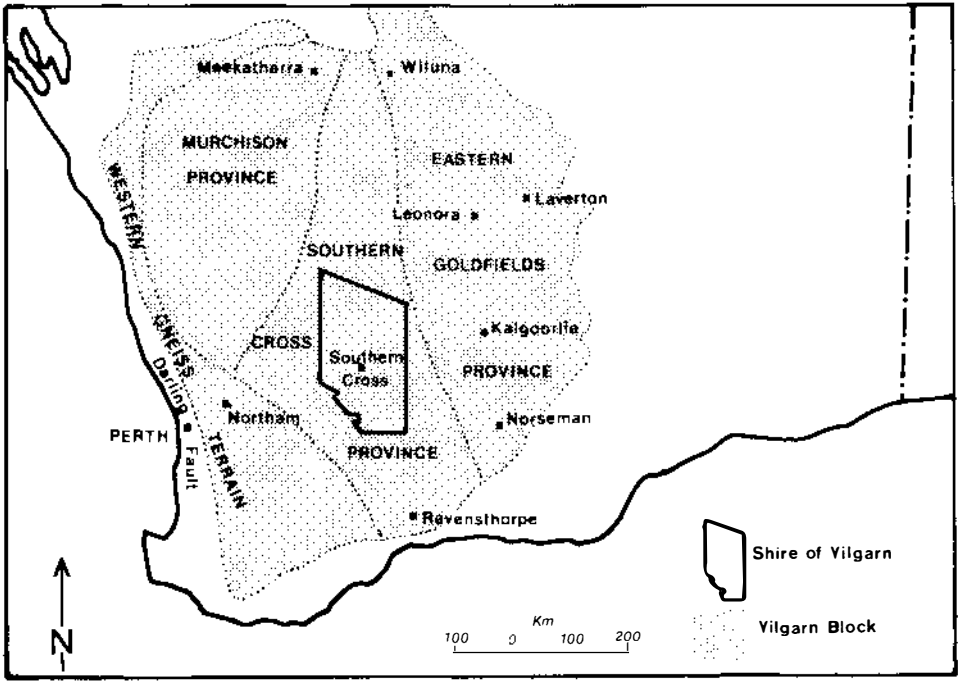


Fig. 1: Map showing the major regional geological subdivisions of the Yilgarn Block. (After Groves and Gee, 1980)

unqualified primary rock names are used in those instances where the rocks are unmetamorphosed or where the effects of metamorphism have not substantially altered either the texture or the mineralogy of the original rocks.

The following sections describe the nature and origin of the rocks in the Yilgarn shire commencing with the oldest rock unit and in general, moving towards successively younger rock units. The descriptions are largely based on geological survey reports by Gee (1982), Chin and Smith (1983) and Walker and Blight (1983).

Archaean Geology

Banded Gneisses

The oldest and most highly metamorphosed rocks in the region are found in the banded gneiss terrains which occur in linear belts both marginal to and within domal granitoids. The banded gneisses do not usually form prominent outcrops and are generally overlain by sandplain and alluvium.

Typically these gneisses are medium to coarse grained crystalline rocks in which light coloured bands from several millimetres to several centimetres thickness and consisting of the minerals quartz and feldspar, alternate with darker coloured bands in which black biotite mica is an important constituent. The mica flakes are oriented parallel to each other to give a characteristic gneissic foliation which in many regions has been tightly folded. Incorporated within some of the gneissic zones are narrow enclaves of banded iron formation and quartzite which suggest that at least part of the gneiss was derived by metamorphic recrystallization of early crustal sedimentary rocks. Other portions of the gneiss appear to have originated through the regional metamorphism of large granitic plutons which had probably intruded into the early crustal sedimentary rocks prior to the gneiss-forming event. The banded gneisses were formed about 2.7 to 3 billion years ago and probably represent the metamorphosed and partly remelted equivalent of the basement upon which the greenstone sequence accumulated.

Greenstone Belts

Greenstone meta-volcanics, intrusives and associated meta-sediments.

The rocks of the greenstone belts originated predominantly by the solidification of molten lava which erupted from submarine volcanoes some 2.6 to 2.8 billion years ago. The volcanoes formed on the floors of ancient seas which occupied graben-like depressions in the ancient gneissic crust. Major rift faults associated with the grabens probably penetrated through the Earth's crust to the upper mantle thus providing access for the magma, generated by partial melting of the Earth's mantle, to move towards the surface and to erupt periodically through vents and fissures as lava, ash and volcanic gases.

As successive lava flows were built one upon the other they gave rise to submarine mountains called volcanic piles. In some instances the summits of these mountains protruded above sea level to form volcanic islands. Explosive eruptions from the surface of the volcanic islands sometimes resulted in huge clouds of volcanic ash which deposited

layers of fine to medium grained volcanic rock debris over pre-existing lava flows. These ash beds were subsequently buried by further lava flows and in time hardened into a rock called tuff.

The main volcanic rock types represented in the volcanic piles were tholeiitic basalt, komatiitic basalt and volcanics of peridotitic composition. In some instances the mafic and ultramafic magmas which gave rise to these volcanics failed to reach the Earth's surface but intruded the volcanic pile to form dykes and sills of the coarser grained equivalents of the volcanic rocks, principally gabbro, pyroxenite and peridotite.

Regional metamorphism which followed the greenstone volcanism, substantially altered the original mineralogy and texture of many of the rocks in the volcanic piles. A typical example of this type of alteration is displayed by the mafic minerals such as pyroxene and olivine which originally formed major constituents of the basaltic lavas. These minerals have generally been altered to amphiboles (particularly hornblende, tremolite, actinolite), chlorite, talc or serpentine. In most cases, the metamorphic minerals have become aligned during metamorphic recrystallization to give the rock a foliated or lineated texture. Typical metamorphic rock types produced by metamorphism of mafic to ultramafic lavas in the volcanic piles are amphibolites, chlorite-tremolite schists and talc schists.

The amphibolites vary from having a very weak foliation to being highly schistose. A good example of a weakly foliated but lineated amphibolite occurs in the open cut at Mt Palmer. This rock was probably formed by the metamorphism of a basaltic pillow lava. Although remnants of the original pillow structure have been preserved, the original pyroxene crystals have all been replaced by a network of weakly aligned hornblende crystals. In contrast, dynamic metamorphism of komatiitic basalts at Mt Elvire and the Yorkradine Hills to the north of the shire, has resulted in strongly foliated and lineated tremolite-chlorite-talc schists in which original pyroxenes have been replaced by aligned fibrous tremolite or actinolite, chlorite and talc. The most abundant variety of amphibolite in the shire is a fine grained, dark green chlorite-tremolite rock. This rock is generally foliated and commonly possesses thin trails of eye-like quartz and plagioclase crystals within the foliation.

In some instances the metamorphic minerals simply replace or occupy the sites of the original igneous minerals and thereby preserve much of the original igneous texture. This type of alteration is well illustrated by a meta-basalt which outcrops over a distance of about 20km at Diemals. In this rock, the original pyroxenes of a komatiitic basalt have been replaced by needle-like and ragged crystals of tremolite-actinolite or hornblende.

Not all the rocks in the greenstone volcanic piles had an igneous origin. During volcanically quiet periods between successive eruptions, beds of fine grained banded iron formation, jaspilite and chert were deposited. The silica-rich and iron-rich minerals that originally formed these rocks were likely to have been deposited on to the sea floor as chemical sediments which precipitated directly or indirectly from seawater. These types of sediments could be expected to occur in the vicinity of active submarine volcanism because the sea water there can become enriched in mineralising fluids which emanate either directly from volcanic exhalations or from the outflow of deeply circulating groundwater that has leached minerals from rocks within the volcanic pile.

Banded iron formation and jaspilite characteristically outcrop as distinct and

persistent 25-30m wide ridges which in some cases are able to be traced as nearly continuous outcrops for distances of about 30km. In many instances a single ridge is replaced by a number of parallel ridges which have resulted from tight folding of a single horizon. The rocks in these ridges consist of alternating iron and quartz rich fine layers or laminae that are generally in the range of 0.5 to 10mm thick. In the Koolyanobbing region where the banded iron formations reach 100m in thickness, the iron-rich laminae are dark grey to black in colour and consist of haematite and/or magnetite. The quartz-rich laminae here are coloured light grey to red-brown. The red-brown colour in the quartz-rich

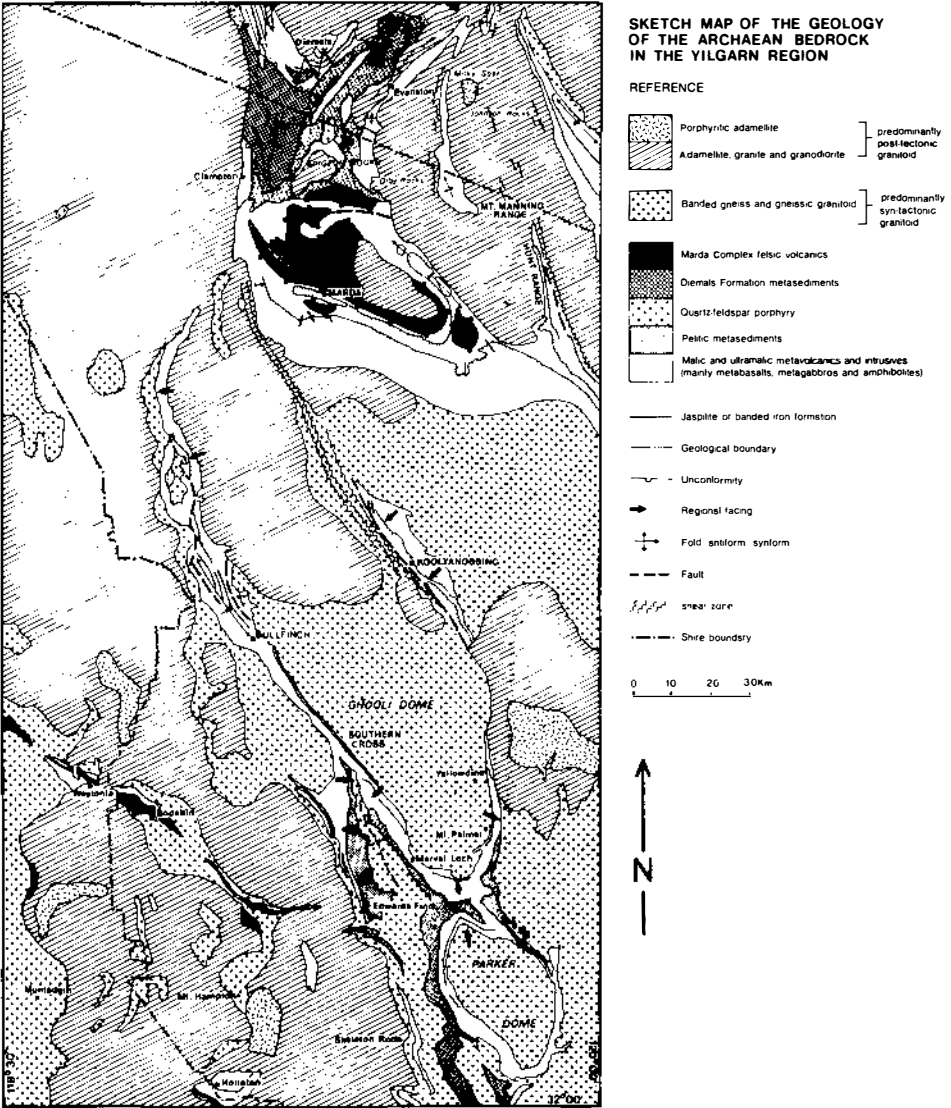


Fig. 2: Sketch map of the geology of the Archaean bedrock in the Yilgarn region.

laminae is due to iron oxides such as haematite, which are finely dispersed through the mass of quartz crystals. In the Mt Palmer-Yellowdine area a finely laminated (0.5-3mm) variety of banded iron formation occurs in which the predominant minerals are quartz (60%), magnetite (20%) and grunerite, an iron rich silicate, 20%.

The jaspilites have a similar appearance to the banded irons but tend to be more finely banded (0.1-2mm) and contain a lower (<5%) magnetite content. They outcrop extensively in the Southern Cross region as thin (1-30m) beds displaying fine cream, brown and black laminations and a granular texture resembling quartzite. Fresh sub-surface samples of this rock suggest that the colour variation in the laminae is due to differing combinations of minerals such as hornblende, plagioclase, grunerite, quartz, magnetite, calcite and epidote.

Chert units consisting of centimetre scale alternating layers of fine grained light to dark grey quartzite occur at various places within the shire, particularly in the greenstones which outcrop south of Mt Jackson.

A hard, finely laminated, dark green phyllitic para-amphibolite with a bronze tinge which occurs in Fraser's mine at Southern Cross and in the belt of rock between the White Horseshoe and the Dulcie mines at Parker's Range is thought to have arisen through the metamorphism of chemically precipitated sediments which consisted of alternating laminae of iron magnesian silicates, microcrystalline quartz and carbonates. Metamorphism has altered these minerals to the present assemblage of predominantly actinolitic hornblende (dark green) with diopside (lightgreen), quartz and feldspar (pale cream) and biotite (bronze). Subtle variation in either the grain size or proportion of these minerals has produced delicate colour banding in this rock.

Minor beds of metamorphosed mudstones, sandstones and conglomerates have also been found within the volcanic pile. Near Mt Jackson homestead, for example, a 2m thick meta-basalt flow lies interbedded with metamorphosed and deformed sandstones and conglomerates. The sandstones have become foliated quartzites and the conglomerates have formed quartz-muscovite schists containing flattened and stretched pebbles.

Pelitic Meta-Sediments

A thick sequence of metamorphosed mud-rich (pelitic) sediments known locally as the Whitestone Series or whitestones forms an important rock unit within the greenstone belts, particularly in the region south of Southern Cross. Invariably these rocks are deeply weathered and as a consequence form poor outcrops which typically are exposed on low rounded hills. Strongly foliated schists and phyllites constitute the dominant rock types in the whitestones. However, in some locations, such as Moonagidding Rock, the foliation is absent and in these circumstances, the meta-sediments display a fine sedimentary layering.

Unweathered samples of the whitestones show a variation in colour, with light buff, green and dark grey being common varieties. Such colour variation is due respectively to the relevant abundance of the minerals sericite (muscovite), chlorite and graphite which occur interspersed with other minerals such as quartz, feldspar, andalusite, sillimanite and garnet.

The pelitic meta-sediments contain stratiform layers consisting almost entirely of the

iron sulphide minerals, pyrite and pyrrhotite, the most notable example being a steeply dipping 20-30m thick layer which passes through Mt Caudan and the Great Victoria mine. This massive sulphide layer has been exposed at the surface at Mt Caudan and has weathered to produce a conspicuous goethitic gossan which forms a 60m to 120m deep capping to the mountain.

Adjacent to the massive sulphide horizon at the Great Victoria mine is a calc-silicate horizon with a mineralogy which indicates that it represents a metamorphosed dolomitic sediment. Rocks of similar mineralogy are reported to occur in pelitic meta-sediments in a number of other localities such as Harris Find and Edwards Find.

The sediments which gave rise to the pelitic meta-sediments were probably derived from the erosion of volcanic islands which had formed in the ancient seas as a result of the greenstone volcanism. Although some of the sediments were deposited during the latter phases of volcanic activity, it appears that most of the beds in this unit were deposited on top of the greenstone volcanics after volcanic activity in the region had ceased.

Initial Greenstone Metamorphism and Deformation

Following the formation of the volcanic piles and their associated sediments a major tectonic event both metamorphosed and deformed the greenstones and the underlying gneissic basement. Neither metamorphism nor deformation was uniform over the whole region, however the metamorphic minerals indicate that generally metamorphic temperatures reached values in the range of 500°-600° C with pressure conditions corresponding to a low to moderate depth of burial.

The deformation associated with the tectonic event produced moderate to steeply plunging isoclinal folds which buckled the layered greenstone sequences into complex repetitions of the various rock types. Strike-slip faults associated with the folding formed zones of intense deformation, particularly along fold limbs. In addition to the above, the region was uplifted and some intrusion of diapiric domal granitoids and dacitic porphyry dykes occurred.

Diemals Formation and Marda Complex

Following the initial deformation, metamorphism and uplift of the greenstones, the region was subjected to a period of erosion. This erosive period was terminated in the northern region of the shire by the development of a sedimentary basin in which a thick (>1500m) sequence of sedimentary rocks, known as the Diemals Formation, was deposited. The rocks of the Diemals Formation, principally conglomerates, sandstones and siltstones, rest unconformably on the underlying greenstones.

Both overlying and interfingering with the Diemals Formation is a thick sequence of andesitic and rhyolitic volcanics consisting of lava flows, volcanic ash (pyroclastics) and associated intrusives.

This volcanic pile, which contrasts strongly both in composition and origin to the volcanics of the underlying greenstones, is known as the Marda Complex because it outcrops strongly immediately north of Marda.

Volcanics of rhyolitic composition constitute the greatest proportion of the rocks in the Marda Complex. They occur mainly as thick sequences of mid-grey siliceous welded

tuff in which angular and rounded fragments of rhyolite and pumice lie embedded in a glassy groundmass. In contrast to the rhyolites, the andesitic lavas are mainly represented by individual flows consisting of a fine grained, often porphyritic dark-grey rock which characteristically forms a thin reddish-brown skin when weathered. Radioactive dating of the rocks from the Marda Complex suggest that they originated from volcanic events that took place about 2600 million years ago.

Soon after their formation the original rocks of both the Diemals Formation and Marda Complex were folded and metamorphosed by a further series of tectono-thermal events which were dominated by active intrusion of large domal granitoids. As a consequence of these events the original siltstones and sandstones of the Diemals Formation were largely altered to quartz-muscovite-andalusite schists and quartzites respectively. In the conglomerate beds the pebbles, which consist mainly of jaspilite and banded iron formation, remained largely unaltered by the metamorphism but the enclosing matrix became schistose. Although the volcanics of the Marda Complex have been folded by the tectono-thermal events, metamorphism has generally been confined to a slight recrystallization of these rocks, and as a consequence, the original volcanic textures have usually been preserved.

The tectono-thermal events described above also refolded the underlying greenstones and further deformed them to their present arcuate configuration around granitoid margins.

Granitoids

The bedrock underlying about 70% of the shire is granitic in nature and originated from a large number of domal granitoids which intruded the region at various times over a period dating from about 2.7 billion to 2.5 billion years ago.

The granitoids have been broadly grouped into two main types - syntectonic and post-tectonic, depending on whether granitoid emplacement occurred during or after the main phases of greenstone deformation.

The syntectonic granitoids are typically composite bodies which show a broad range in composition as represented by tonalite, granodiorite, adamellite and granite. They are thought to have intruded the region as predominantly solid diapirs during the main phases of greenstone deformation. The diapiric nature of these granitoids is indicated by their conspicuous ovoid shape and the manner in which the greenstones have become flattened into arcuate belts around dome margins. These margins are usually strongly sheared and there is a distinct absence of cross-cutting igneous contact zones. The rocks forming these granitoids normally display gneissic, foliated or lineated textures which match those in the neighbouring greenstones suggesting that both rock groups experienced similar and contemporaneous deformational conditions.

The syntectonic granitoids are thought to have been derived by remobilization of portions of the ancient pre-greenstone gneissic crust, particularly those portions of that crust which represented pre-greenstone granitic intrusions.

The post-tectonic granitoids have a predominantly adamellitic composition and intrude the banded gneisses, greenstones and syntectonic granitoids. In contrast to the older granitoids, these younger bodies have irregular but sharp intrusive contacts which

show good evidence of high grade contact metamorphism and no consistent conformity to the regional structural trends.

Rocks comprising these granitoids have predominantly magmatic textures and are medium to coarse grained. In some cases, such as at Caroling Rocks and Retreat Rock, the texture is porphyritic with feldspar phenocrysts reaching about 20mm in size. Phenocrysts within these granitoids are commonly aligned along magmatic flow lines which were produced by slow flow of the magma prior to complete crystallization.

Some zones within the post-tectonic granitoids contain migmatites which are typified by numerous blocks of strongly foliated syntectonic granitoid enveloped within unfoliated post-tectonic granitoid. Good examples of these migmatites can be observed at Muntadgin Rock and Sandford Rocks. A common feature within both the syntectonic and post-tectonic granitoids is the occurrence of irregular and tabular bodies of pegmatite.

The intrusion of the post-tectonic granitoids represents the last major tectono-thermal event to affect the area. However, during the early part of the Proterozoic Era a relatively minor igneous event gave rise to a series of east-west trending unmetamorphosed mafic dykes of predominantly doleritic composition which cut across the Archaean basement.

Cainozoic Geology

Tertiary and Quaternary surficial deposits form a relatively thin veneer of sediments which obscure much of the Archaean basement.

The Tertiary deposits consist of lateritic duricrust, silcrete, pisolitic gravel and yellow to white sand. The lateritic layer forms an erosion resistant surface which has slowly weathered to produce both gravel and sand. The laterite was probably formed during the Early Tertiary when a higher than present average rainfall led to deep weathering of the underlying Archaean bedrock.

Quaternary clay, silt and sand in which calcareous nodules and quartz fragments commonly occur, form thin deposits in the drainage channels and on the gentle slopes of the broad valley floors. These deposits have been derived by sheetwash erosion of the elevated exposures of the lateritic duricrust and Archaean basement.

The salt lakes which currently form the central drainage system for the region are underlain and surrounded by saline gypsiferous clays and silts. Wind erosion of salts from the dried-out surfaces of some lakes has led to the formation of dunal deposits of gypsiferous sand and silt on lake margins. At Lake Seabrook and near Mt Palmer these deposits are of sufficient size and grade to have been commercially exploited.

Geological History of the Region

The overall geological history of the area can be summarised as follows:

1. Early Archaean sediments were deposited and then folded, metamorphosed and intruded by granitic magmas to form a gneissic basement that was then submerged beneath the sea.
2. Marine submergence of the gneissic basement was accompanied by igneous activity in which mafic and ultramafic lavas and inter-flow sediments accumulated on the sea

floor to form greenstone volcanic piles. These piles were contemporaneously intruded by comagmatic dykes and sills. After most of the volcanism had ceased a thick sequence of pelitic meta-sediments accumulated on the piles.

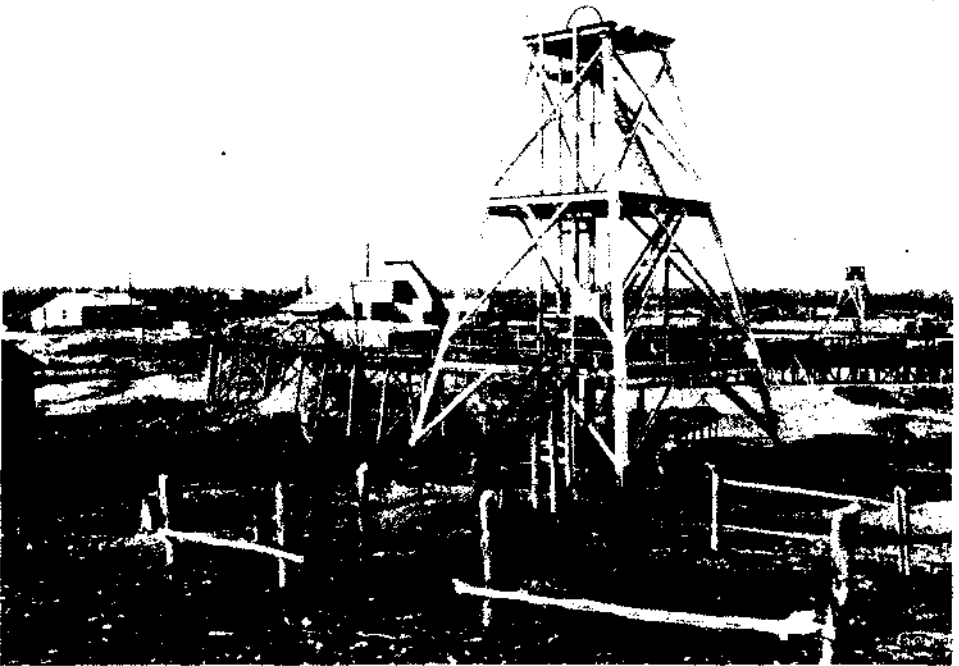
3. A major tectono-thermal event folded and uplifted the greenstones, pelitic sediments and underlying gneiss, and metamorphosed many of the lavas to amphibolites and pelites to schists. Intrusion of syntectonic domal granitoid diapirs accompanied this event.
4. Following a period of greenstone erosion, local down-warping of the crust produced basins in which sediments of the Diemals Formation accumulated on the underlying greenstones. Isolated centres of active felsic volcanism at this time gave rise to the felsic volcanics of the Marda Complex.
5. Felsic volcanism was followed by a renewed phase of tectono-thermal activity dominated by further intrusion of domal syntectonic granitoids. This activity folded and metamorphosed the Diemals Formation and Marda Complex and further flattened the greenstone sequences to form arcuate belts around granitoid margins.
6. The final phase of Archaean deformation and metamorphism of the region occurred with the widespread intrusion of the post-tectonic granitoid magmas. Deformation and metamorphism associated with these intrusions were largely confined to narrow zones along the granitoid margins.
7. This Archaean tectono-thermal activity is likely to have uplifted the region to form a major mountainous zone. Except for the intrusion of a series of minor doleritic dykes during the Proterozoic and the occasional covering of the region by shallow seas, the dominant geological processes which have operated in this region since the Archaean are weathering and erosion. These processes reduced the mountains to a relatively flat plain which, in the early Tertiary became lateritized and subsequently developed a lateritic duricrust.
8. Erosion and weathering of the lateritic duricrust both in the Tertiary and Quaternary Periods has produced the loose accumulations of sand, pisolitic gravels, silt and clay which form the characteristic surface covering found today over much of the shire area.

Mineralization and Mining

Gold and iron ore have been the most significant minerals produced in the Yilgarn shire. In addition, silver, which occurs as a minor impurity within the gold, has been extracted in small quantities as a by-product of gold production. Although minor occurrences of copper, nickel, lead and sedimentary uranium mineralization have been located, none of these deposits has proven to be commercially viable to date. Gypsum deposits which have accumulated in small dunes marginal to some playa lakes like Lake Seabrook, have undergone intermittent commercial exploitation.

Gold

Gold is thought to have been first discovered in the Yilgarn by a party of three men - Payne, Anstey and Greaves — in 1887, at a site near Eenuin about 30 kilometres to the north-west of Bullfinch. Shortly afterwards, Bernard Colreavy who was following up this find, located a significant deposit at Golden Valley. These initial discoveries were quickly



*Fig. 3: Fraser's Goldmine, Southern Cross, 1912.
(Courtesy, Geological Survey of Western Australia)*

followed by several others, the most notable being the prospect pegged by Hugh Fraser in the Yilgarn Hills at Southern Cross on 17 November, 1888, which, as Fraser's mine, (Figure 3) developed into one of the major gold producers of the region. These early prospecting successes led to the region being proclaimed the Yilgarn Goldfield in 1888. To 1978, this goldfield yielded about 77,000 kilograms of the precious metal from ores which averaged around 9 grams of gold per tonne of ore. Most of this production came from mines lying within the boundaries of the Shire of Yilgarn, the main exception being about 12,000 kilograms won from mines at Westonia, principally the Edna May.

In the ninety years, 1888-1978, the Yilgarn Goldfield experienced three peaks in gold production corresponding, firstly, to the early growth and development of the field up to the Great War; secondly, to the increased mining activity which followed a strong world-wide rise in gold price in the 1930s and the granting of a Commonwealth Gold Bonus; and, thirdly, to the operations of the company, Great Western Consolidated N.L., from 1952 to 1963 when a number of mines in the region, including Copperhead, Fraser's, Corinthian and Nevoria were re-opened and further developed.

A major surge in gold prices in 1978-79 led to renewed interest in gold mining and exploration throughout the goldfield with many of the old mines being re-opened. New ore treatment methods were introduced and further exploration for extensions of mineralization were undertaken. This more recent spate of exploration has been directed particularly towards finding deposits which are large, with relatively low average grade (1 to 2 g/t) and amenable to modern open-cut mining methods.

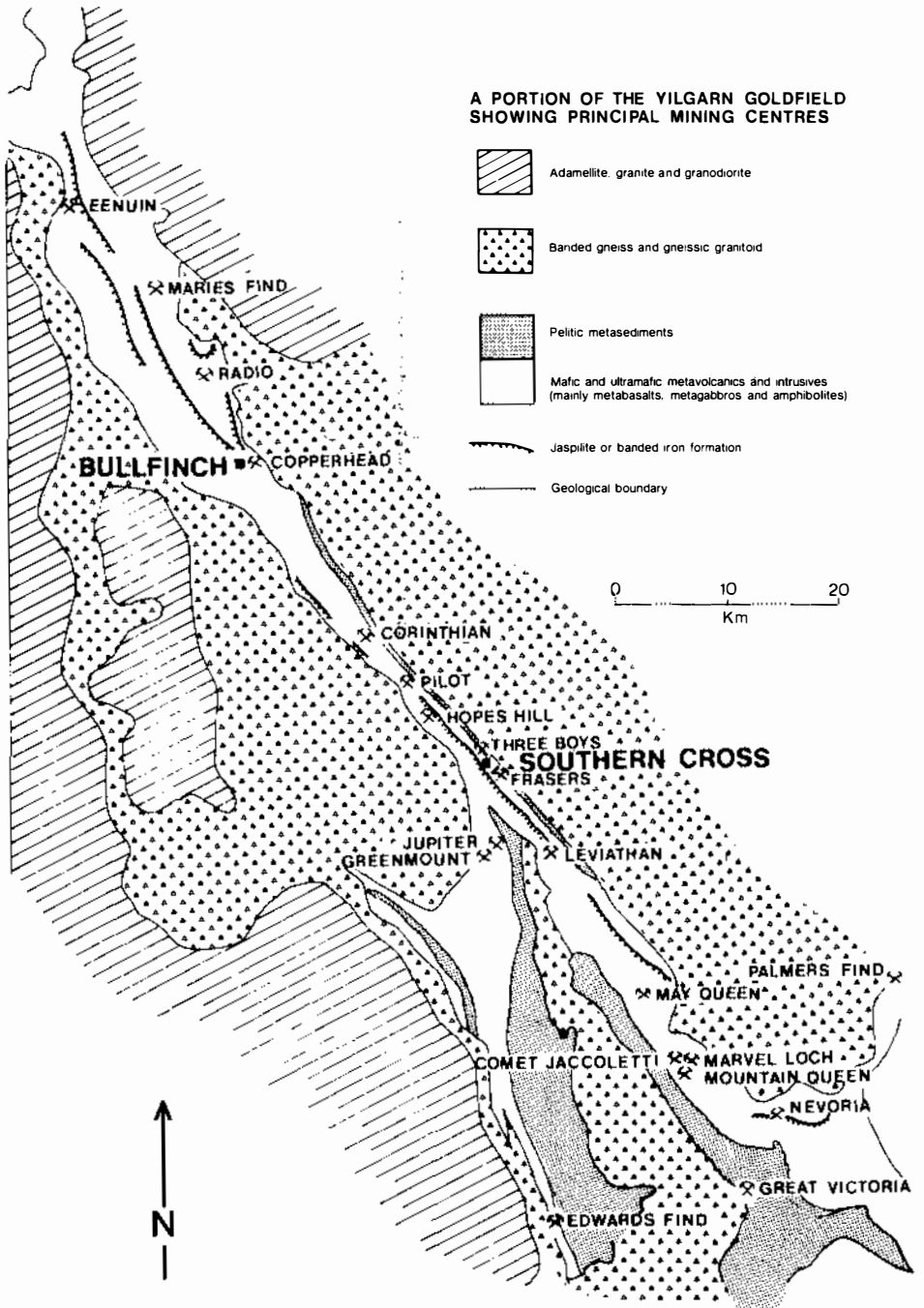


Fig. 4: Geological sketch map of portion of the Yilgarn Goldfield showing the location of principal mining centres.

The bulk of the gold produced within the shire has come from three major mining centres, (see Figure 4) namely Bullfinch (21,000kg) Southern Cross (10,000kg) and Marvel Loch (11,000kg). At Bullfinch, the principal individual mine was the Copperhead with a gold output of approximately 14,000kg over the period 1952 to 1966. Production at Southern Cross was dominated by the Fraser's deposit which yielded in excess of 9392kg of gold. By contrast, production centred on Marvel Loch has been more evenly spread over a relatively large number of smaller mining localities including Comet-Jacoletti (500kg), Mountain Queen (1000kg), the Marvel Loch lodes (1000kg), Great Victoria (1600kg) and Nevorla (2400kg). Two noteworthy gold producing centres which lay outside the major mining centres were Mt Palmer (5000kg) and Corinthian (1800kg).

Most of the gold produced in the Yilgarn Goldfield has been won from lodes which formed within relatively thin meta-sedimentary horizons, namely jaspilite, para-amphibolite and metamorphosed iron-rich pelites. These meta-sediments lie interbedded with metamorphosed mafic and ultramafic lavas and tuffs of the greenstone volcanic piles. The influence of these meta-sedimentary host rocks in localising mineralization within the greenstone belts is well illustrated by the occurrence of lines of mine workings along the outcrop trace of specific meta-sedimentary horizons. In the Parker's Range region for example, a succession of significant mines forms a linear pattern from the Centenary southward to the Dulcie, a distance of some 20 kilometres. Each of the workings in this line occurs in a relatively thin meta-sedimentary band consisting of para-amphibolite and jaspilite which lies interbedded within a thick sequence of metamorphosed basaltic rocks. A similar situation is also reflected by workings along the Kennyville-Glendower-Lenneberg line between Southern Cross and Marvel Loch.

Significant production has also come from lodes such as at Jacoletti, Great Victoria and Greenmount which developed within the thick pelitic meta-sedimentary unit that forms a major part of the greenstone belt south east of Southern Cross. Only a few mines in the Yilgarn, notably at Mt Palmer, appear to have had their mineralization concentrated directly within the meta-volcanics or their associated intrusives. This situation contrasts strongly with the pattern of mineralization at the Golden Mile, Kalgoorlie where typically the lodes are hosted by greenstone mafic igneous rocks such as basalt and dolerite.

Within any favourable meta-sedimentary host rock the gold mineralization is usually found to be localised towards or along a boundary with an adjacent meta-volcanic rock. Examples of this form of ore localization are well illustrated in the mines located between Hope's Hill and the Corinthian mine where consistently the mineralization in the jaspilite host rock is found adjacent to the contact between the jaspilites and the meta-basalts.

Within lode zones, the gold generally occurs associated with quartz veins which have filled fractures in the host rocks. These veins display a variety of forms from irregular to parallel fine stringers along the host rock foliation, to parallel or cross-cutting reefs localized in particular fold structures. At the Copperhead mine for example, the gold occurred mainly in association with anastomosing quartz veins that tended to be concentrated in the crests and troughs of drag folds which had developed on the limbs of isoclinaly folded jaspilite and dolomite horizons. The best ore shoots were generally located in complex collapsed folds where the rocks had undergone a high degree of fracturing to form favourable sites for the precipitation of ore minerals from invading hydrothermal ore fluids.

Various mechanisms have been suggested to explain the origin of the gold deposits within the Archaean greenstones. It seems evident that the gold was deposited in the lode zones by hydrothermal fluids at some time following the main phases of greenstone deformation and regional metamorphism. Recent studies suggest that the precious metal was originally brought to the Earth's surface in relatively low concentrations within the mafic and ultramafic volcanics. Initial increases in concentration of this gold may have been effected by the leaching action of hot sea-water and volcanic gases passing through porous volcanic rock units during episodes of submarine volcanism. The leached gold may have then been reprecipitated in a more concentrated form in favourable loci such as sulphide-rich sediments.

When the deeper portions of the pile underwent regional metamorphism in which rock temperatures reached 500 to 650°C, volatile substances such as water, carbon dioxide and sulphur together with certain metallic elements like gold, silver, copper and lead, were driven out of the recrystallizing rocks as a hydrothermal fluid. This fluid migrated upward through the volcanic pile carrying with it the gold dissolved in the form of gold sulphur complexes.

Towards the upper portion of the volcanic pile, fracture zones that formed during folding and shearing, provided suitable pathways for such migrating fluids. Within these fracture zones, precipitation of the gold and associated minerals was induced by coincidental changes to the physical and chemical condition of the ore fluid, brought about by circumstances such as a drop in fluid temperature say to a range between 300 and 400°C in conjunction with the flow of the fluid through an iron-rich host rock such as a banded-iron formation or an iron-rich meta-sediment. Under these conditions the iron in the host rock may have reacted with the sulphurous ore-fluid to precipitate both the gold and its ubiquitous accessory mineral pyrite to form the gold-bearing lodes.

Where the upper portions of the lodes became oxidized through the deep and intense weathering that was associated with regional lateritization over various time intervals since the early Mesozoic, the oxidized portions of the lodes became even further concentrated in gold content through secondary enrichment processes. This enrichment occurs because weathering tends to remove, in solution, much of the rock material enclosing the gold, thereby leaving behind a concentration of the relatively insoluble minerals such as quartz, gold and iron-oxides.

Although gold is generally very stable under normal weathering conditions it appears that under lateritization conditions the oxidation and hydrolysis of iron minerals such as pyrite can lead to the generation of acid chloride solutions which are capable of dissolving and transporting gold over short distances. Gold remobilized in this manner can be reprecipitated elsewhere in the oxidized zone and may account for the broader and more even dispersion of gold found in some of the lateritized layers overlying lodes than in the lodes themselves. Such an explanation may apply at the Great Victoria mine where high gold values occurred in the surface lateritic ironstone cap for distances of up to 100m laterally from the lode zones. Remobilization and reprecipitation of gold during oxidation could also account for the occurrence of paint-gold found coating fracture surfaces in oxidized regions of mines as recorded in the Copperhead mine at Bullfinch. Oxidation of accessory sulphide minerals has also helped to free the gold grains from any enclosing mineral matrix, a factor which significantly enhances gold recovery during ore treatment.

Although the average grade of ore won from the Yilgarn Goldfield up to 1978 was approximately 9 grams of gold per tonne, there were however, some marked variations in both the grade and quantity of ore produced. This is well illustrated by a comparison of the production records to 1962 of the Radio and Corinthian mines which reveal that the former mine was able to produce 1997kg of gold from only 44,479 tonnes of ore indicating a high average grade of around 45 grams to the tonne. In contrast, the Corinthian was a much larger mine than the Radio in that it produced about six and one half times more ore (289,897 tonnes). However, due to the comparatively low grade of this ore (about 6.4 grams gold/tonne) the amount of gold metal actually recovered was only 1840 kilograms, that is, slightly less than that produced from the Radio.

During the early development of the goldfield, mining was generally confined to the oxidized portions of lodes where secondary enrichment associated with oxidation had increased the gold content of the lode zone to mineable grades and also rendered the ores amenable to gold extraction by the treatment methods in practise at that time. Gold in these ores was relatively coarse grained, free milling and generally free of sulphides. Where mining followed the mineralization below the oxidized zone, the gold was found to be in lower concentrations, more erratically distributed and of finer grain size than in the oxidized zone. In addition, the gold mineralization here was generally associated with sulphides, particularly pyrite and pyrrhotite, and commonly with arsenopyrite, stibnite and galena occurring as minor accessory gangue minerals.

As a consequence of the oxidation process, the gold ore mined from shoots within the oxidized lode zones tended to be a porous gold-bearing mixture of vuggy quartz veins, haematite, goethite-limonite, clay minerals and irregular fragments of partially weathered host rock.

Many of the mines in the region have been worked by a combination of both surface and underground mining methods. (Figure 5). The basic pattern of underground mining, which involved shaft sinking, the development of cross-cuts and drives, and then the selective mining of ore shoots within the lode zones by stope development, has been followed throughout the history of the goldfield. Nevertheless, significant developments occurred over the years in terms of the amount of heavy manual labour required, the efficiency of drilling and blasting, and the implementation of safer mining practises.

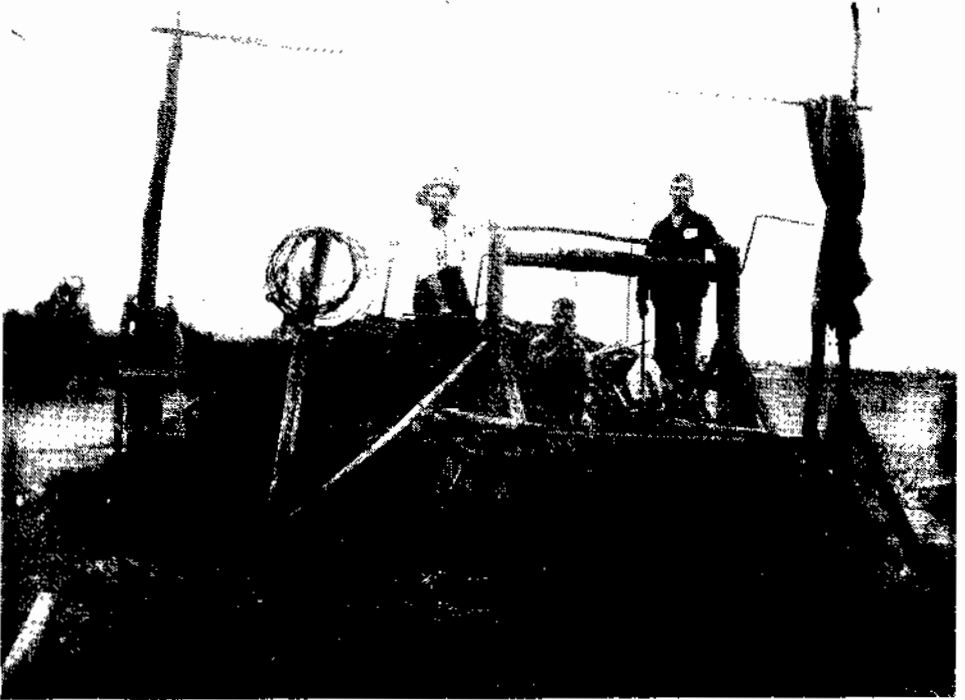
The general method used to advance drives, cross-cuts and stopes was to drill a pattern of holes into the rock face to about 1.5m depth using either a hand drill or compressed air driven machine drill. Explosives such as blasting gelignite or gelatine dynamite were placed into these holes and the charges fired. The resulting explosion would advance the rock face about 1.3m and provide a pile of broken rock to be loaded into skips for transport to the shaft for hoisting to the surface.

The mechanical rock drills used in the early large mines were very heavy and required solid bars to be wedged between the floor and back of the mine to help stabilise and support the drills. These bars needed to be dismantled and reset for each new drill hole, a task which was both laborious and time-consuming. The introduction of lighter hand held jack-hammer and air leg combination drills around the 1950s provided greater manouverability for both miner and drill. The early drill steels generally ranged in size from 44.45mm (1¾") diameter and 3.048m (10') long to 82.55mm (3¼") diameter and a length of 1.524 m(5'). The steel bits had either a cruciform or chisel profile and required

regular sharpening. This task was generally undertaken by hand at the mine surface. Where mining occurred in hard rocks, excessive bit wear forced miners to make frequent pauses in drilling in order to replace the worn bits with sharpened ones. This problem was overcome in the more modern mines such as the Copperhead through the use of hard tungsten-carbide tipped drilling bits.

Work underground in the early mines was physically demanding because the broken ore was usually bogged by hand into the skips which were then pushed manually on narrow gauge rails to the main haulage shaft. In the major post-World War mines small mechanical bidders (loaders) were used to "muck out" or load ore into skips that were hauled by battery powered locomotives.

Where the ore shoots were steeply dipping and both the hanging and footwall rocks strong, the shrinkage stopeing method was often used because of its safety and operational simplicity. In shrinkage stopeing, the ore broken from the back (roof) of the stope falls to the stope floor to become the working platform for further development of the stope. To maintain the stope floor at a convenient working level about one third of the ore broken each shift is drawn off at the bottom of the stope, loaded into skips and hoisted to the surface. When all the ore to be mined from such a stope has been broken, the stope is then emptied. Ventilation and access to such stopes for miners and equipment is generally provided by timbered man-ways placed at the stope ends. Open stope mining using both overhand and benching techniques were also employed. Where the ground had a tendency



*Fig. 5: Prospecting shaft, Southern Cross, 1912.
(Courtesy, Geological Survey of Western Australia)*

to be unstable, pillars of ore or support timbers such as square set or stulls were often left in the stopes to help prevent the stope roof or walls from collapsing. Another method used to support the stopes involved filling the stopes with waste rock material derived from mine development work or mill wastes. At Fraser's mine for example, the crushed wastes (tailings) discharged from the original gold amalgamation plant were used underground for this purpose.

In many of the early mines, near surface lodes, especially the larger deposits, were extracted from shallow but steep-sided open cuts which rarely penetrated deeper than about 15m. Larger pits, such as those developed in the 1950s at Bullfinch, were unable to be dug by the earlier miners because neither heavy earth-moving equipment nor high power explosive technologies were available until after the World War. The ore broken within many of the early open cuts was actually removed by channelling it downward through ore passes constructed in the pit floor. These connected to an underground drive passing below the pit. Ore drawn from the bottom of the passes could be loaded into skips which were pushed to the main haulage shaft for hoisting to the surface. Open pits in which the ore is transported from the pit via underground methods, as described above, are generally known as glory holes.

With the advent of heavy earth-moving equipment and modern drilling and blasting techniques after the World War, open cuts could readily be made wider and deeper. In addition, relatively cheap bulk road transport operations could be mounted for moving ore to the mills or overburden to the mullock dumps.

In the early stages of development of the Yilgarn Goldfield the extraction of gold from the ore was restricted by the absence of abundant fresh water. Salt water was, however, generally very abundant in the mines, particularly those situated near the margins of salt lakes. In the case of Fraser's South Extended, large pumps were required to remove 1,305,000 litres of water per day to keep the mine operational. In most cases the salt water could be used for crushing purposes but was unsuitable for cyaniding or for steam generating boilers. Where fresh water was unavailable, the ore was first crushed in stamp batteries, mixed with water to form a fine slurry and then passed over mercury amalgam plates. Any grains of gold which came in contact with the mercury formed a gold-mercury amalgam from which the gold was then recovered by heating the amalgam. This method tended to recover only the coarser grains of free gold from the ore. The presence of sulphide minerals in the ore lowered the gold recovery because they led to the formation of mercury sulphide in the amalgam which in turn inhibited the formation of a gold-amalgam. This factor also significantly increased costs of treatment through mercury loss from the system.

The tailings from the early mills and treatment works, usually contained unrecoverable fine free gold and/or gold enclosed in gangue minerals. These tailings were discarded on to tailings dumps or in some cases, back down the mine. Many of these old dumps have since been successfully reworked using more efficient treatment methods to recover most of the remaining gold.

When adequate supplies of fresh water were available, the crushed ore was generally subjected to gravity separation in which the gold bearing heavy mineral fraction was separated out and then passed to amalgamation plates for the removal of any coarse gold. The finer fraction was subjected to cyanidation, a process in which any exposed gold is

dissolved in an oxygenated sodium cyanide solution. This process effectively extracts the free gold from the remaining undissolved rock material which is then filtered off and dumped as tailings.

Recovery of the gold from the gold-bearing cyanide solution can be achieved by running the solution through boxes containing zinc dust. The zinc reacts with the solution to precipitate a fine black mud consisting principally of metallic gold in which impurities of zinc and silver occur. This mud is drawn off, treated with acid to remove some of the impurities and then smelted into gold ingots of about 90% purity. Ingots are sent from the mines to the mint for purification to "pure" gold of 99.5% gold content.

Another method for gold recovery from the cyanide solution, which has been adopted by most of the currently producing mines, is called the carbon-in-pulp method. This method involves adding carbon granules of a known diameter to the mixture of ground ore (pulp) and cyanide solution. Gold-cyanide ions formed by the interaction of the ore and cyanide solution are absorbed on to the carbon granules which together with the ore grains are kept in a constant state of agitation in the cyanide solution by air bubbles that are blown through the mixture. Following a period of agitation, the gold-bearing carbon grains, which are significantly coarser in grain size than the pulp, are sieved (screened) off and sent to a desorption tank where hot caustic cyanide solution is used to strip the gold from the carbon. The carbon is then recirculated to the cyanide-pulp mixture to pick up more gold. The gold-bearing stripping solution is sent to an electrolytic cell in which the gold metal is deposited on to a wire wool cathode. The cathode is later dissolved in hydrochloric acid and the gold recovered for further purification.

To enable unoxidized sulphide-bearing gold ores to be profitably mined, many modern treatment plants first concentrate any sulphides by flotation and then eliminate the sulphur by roasting the concentrate. This converts the metal sulphides to metal oxides and eliminates the sulphur as sulphur dioxide gas.

Currently, heap leaching of lateritic and oxidized gold ore is used to treat ore from a number of mines in the Yilgarn area including the Nevoria mine. This technique involves the construction of a sealed leaching pond into which about 18,000 tonnes of uncrushed or crushed and screened ore containing about 2.5 g/t of gold is dumped. A cyanide solution is distributed over the surface of the dump via sprinkler systems and percolates down through the ore and dissolves out any gold present. The gold-bearing solution is drawn off from the base of the leaching pond and the gold separated from the solution. The leach solution is recharged with cyanide and recirculated through the dump. This process is continued over a period of time until the gold values obtained in the solution fall below acceptable levels.

The Great Victoria at Burbidge and the Copperhead at Bullfinch are two major mines in the shire which have had a relatively long history and are illustrative of some of the main changes in mining and gold extraction techniques that have been practised in the Yilgarn Goldfield since its proclamation one hundred years ago.

The Great Victoria mine, which was re-opened in 1982, is centred on a gold prospect found by Charlie and Harry Burbidge in 1906. Mining at the Great Victoria has been mainly confined to the oxidized portions of three steeply dipping, north-westerly trending gold-bearing lodes which occur at the base of a sequence of metamorphosed pelitic sediments now represented by horizons of graphite schist, quartz-mica schist, banded

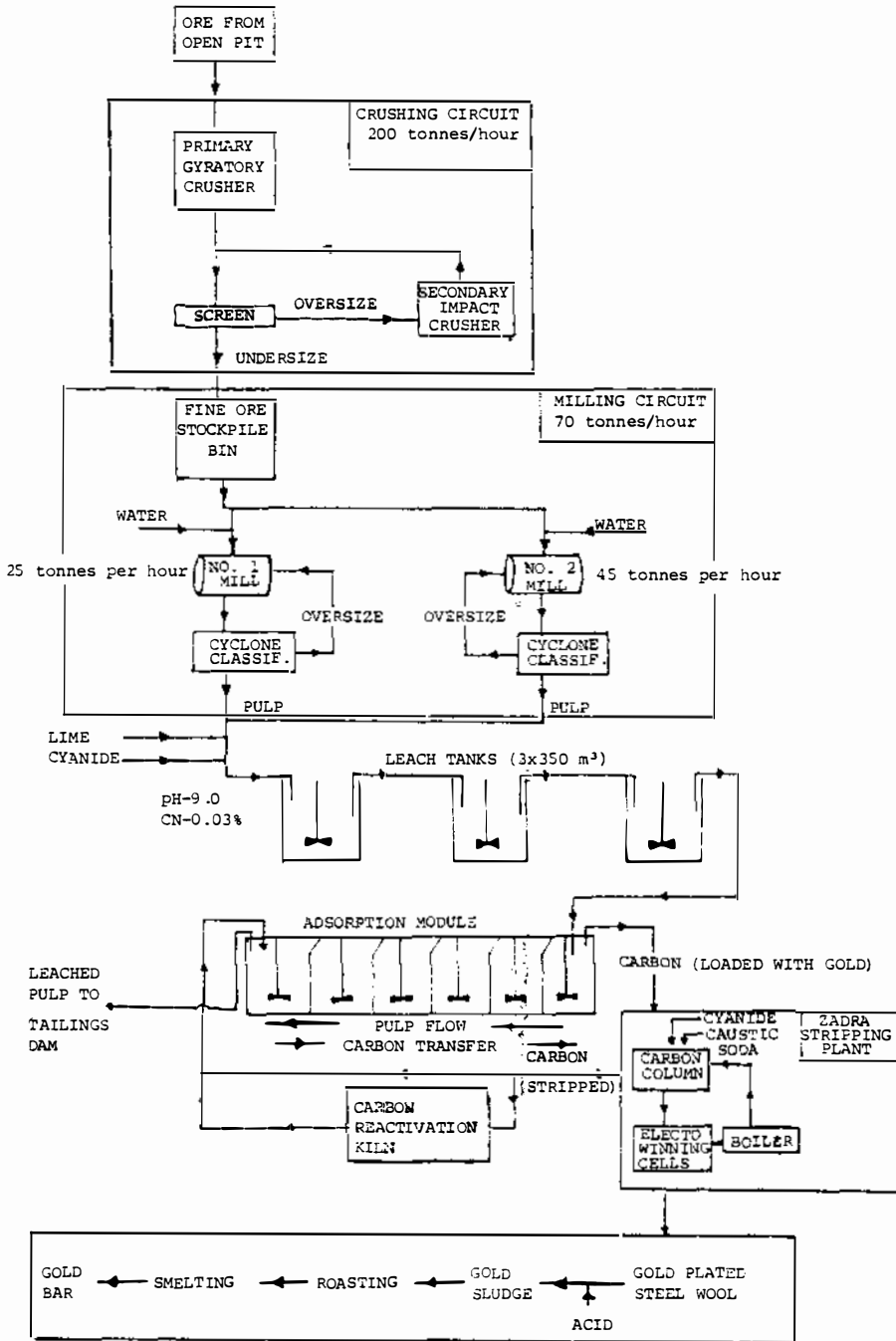


Fig. 6: Flowsheet showing the steps involved in extracting gold from gold ore at the Great Victoria Goldmine, Burbidge.
(Courtesy Great Victoria Gold Ltd)

quartzite, massive sulphide and a calc-silicate rock. An amphibolite representing a metamorphosed mafic lava flow forms the main footwall rock to the lodes.

Two of the lode zones at the mine developed within the massive sulphide horizon which, in its unoxidized state, consists mainly of pyrite, pyrrhotite and magnetite. These lodes have lengths from 150 to 190m and widths from 15m to 30m. About 80% of the gold within these lodes crystallized in intimate association with the pyrite. The third lode with areal dimensions of approximately 100m x 10m has formed in the calc-silicate horizon and consists of a network of gold-bearing quartz veins.

Near the surface, oxidation of the sulphide-rich lodes has resulted in the formation of a 15m thick haematite-goethite ironstone capping averaging up to 8 g/t gold and extending laterally for distances of up to 100m from the lodes. Beneath this capping, gold values averaging about 3 to 4 g/t occur through the remaining oxidized portion of the lode zones. The gold in these zones is generally fine grained, free milling, evenly distributed and intermixed with porous to massive gossanous iron oxides (goethite-limonite), vuggy quartz veins and clay. The wall rocks adjacent to lodes have also been oxidized and consist of a mixture of iron oxides, clay minerals, sericite and quartz grains.

In the early development of the mine, before the Great War, much of the gold-enriched iron-stone capping above the lodes was removed via a steep-sided open cut or glory hole which extended down along the line of the lodes for a vertical depth of about 25m. Below this depth, ore shoots representing the richer portions within the lode zones were mined by underground stopes serviced by two major shafts, the deepest reaching a vertical depth of about 87m. Drives were run north-westerly parallel to the lode zone from cross-cuts established at levels about 31m, 50m, 75m and 87m depth from the surface.

Treatment of the ore during the early life of the mine consisted of crushing in a ten head stamp mill followed by amalgamation. These crushings produced in excess of 1150 kg of gold prior to the Great War. However, about fifty-five per cent of the gold present in the ore was lost to the tailings dumps because cyanidation was unable to be used due to a lack of adequate supplies of fresh water. The mine was worked sporadically between the Great War and the 1930s. Following this period a renewed interest in gold mining and the completion of a water pipe line from Marvel Loch to Burbidge led to the tailings being retreated by cyanidation in 1935. New crushings from the mine were commenced in the late 1930s but mining ceased again during the war years.

Currently the mine is being re-worked using modern open cut methods by Great Victoria Gold Limited. This company plans to develop an open pit with final areal dimensions of about 150m by 350m to encompass all three lodes and enable mining to proceed to a vertical depth of approximately 60m.

A modern ore treatment plant has been established at the mine site with a through-put capacity of 500,000 tonnes per year. Ore treatment here involves crushing and grinding followed by cyanidation and carbon-in-pulp gold separation methods as outlined in the flow-chart shown in Figure 6. Water for these operations is provided from the company's own water boreholes.

The Copperhead mine at Bullfinch, which was extensively worked by Great Western Consolidated N.L. from 1952 to 1963, became both the largest producer in the goldfield and the mine which followed the ore to the greatest depth. Over the period 1952-1966 this mine produced 14,243kg of gold from 3,373,163 tonnes of ore. In addition, about 6400kg

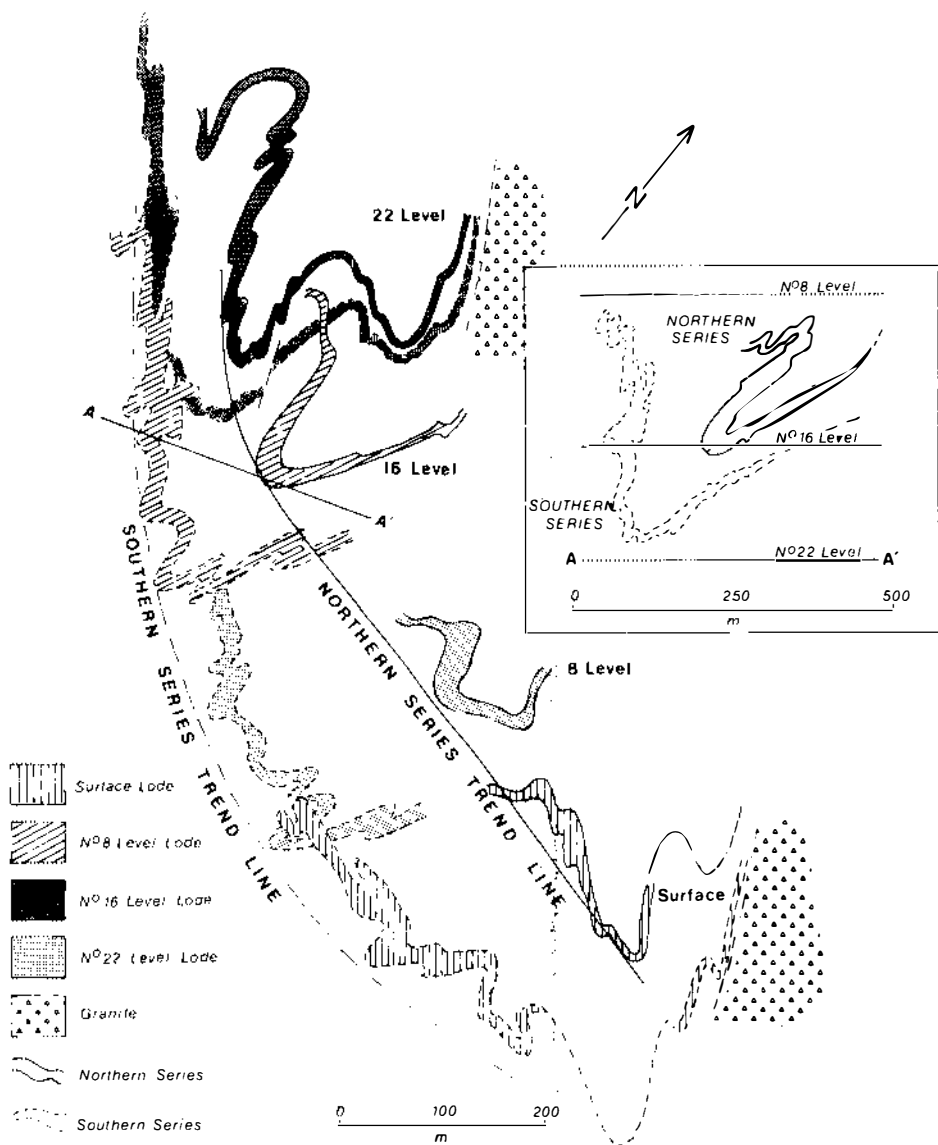


Fig. 7: Generalised composite plan and cross section of portions of the Northern Series and Southern Series lodes at the Copperhead mine, Bullfinch. (After Williamson and Barr, 1965)

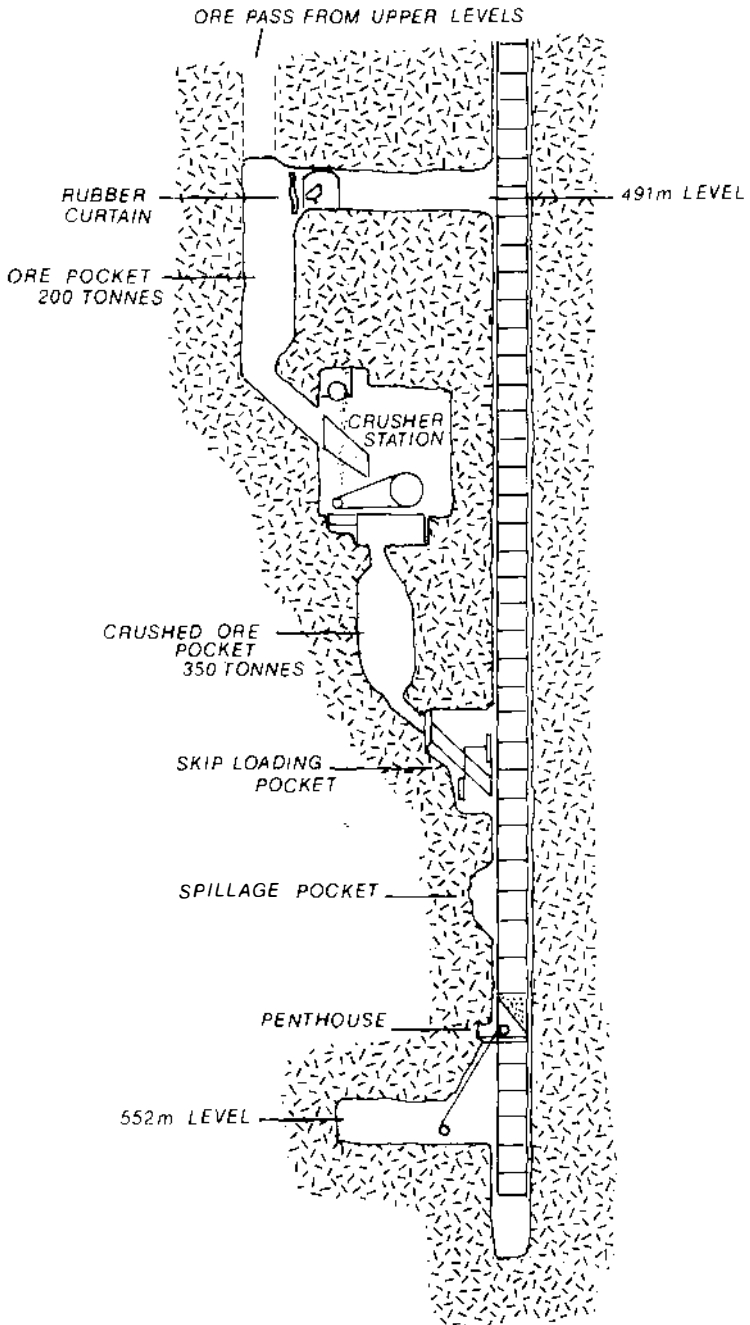


Fig. 8: Longitudinal section of a portion of the Copperhead mineshaft, Bullfinch, showing the location of the underground crusher.
(After Woodcock, J. T., 1956)

of gold were won from this mineralized zone principally over the period from its discovery by the Doolette Syndicate in 1909 to temporary cessation of mining activity in 1921.

At the Copperhead the gold occurs in two distinct west to north westerly trending lode zones that lie sub-parallel to each other and are separated by about 200m of barren rock (Figure 7). The northern lode occurs within a 7m wide dolomitic bed whereas the southern lode resides within a 3m to 6m wide jaspilite horizon. Both the jaspilite and dolomite horizons are themselves bedded within a thick sequence of barren ultramafic schists which were formed by the metamorphism of greenstone mafic and ultramafic volcanics.

The gold found in the unoxidized portions of the lodes below 60m depth, formed as free gold within a system of interlacing and anastomosing quartz veins that invaded fractures in previously folded host rocks. The best ore shoots were located along the crests and troughs of collapsed drag folds where rock fracturing was most intensive. These shoots generally pitched north westerly with angles that averaged around 45°. The gold mineralization was accompanied by the sulphides pyrrhotite, pyrite and to a lesser extent, galena. These sulphide minerals, particularly pyrrhotite, were most prominent in the jaspilite ores of the southern lode.

The occurrence of two separate lodes at the Copperhead resulted in the development by Great Western Consolidated N.L. of two separate open cuts to extract the oxidized ore. Each pit was mined to about 45m depth with benches cut at 12m intervals with batter angles between 55° and 70°. In the pits, the ores were broken by blasting along 14m blast holes drilled on a 3.7m x 3.7m grid. The broken ore was loaded by power shovel on to 12 or 14 tonne trucks which moved out of the pit along haulage roads with a 1 in 10 gradient.

This company's underground mining operations on both the northern and southern lodes were serviced mainly by a modern five compartment rectangular shaft with cross section dimensions of about 8.5m x 2m and vertical depth of about 570m. Levels were constructed at about 61m intervals. Construction of this shaft was commenced in 1950 and it replaced several shallower shafts which had been in use at various times during the earlier history of the mine-site. Some of the older workings such as a 1.8m x 1.8m inclined shaft that went to a depth of about 125m were refurbished and used in the modern Copperhead mine for ventilation and general mine access. Workings in the mine actually extended to a depth of about 180m below the base of the main shaft. Access to these deeper workings was provided by an inclined internal shaft which ran from a level at 518m depth to a level at 670m depth.

The underground mining method employed at the Copperhead by Great Western Consolidated involved shrinkage stoping in those places where the lodes were narrow and possessed both a steep pitch and dip. Where the ore blocks were wider and possessed dips in the range 40° to 45°, sub-level benching was used. Overhand open stoping was sometimes used in zones where the shoots were narrow and had moderate dips.

Ore was broken underground using AN "60" gelignite explosive placed in charge holes of about 2.54 to 2.85cm diameter that were drilled by hand held pneumatic drills fitted with tungsten carbide tipped chisel bits. The explosive was ignited by safety fuse with cartridge-type fuse igniters.

Broken ore was drawn from openings at the bottom of the stopes using mechanical

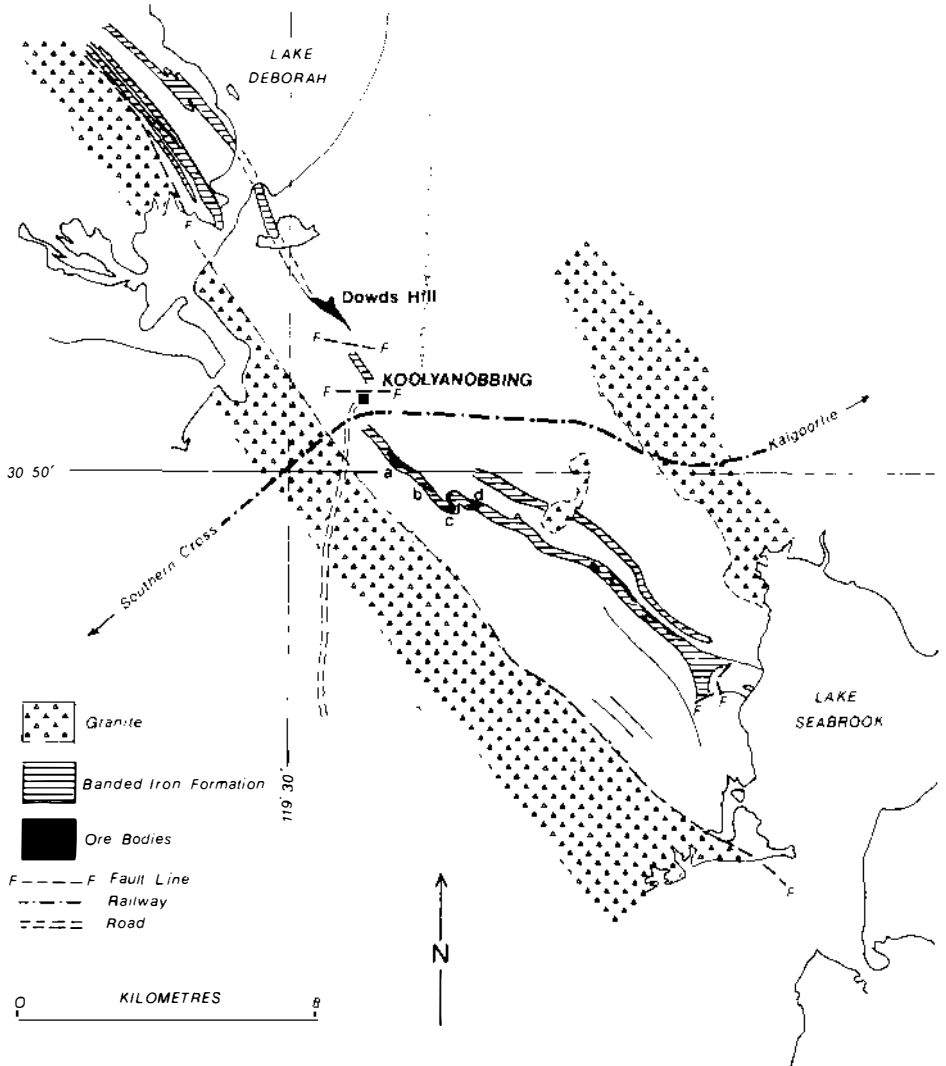


Fig. 9: Geological sketch map showing the location of the iron ore deposits at Koolyanobbing.
(After BHP Staff, 1975)

boggers and loaded into automatic side-tipping, 1.87 cubic metre capacity Granby ore wagons for haulage by battery powered locomotive to ore passes. These ore passes fed an underground jaw crusher situated at a depth of about 500m from the surface (Figure 8). The crushed ore was then loaded into skips for transport up the shaft to the surface mill.

At the mill, ore from both the open pit and underground operations was put through a crusher prior to being ground in rod mills and ball mills containing a cyanide leach solution. The ground ore was then passed through a number of agitators which consisted of large vats that mixed the rock pulp with the cyanide solution. Agitation and leaching were enhanced by blowing air through the pulpy solution. The gold-bearing cyanide solution was filtered from the rock pulp and zinc dust and lead nitrate added to precipitate the gold. This precipitate was first roasted in a wood fired muffle furnace and then smelted in a rotary oil-fired furnace. The gold produced was then remelted and cast into 15.55 kg (500 ounce [T]) bars which assayed 73% gold, 24% silver and 30% base metals.

Iron

Iron ore bodies which have formed within the banded iron formations of the Archaean greenstone belts occur at a number of localities throughout the shire such as near Bungalbin Hill, Mt Manning and Koolyanobbing. The major deposits are located in the northwest trending Koolyanobbing Range between Lakes Seabrook and Deborah (Figure 9). Although the Koolyanobbing deposits were first discovered in 1887, it was not until 1950 that large scale extraction of the estimated reserves of over 50 million tonnes of ore, averaging 61% Fe, was initiated with the establishment of an open cut mine at Deposit A. In 1967, production commenced at Dowd's Hill, the largest of the deposits. Over 20 million tonnes of ore was extracted from this mine until it ceased operations in 1983.

The Dowd's Hill deposit which extended over a strike length of 900m and was up to 300m wide, consisted of a mixture of iron oxides in a variety of forms, namely hard, massive goethite; coarse-grained friable haematite; massive fine-grained haematite; ochrous limonite and minor magnetite. This deposit appears to have formed in a zone where tight folding of the banded iron formation fractured the fold cores and hinges. These fractures provided suitable pathways for the penetration of mineralising solutions that simultaneously removed much of the rock's silica and replaced it with iron minerals.

Although the initial mineralizing fluids may have had a deep hydrothermal origin, it seems highly likely that much of the iron-enrichment observed here resulted from the precipitation of iron oxides from near surface groundwater. The groundwater probably became concentrated in iron as a result of its circulation through iron-enriched rocks such as banded magnetite-talc schist, quartz-magnetite-pyrite-siderite (iron carbonate) rock and massive pyrite with haematite, magnetite and graphite rock all of which have been found in the unoxidized zone immediately below the Koolyanobbing ore bodies.

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LEAN-TO

Nothing more real to me,
Leaning on images, patchwork
Of paddocks that splay across hills;

Flanks by the plough squared, patches of umber,
Shoulders well covered with gather of green,
And pallid the stubble where fallow it lies;

Quaver and hiss of the wind across hill slopes,
Murmur and surge of the creeping machines,
Voices from homesteads, dog barks and birds:

Stubble and stones with the dampsmell of mildew,
Good tang of silljon freshly upturned, and
Whiff of blue woodsmoke from road verges burning;

The fence lines dark-straggled or taut and defined;
Scribbled in huddle of valleys the streams;
And opened like furrows the ribbon of roads.

Nothing more real to me,
Standing on hill bank, than press
Of my homeland leaning on me.

Glen Phillips

Chapter 4

Soils, Flora and Fauna

From whom does it seal its soft scent away
in this thin peopled land?
Who was there to covet so the heavy sweetness,
held tight in twisted limbs;
distilling warmth and richness
from a stinting soil
into that most harsh, most delicate of senses?

Could it be a lure left for something finer
than our dull race,
come safe through centuries and dark hands;
till we, conservatively,
but surely, began uprooting
the last least chance that they might know?

Caroline M. Caddy, "Sandalwood",
Patterns, Summer 1977.

Soils

The Australian landscape is a very old one. Its main form in south-western Australia, it is suggested, was established by the late Jurassic to early Cretaceous eras, that is some 135 million years ago. If this is true, then it survived the drifting apart of the Gondwanaland continents and was not affected by the earth movements which formed the Alps and the Rocky Mountains. Much later it escaped the more drastic effects of the ice ages which in Europe and America ground away the old soils and laid down fresh materials on which new and more fertile soils could form. The soils of the Yilgarn are, consequently, weathered profiles and leached soils normally associated with the humid tropics rather than with the semi-arid conditions which now prevail. They are generally of low fertility due to deficiencies of nutrient elements, both major and minor.

There is a relationship between the soils and the land forms of the area. Soil surveys have shown that three recognised soil types occur.

The first, which cover about 20 per cent of the Yilgarn area, consists of the red loamy soils of the valleys of the ancient drainage system whose relics are the chains of salt lakes

TABLE 1
Soil nutrient status (parts per million) and reaction

Habitat	Soil colour	Soil depth (cm)	pH	P	NO ₃	NH ₄	K	Cl	Fe
1. VALLEY SOILS (red loams)									
(a) woodland									
(i) mallee	red	10	6.2	1	15	7	100	153	315
		100	6.2	2	na	3	298	781	145
(ii) salmon gum/gimlet									
no salt bush	red	10	8.0	4	46	6	431	64	476
		100	8.1	7	na	4	345	613	262
salt bush	red	10	8.5	5	76	7	401	380	271
		100	8.6	4	na	4	485	2626	460
(iii) morrell	red	10	8.3	3	37	13	494	122	618
	or grey	100	8.3	4	75	14	420	695	710
(b) salt lakes (Lake Deborah)									
(i) lake bed		10	7.7	26	96	19	926	69100	2020
(ii) samphire flats		10	8.3	5	na	3	263	3113	361
		100	8.2	12	na	2	438	10875	453
2. SANDPLAINS									
(a) deep yellow sands (lateritic soils)									
(i) heath	yellow	10	5.8	1	2	3	30	48	249
		100	6.2	3	3	4	16	21	242
(ii) mixed shrub	yellow	10	6.1	2	24	3	27	14	340
		100	5.6	3	na	4	26	17	272
(b) gravelly sands									
wattle thicket (wodjil)	yellow	10	5.6	1	4	1	77	43	187
3. SKELETAL SOILS (granite soils)									
(a) wattle shrub	red/brown	10	7.2	6	18	15	143	39	635
		100	7.1	1	8	8	121	17	619
(b) casuarina shrub	red/brown	10	6.1	2	na	3	33	6	309
		100	6.0	3	na	3	27	7	277
MISCELLANEOUS SOILS									
Granite outcrop	red/grey	10	6.3	3	4	3	72	17	186
Ironstone outcrop	red	10	7.2	16	52	9	330	71	610
Developed Farmland	red	10	7.6	16	20	6	326	32	280

* na indicates not analysed

Note: The soil depth sampled was the surface 10 centimetres unless otherwise stated. Soil nutrient data is empirical and may not fully represent the quantity of the element available to the plants. The nutrient requirement of native plants is unknown. The needs of cereals and pastures are known. However, the availability of nutrients to them depends on rainfall and soil reaction (pH). A concentration of 30 to 35 parts per million of available phosphorus (P) would be necessary for crops not to require additional fertilizer. Potassium (K) levels of below 100 parts per million mean a potential deficiency exists for cereal crops and pastures, but low rainfall conditions rarely allow symptoms of deficiency to develop. Soil acidity and alkalinity (pH) present in most soils listed are within the range for normal growth of crops and pastures. Nitrate (NO₃) and Ammonium (NH₄) levels above indicate potential adequacy of soil nitrogen for crops and pastures. Any soils containing chloride (Cl) concentrations over 450 parts per million are considered to be saline soils and unfit for crops and pastures. Iron (Fe) content below 200 parts per million indicates a high leaching rate while above 800 parts per million much phosphorus is bound and made unavailable to the vegetation.

seen today. These may overlie decomposed granite, clay or greenstone and are usually of a uniform - textured profile with some organic material present in the surface 30cm. They are calcareous in nature with relatively high fertility levels and often have a high salt (chloride) content, the carbonate and salt having been leached from the old upper plateau soils (Table 1). Mostly the soils sustain woodland though, bordering salt lakes, there may be *Acacia* scrub or dense *Melaleuca* thickets present.

The second, which cover over 65 per cent of the shire's area, are the sandplains which are upland, plateau, lateritic soils. A laterite is a red soil containing aluminium and iron oxides with little sand owing to leaching under hot, moist climatic conditions. Occupying large areas of the arid interior of Australia, they developed on duricrust and overlie laterite profiles often with loose gravel on the surface when formed from laterite detrital material. Mostly they developed from old, strongly weathered, sandy material giving deep yellow profiles. These soils support mallee, shrubland and heath. They can sustain cereal crops and pasture after heavy fertilizer application.

The third type are skeletal soils which are shallow and overlie granite, greenstone or ironstone rocks. These skeletal soils vary from yellow-brown to red-brown and are variable in texture. Other outcropping soils (lithosols) are rocky, red or red-grey in colour and often relatively fertile compared with the skeletal soils.

All soil types vary in their soil acidity and alkalinity (pH). The shallow soils of the ironstone outcrops are neutral while those of granite origin are often slightly acidic. The yellow sands which support heath, mixed shrub and wadjil are acidic (pH ca 6.0), often becoming more so at depth. Except for the mallee wood soils which are acidic (pH 6.2), the woodland soils are very alkaline (pH 8.5) as the soils are calcareous.

Of the major elements needed by plants for good growth, phosphorus is the most deficient in the Yilgarn soils. The average concentration in virgin soils is only two or three parts per million. Even the salmon gum woodland selected by agriculture for its relative nutrient richness can only boast five parts per million. However, the ironstone outcrops and salt lake samphire flats are rich in phosphorus.

The nitrogen content of the soils was measured in terms of nitrate and ammonium ions. The former being present in much higher concentrations. The woodland soils of the valleys are reasonably rich in nitrate especially in areas close to salt lakes. Mallee woodland soil is low in nitrogen: in fact, of all the woodland red loams it is the least rich in soil nutrients. Once again the nutrient rich ironstone skeletal soils are high in nitrogen, particularly the nitrate source. The samphire flats on the fringes of salt lakes are by far the richest source of nitrogen with nitrate levels reaching almost 100 parts per million and ammonium levels a quarter of that value.

Woodland loams, even the mallee soils, are rich in potassium, while the sandplain contain much less of this macronutrient. The shallow granite outcrop soils are low in the nutrient but by contrast, ironstone outcrop soils contain high levels.

The micronutrients copper, zinc and molybdenum are required to be added to sand plain soil only for proper growth of cereal crops. There is very little difference in the concentration of the elements other than salt, down the soil profiles.

Salinity

Salt is deposited in these inland regions mainly in rainfall as dilute aerosols (suspended spray) from the sea, though some deposition occurs as dry fall with aeolian dust. Measurements at Merredin have shown annual salt deposition of 18 kilograms per hectare compared to 341 kilograms per hectare at Perth.

Only about 10 per cent of the salt content of the Yilgarn region is found in the salt lakes. The remainder, amounting to one million kilograms per hectare or more, is in the deep subsoils throughout the shire. These are deep (30 metres or more) zones of extremely weathered sandy clays. When exposed at breakaways they give rise to localised surface salinity. At present day rates of accession, the salts could have accumulated in a relatively short period, say, a few tens of thousands of years.

It has been shown in eastern wheatbelt areas that soil salinity is not necessarily related to proximity to salt lakes, but rather to the texture and structure of the soil and to the depth of the saline water table.

Generally, in low rainfall areas of Western Australia, lower salinity occurs in light soils such as those of the upland sandplains, and the red loam valley soils possess a higher salt content. This is because salts are more readily leached in sand than in the finer textured loams.

Rising water tables caused by the clearing of vegetation can result in the movement of salt to the soil surface. The critical depth of ground water is regarded as between 1.5 and 1.8 metres. Although the salination of farmland is not a great problem in the Yilgarn shire, such shallow watertables and associated salinity problems are being experienced in other wheatbelt areas.

It has also been found that the movement of water (and salt) upwards from a shallow water table can occur more easily in clay than in loam soils. The surface salinity can be prevented by controlled clearing. It is gratifying to know that clearing in the Yilgarn has had much less illeffect in this regard than in some other areas.

In sites where there is a problem, salinity can also be decreased by installing subsurface drainage structures, by retaining vegetation cover throughout the year, and by avoiding fallowing over summer months. Planting salt tolerant shrubs and grasses allows use to be made of salt land. These tolerant species include the bluebush (*Maireana brevifolia*) and various species of saltbush (*Atriplex* species), annual ryegrass (*Lolium* species) and *Puccinellia* species. They provide useful forage but have to be carefully grazed to maintain plant cover.

Vegetation

Australian vegetation and its fauna have interested naturalists since Europeans first visited Australia. This continent has the most heterogeneous and isolated plant kingdom on the earth, if not the most densely populated. About 8000 plant species have been recorded in Western Australia of which 3500 are from the South-West Botanical Province. A country with a similar climate such as South Africa would have double this number on half the area. Since the flora of the world is considered to number about 300,000 species, the State can claim two per cent of the total.

Botanically the Yilgarn is placed in the Western Mallee Province — a region in the

coastal zone of Australia referred to as the Eucalyptus sub-kingdom, as opposed to the desert, central Australian sub-kingdom. It lies in a zone intermediate between the eastern desert and the wetter western region. In this dynamic environment a variable flora has evolved under the strong environmental influences of infertile soils, drought and fire. The former factor is held responsible for the sclerophyllous (hard leaved) nature of much of the vegetation, though these adaptations also help in a tolerance towards or avoidance of desiccation. It is postulated that the major factor contributing to the occurrence of so many rare and localised plant species in the wheatbelt was the turbulent climatic fluctuation over the past few million years. The uneven availability of water caused the evolution of a large number of species and life forms which are able to co-exist.

A prominent characteristic of the sclerophyll flora is its brilliant display of spring flowers. This constitutes an apparent paradox for both flowering and fruiting are nutrient demanding — a commodity in short supply. In the harsh environment of the sandplain, few pollinators are available and a brilliant floral display may be required to attract them. Many fertilized flowers abort because of the nutrient demand of fruiting or the shortage of water.

Another peculiar feature of the Australian flora is the large number of species in each genera. Western Australia possesses about 300 species of *Acacia*, 170 of *Eucalyptus*, 160 of *Melaleuca* and 120 of *Grevillea*. No comparable situation occurs on any other continent. This indicates that the flora has evolved from a small range of source material. This speciation is particularly favourable in semi-arid transitional climate zones such as the Yilgarn, where there is a greater number of selecting factors, while permanently humid or arid zones favour evolutionary stability.

There is no doubt that fires started by lightning during summer storms have ravaged the Australian vegetation causing plants to become adapted to living with fire of various intensities and frequencies. They accommodate to, and have even come to rely on, this extreme environmental phenomenon in a variety of anatomical and physiological ways, for example, by developing underground lignotubers, thick bark and heat stimulated flowering. Fire is probably responsible for many of the vegetation patterns which now exist and there is no evidence as to the structure and composition that the vegetation would develop in its absence. Within the last several thousand years Aboriginal activities, particularly burning, have strongly affected the pattern of local vegetation. More recently the spread of European settlement with its variety of land uses including mining, grazing and agriculture has wrought enormous change in the vegetation of the shire.

The greatest loss in the last century has been woodland. Sandalwood was the earliest tree to be cut. Tracks left by the collectors have been followed by prospectors since the 1880s. Mining companies later cut the woodland for mining timber and fuel for boilers whilst mining greenstone areas. The goldfields water scheme also indirectly influenced woodland vegetation as timber was used in the boilers of the pumping stations. It is claimed that the onslaughts by miners and, later, farmers have been responsible for the felling of 40 million tonnes of timber in the district. The distribution of sandalwood is now much less extensive and large trees are rare. Cutting increased due to the ease of access to the area caused by the opening of the eastern goldfields railway — it reached Southern Cross in 1894. This resulted in a tremendous surge in the export of the wood to China. Some of the less successful miners turned to sandalwood cutting to earn a living, often

combining it with prospecting. There was another boom in sandalwood pulling after the Great War and during the Depression.

Extensive farming developed in the Yilgarn in the 1920s. After several fluctuations in the industry virtually all available areas of red loam soils west of the Highcliffe Hills — Parker Range axis were taken up and inroads were made into the sandplain soils. Further east the rainfall is too unreliable for farming. Apart from land clearing, human occupation has not modified the natural vegetation significantly in recent years though there is still some prospecting and mining. There is a long history of pastoral activity in the north near Mt Jackson and attempts were made to graze cattle and sheep in open range conditions in the south Yilgarn but these failed either because of lack of stock water or the ravages of dingoes. Generally it has been difficult to put the Yilgarn to pastoral use as the natural plant cover provides little or no suitable stock feed except to some extent in the vicinity of salt lakes, and these frequently contain poisonous species.

The Yilgarn vegetation is very complex but can be divided into three broad vegetation zones which are associated with the landforms and geology. The first is the sandplain country (part of the ancient continental shield of Western Australia) composed of, on higher ground, remnants of an old plateau with its mantle of mostly yellow sand and laterite. Outcrops of granite (Plate 11) are common where the laterite duricrust has been removed. These consist of large, flat, extensive, and mainly bare rocky areas or granite hills more than 30 metres high. The second zone is the broad shallow, gently sloping valleys separating the duricrust ridges and containing chains of salt lakes. The third less extensive zone comprises the greenstone belts, with older rocks not affected by the granite, some of which are gold mineralized. These north-west aligned belts are hilly with virtually no laterite but are frequently marked instead by abrupt ridges of banded ironstone.

Woodlands

On the red loamy soils of the valleys the Yilgarn supports a diverse mosaic of scant to extensive sclerophyllous woodland. It consists in general of an upper stratum of eucalyptus trees between 10 and 30 metres high in which the canopy cover is sparse. In these open stands of trees a regular pattern is often exhibited in which each eucalyptus occupies a distinct circular patch of ground beneath and around which all other trees have been excluded (Plate 1) due to the extensive shallow root system radially searching for moisture and nutrients.

In general a correlation between height and density exists in that the lowest woodlands tend to be the densest, and the taller more open. There is every gradation from low dense mallee to very tall stands over 25 metres in height, where trees are scattered. However, one may distinguish two broad classes: the mixed woodland 10-20 metres in height on residual soils; and the salmon gum woodlands of colluvial flats which exceed 20 metres. Trees in mixed woodlands tend to be irregularly scattered so that in places their crowns touch, while in other places they are widely spread. These woodlands consist of single or mixed formations. The most prevalent is the salmon gum (*Eucalyptus salmonophloia*)-gimlet (*E. salubris*) co-association. This system is joined or replaced by morrell (*E. longicornis*) near salt lakes and by wandoo (*E. wandoo*) on breakaways and on



Plate 1: Aerial view of salmon gum woodland showing regularly spaced trees.

the aprons of some granite outcrops. Rough-fruited mallee (*E. corrugata*) is common on stony rises with morrell on flats near greenstone hills.

Salmon gum-gimlet-morrell formations have generally three types of understorey. One consists of boree (*Melaleuca pauperiflora*) with a broombush habit which sometimes completely replaces woodland under more saline conditions. The foliage is dense and the ground cover depauperate (Plate 2).

The second type is very open and consists of various species of saltbush (*Atriplex* species, Plate 3), with large shrubs such as quandong (*Santalum acuminatum*), and *Hakea preissii* which occurs in the saltlake greenstone areas which are dominated by morrell. This tree is indicative of soils which are alkaline, and usually saline. Thirdly, in less salty areas, there is a mixed understorey of large shrubs with species of *Acacia*, *Eremophila*, *Olearia*, and *Melaleuca*, with some grasses (Plate 4).

The salmon gum-gimlet woodland includes an irregular mixture of the two dominant species carrying one of the three types of shrub understorey mentioned, though the pattern changes within a very short distance from one to another. The attractive salmon gum is easily recognisable (Plate 2) as the smooth bark is distinctively variable in colour from brownish pink at the end of summer to almost white in winter, usually with greyish-purple patches. The name is derived from the colour of the new bark which resembles the colour of cooked salmon flesh. It has a heavy, somewhat sickle-shaped, deep green foliage rich in oil glands with a crown of an umbrella-like appearance. When well spaced, the trees branch widely and provide good shade. The timber has been used for domestic structural purposes but will not withstand the ravages of termites. From the early days of agricultural

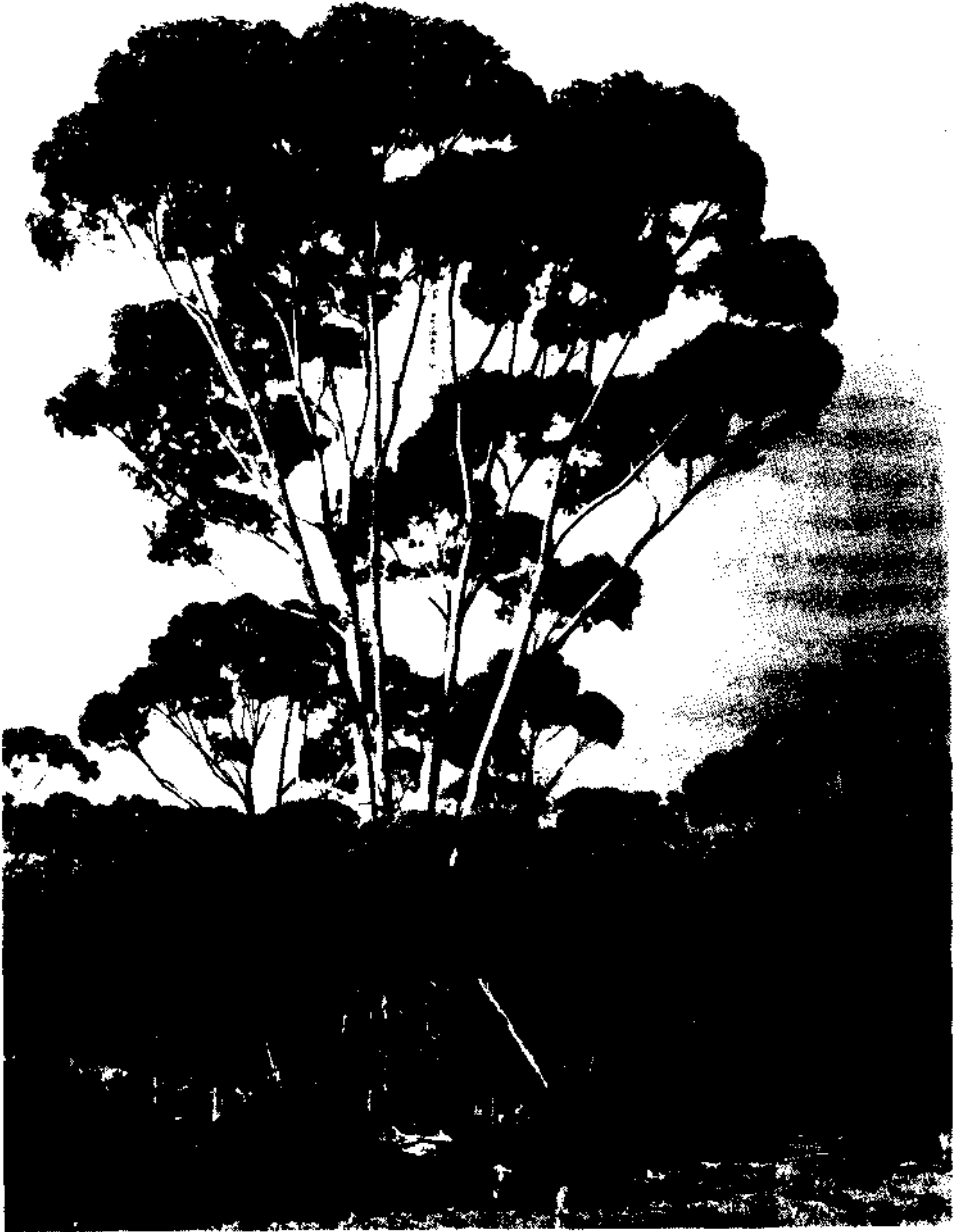


Plate 2: Salmon gum woodland, with boree understorey showing the "broombush" habit (Yellowdine).

settlement in Western Australia, salmon gum has been taken as an indicator of good quality loamy soil suitable for wheat growing. Where it is associated with gimlet the soil has a higher clay content. In the Yilgarn today the salmon gum is becoming rare except for roadside specimens and in isolated clusters retained for stock shade. Pure stands are characterised by the absence or paucity of mallees as an understorey, and by open low scrub which provides the ground flora.

After the salmon gum, the gimlet is perhaps the best known of the trees of the district. A smooth thin reddish-brown bark, and a fluted or spirally twisted trunk, especially in the young trees, distinguish the tree at a glance. The thin outer layer of bark when shed towards the end of summer reveals a sappy pale green, inner bark. When growing close together (Plate 4) the young trees have slender straight trunks and are used for rails and for poles. This timber is also susceptible to termite attack and older trees are frequently hollow as a result of termite activity. The foliage has numerous oil-glands which give relatively high yields of eucalyptus oil. The bark is rich in tannin and its action as a tanning agent is said to be rapid, but is of no economic importance.

The woodlands of the Yilgarn shire has been broadly described in the reports of the Biological Surveys Committee of Western Australia. In this study students of the Western Australian College of Advanced Education selected plots of 500 square metres to provide more detailed information. Comparisons of different vegetation types are presented in Table 2. Forty-three plant species were recorded on average in 500 square metre samples of salmon gum-gimlet woodland. Asteraceae (mainly everlastings) were the most common family with 25 per cent, followed by the Leguminosae (pea flowers and wattles).



Plate 3: Salmon gum/gimlet woodland with saltbush understorey (Parker Range).



Plate 4: Gimlet woodland with mixed understorey (Parker Range).

Few Proteaceae (*Banksia* species and *Grevillea* species) were present as they tend to favour sandy soils. Myrtaceae (*Eucalyptus* species and *Melaleuca* species) are also few in number but along with the Proteaceae and Leguminosae tend to be the most dominant plants if only of one or two species. Poaceae (grasses) are more common on loams and clays than on the lighter sandy soils.

TABLE 2

Number of species and percentage of aliens and important families per 500sqm.

Habitat	No. Species	Aliens	Myrtaceae	Proteaceae	Leguminosae	Asteraceae	Poaceae	Cyperaceae
Heathland.....	47	0	25	25	9	0	0	5
Shrubland.....	20	0	30	20	10	0	5	5
Mallee woodland.....	30	1	25	5	17	8	5	0
Morrell woodland.....	35	9	3	0	6	23	3	0
Salmon gum-gimlet woodland.....	43	5	3	1	8	25	8	0
Wandoo woodland.....	57	0	4	0	4	19	4	0
Ironstone outcrop.....	56	0	3	2	4	17	7	1
Granite Hills.....	70	6	3	6	3	19	3	3
Granite Exposures.....	44	2	11	2	4	16	9	9
Salt lake.....	31	5	4	1	7	24	5	0

Another woodland type often growing as a pure stand near salt lakes or on greenstone is the morrell. It can grow to 20 to 25 metres with a rough-barked trunk and reddish-grey smooth branches. The leaves are spreading, deep green and shining, rather broad, and covered with numerous oil-cavities. The floristics of the habitat are similar to that of the salmon gum-gimlet but with fewer species at the sites surveyed (35 per 500 square metres) and only half the number of grass species. There were nine introduced annuals present in sites surveyed at Parker Range. Close by, a pure stand of wandoo, however, possessed no introduced species but was rich with 57 different species. Again, few Myrtaceae and no Proteaceae were recorded per unit area and half the number of legumes were recorded compared to the salmon gum-gimlet stands. Characteristically of the woodlands, about a fifth of the species were everlastings, but there were few grasses. On the low Yilgarn Hills, the ridges of Parker Range and as far north as Mt Jackson, low woodlands of rough fruited mallee (*E. corrugata*) grow on stony ridges covered with shallow calcareous soils. It is never a large tree and is easily distinguished by the prominently corrugated bud and fruits. Present with the stands are melaleucas, eremophilas, and wattles, including jam.

There are scores of other isolated eucalypts present in the Yilgarn as well as pure and mixed stands of various type each, presumably, with its own physical and chemical requirements though of all the woodland soils tested the salmon gum-gimlet is the most fertile.

Mallee

Woodland found on less fertile soils includes stands of pure or mixed mallee eucalypts. Mallees three to six metres in height are common on sandplain south of Southern Cross but decrease in height as rainfall decreases northwards. Most mallees



Plate 5: Mallee woodland (South Carrabin).

grow where the top soil has a higher than average loam content. They also grow on banded ironstone hills and around some granite rocks to form low, open to closed (or dense) shrubland. The mallee has a spherical or flattened canopy with the leaves generally found near the end of branches (Plate 5). They are multi-stemmed with individual stems arising from lignotubers or swellings at the base of the stem or mallee root at or below soil level and bearing dormant buds. After fire the mallees regenerate from the lignotuber. Many eucalypts can exist in both the tree and mallee form, for example, redwood (*E. transcontinentalis*), york gum (*E. loxophleba*) and ribbon gum, (*E. sheathiana*). Tall sand mallee (*E. eremophila*) on the other hand is always a mallee. It is found on the margins of salmon gum woodland on sandy nutrient deficient soils forming open thickets; *eremophila* refers to the desert loving habitat of the species.

Most mallee eucalypts shed bark regularly. It often peels away in long streamers, providing shelter for geckos and other lizards. A particular example of this is the ribbon gum which sheds its bark in long ribbon-like streamers from the branches to the base of the stem. It becomes free except at the top and hangs from February throughout the winter in this fashion. The tree form is particularly susceptible to termites which eat out the heartwood in older trees. Young mallee shoots produce a wax or sugary exudate which attracts large numbers of insects, particularly ants. The flowers are also rich in nectar and pollen and serve as food for animals.

The floristics of the mallee woodlands surveyed (in the southern half of the shire) were related more to the heathland and shrubland than to the woodland in that the dominant family was the Myrtaceae. There were collectively few species and relatively few Asteraceae. However, they were similar to the woodland in having few Proteaceae. The unique floristic character of the mallee appeared to be the variety of legumes present. Structurally they looked like shrubland in that being frequently fired the trees (*E. eremophila*) were the same height or in two distinct strata.

Shrubland

The shrubland of the shire is very variable in floral structure, height and density. Its distribution is determined by elevation, climate and soil conditions. Wherever nutrient depleted, sandy, upland soils occur, tall or low, open scrub or dense shrubland dominates.

In order to appreciate the type of shrubland community it is necessary to indicate the main local vegetative systems (Figure 1). Such systems are a series of plant communities recurring in a catenary sequence or mosaic pattern.

Some boundaries between systems are quite clear. For example, vegetation on greenstone hills such as the Highclere, Yilgarn and Parker ranges is very different to that on bordering sandplain and broad valleys. Likewise, vegetation on banded ironstone hills and ridges such as Bungalbin is very different to that on the surrounding sandplains of Jackson. Boundaries which are not clear are those between adjoining sandplain and broad valley vegetation.

Vegetation Systems

The Jackson system in the more arid north comprises: fairly wide sandplains with laterite soils and wattle thickets (wodjil); shallow granite soils on the middle slopes with wattle scrub; and deep loams in the broad valleys carrying woodland. In the vicinity of salt

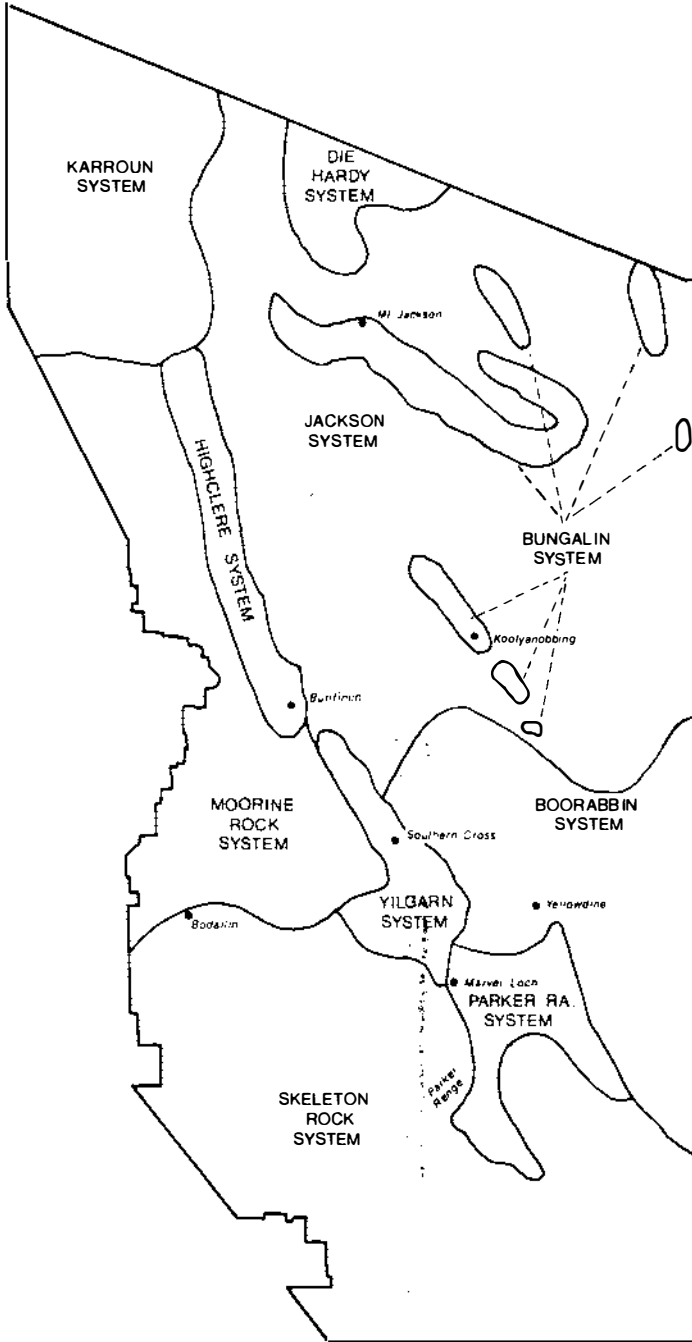


Fig. 1: Vegetation systems of the Yilgarn Shire.



Plate 6: *Acacia* in background with saltbush in foreground (Lake Deborah East).

lakes the soil may become sandy, in which case there is a return to wattle scrub, this time with a saltbush understorey (Plate 6).

The wattle thickets on the northern sandplain are of three distinct types which associate with one another in mosaic patterns. The simplest of these which occupies the most shallow soil (15 to 60 centimetres) is virtually a pure stand of dense *Acacia neurophylla* (1.5 metres tall) with sedges and pin cushions (*Borya nitida*) in the ground layer. As the soil deepens to 45 to 90 centimetres the thicket becomes taller (2.5 to 3 metres) and more mixed in composition. The dominant shrubs are numerous species of *Acacia*, *Casuarina* and *Melaleuca* most of which assume the broombush habit. This consists of numerous erect branchlets given off near the base which terminate at the same height forming a dense bush with a gently domed crown (Plate 7). Some small shrubs and sedges constitute a sparse lower layer. The third community in this series occurs where the sand is deepest (more than 90 centimetres) and exhibits a single-dominant association with the wattle, *Acacia resinomarginea* which may become almost a tree (three to six metres). The understorey species are those of the mixed thicket community though suppressed by *A. resinomarginea*. The wattle has a shaggy bark and long quadrangular phyllodes (like a leaf but structurally a modified leaf stalk) that contain resinous glands, and give the plant a dense crown. Wattle thickets on ironstone ridges (Bungalbin System) are less dense and dominated by *A. quadrimarginea*, a shrub which is not a broombush and reaches 1.5 to 2.5 metres in height. Around granite outcrops reasonably dense wattle scrub occurs, which is more or less absent in the Karroun System, being replaced by three type of thickets found in the Jackson System. In the south-western Moorine Rock System the *A.*

resinomarginea thickets are absent as the soils are generally more shallow and rainfall is higher. The dominant phase is the wattle-casuarina association with *Allocasuarina campestris* replacing *A. acutivalvis* and *A. corniculata* and there are more dwarf shrubs species than are present further north. The thickets are two layered, with a dense upper stratum usually 2 to 2.5 metres tall and a suppressed and sparse lower layer of small shrubs.

Where long unburned, as today in some roadside strips, the sandplain mallees outgrow the other shrubland species reaching 4.5 to 6 metres in height. The sandplains of the Muntadgin System occupy more than 50 per cent of the surface and consist of dense thickets rarely exceeding 2.5 metres in height. In composition they are the same as the adjoining Moorine Rock System where they are more extensive. In the deeper sands there is virtually no change in composition similar to the situation in the Moorine Rock System but unlike the Jackson or Boorabbin Systems. The edge of the sandplain in the latter system is sometimes marked by a distinct breakaway. On the sandplain of the Boorabbin System there are now two distinct vegetation units, differentiated by depth of sand. On the shallower sands occur broombush thicket with similar components to that of the two previous mentioned systems with wattle-casuarina associations and the mallees *E. burracoppinensis* and *E. leptopoda* as the most conspicuous elements. It is a single-layered community of relatively simple floristic composition occurring on the edge of the sandplain. As the soil becomes deeper it grades gradually into scattered tall shrubland with many low shrubs. There is never any definite boundary between them. Dominants of dense tall shrublands, such as *Allocasuarina acutivalvis* and *A. corniculata*, are rare or absent on the heathland. Various species of *Acacia* and *Melaleuca* are co-dominant with



Plate 7: *Melaleuca*, *Acacia* thicket showing broombush habit.

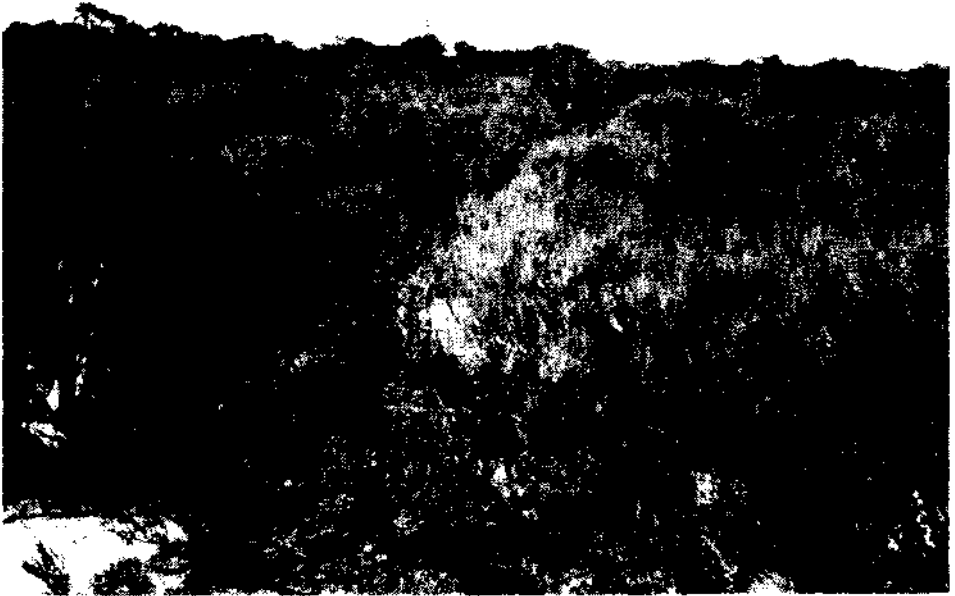


Plate 8: *Acacia quadrimarginea*, *Allocasuarina corniculata* (with round fruits), *Melaleuca uncinata* thicket (Ghooli). Mallee in background.

the casuarinas, all having the same broombush pattern of growth. The height of the vegetation depends largely on the time elapsed since the last fire, up to five metres being possible when no burn has occurred for at least 75 years (Plate 7).

Fires occur frequently in thickets, destroying the foliage which regenerates from seed. Casuarina and melaleuca fruits generally hold their seed for five to seven years after maturity, though a severe drought can shorten this period to two to three years. Following fire, the fruits shed their thin-coated seed which can then germinate. Wattle seeds on the other hand are shed annually but are protected by a hard seed coat which prevents germination: After burning this hard testa is affected by the heat and germination may be copious.

A typical area of sandplain broombush was surveyed by the author at Ghooli and a recently burned stand was found to be co-dominated by *Acacia quadrimarginea* (21 per cent cover), *Allocasuarina corniculata* (23 per cent cover) and *Melaleuca uncinata* (6 per cent cover), and *Eucalyptus burracoppinensis* (9 per cent cover) which had attained a height of two metres (Plate 8).

In a recently fired area the relative cover of the four main species becomes *A. quadrimarginea*, 21 per cent cover, *Allocasuarina corniculata*, 15 per cent cover, *M. uncinata*, 26 per cent cover and the burracoppin mallee, 9 per cent. Thus the dominant species change from a casuarina/wattle association to a casuarina/melaleuca association as the area recovers from fire. There was no change in the number of species per 500 square

metres, being 20, nor of overall density of the thicket following fire. Broombush thickets, generally, were shown to possess only a small number of species, namely 20, with a few grasses and sedges (5 per cent each), a few legumes (9 per cent) and a dominance of Proteaceae and Myrtaceae (20 per cent and 30 per cent respectively). No Asteraceae was recorded.

Most of the thickets are dominated by a variety of species of *Acacia* and/or *Casuarina*. As suggested, they grow in dense patches on shallow, nutrient-deficient soils. Their success as early pioneers after fire when nitrogen is burned away as gas is due to the presence in the roots of nodules containing bacteria, respectively, *Rhizobium* and *Frankia*. Their symbionts allow them to use gaseous nitrogen directly from the atmosphere, rather than from nitrates and ammonium salts in soil solutions. In return the large shrubs provide sugars to the bacteria.

Many other species in habitats mixed with wattles and sheoaks, for example eucalypts and bottlebrushes, depend upon the nitrogen fixed and released into the soil by their neighbours in much the same way that crops benefit from introduced clover plants. Casuarinas form associations with soil fungi called mycorrhizas ("fungus-roots"), which can either cover the root surface or occupy the root cells themselves. These fungi help the casuarinas and many other plant species scavenge nutrients such as phosphorus from the soil. There are also other micro-organisms which stimulate casuarinas to form "cluster" or "proteoid" roots (so named because they were first observed on roots of the Proteaceae family) which assist in phosphorus uptake.

These two high performance plants are not only important as colonizers of infertile soils providing much needed nitrogen but they also pioneer saline soils. *Allocasuarina obesa* can grow in soils containing chloride at concentrations of up to 28,000 parts per million. Not only are casuarinas tolerant of salt, infertile soils and extreme heat, colonizing coastal dunes, swamp and arid soils, but they grow rapidly, are easily propagated, need little care, are fairly resistant to pests, and suffer few major diseases.

It is for these attributes they are used in many developing countries throughout the world as fuelwood (the dense wood burns slowly), as windbreaks for crops and farm animals and as stabilizers of coastal sand dunes. *Melaleuca* species, often growing with casuarinas and wattles are also highly successful plants growing near salt lakes in waterlogged soils and on infertile soil. The reason for their success is not as fully documented.

Heathland

Occupying the centre of the sandplain in the Boorabbin System, in soils similar to the more northern profiles of the Jackson System carrying *Acacia resinomarginea*, are the heathlands referred to as sand heaths or scrub heaths (Plate 9). However, in this more southerly region the rainfall is higher but even so the vegetation consists of small shrubs 45 to 75 centimetres tall with large shrubs few and scattered. It is an open form of vegetation and, compared to the adjoining broombush, the plants require large, more widely ranging root systems because of the hotter, drier surface soil conditions. However, why these more moist conditions should produce a much less tall and dense vegetation or why deep soil should bear dwarf plants and the shallow soil tall dense broombush is a typical Western Australian paradox.



Plate 9: Heathland (Ghooli).



Plate 10: Lake Baladjie (viewed from Baladjie Rock).

These Boorabbin scrub heaths are unique and contain a rich flora. However, it is difficult to describe a characteristic structure for the formation since the vegetation is burnt so frequently that a mature structure has little chance to develop. After fire, regeneration occurs by suckering and seed generation forming a layer of low shrub, at first open and then more dense. Naturally taller species eventually outstrip the smaller causing stratification of lower ericoid shrubs with emergent taller species with larger leaves. In time the irregular upper layer may close up and suppress the lower layer. The lower stratum, one metre tall, typically belong to the Myrtaceae while the components of the upper layer reach five metres and belong typically to the Proteaceae. The showy grevillea (*Grevillea excelsior*) appears to be one pioneer species following fire reaching up to five metres before dying away. There is some admixture of casuarinas (*A. corniculata*) from the adjacent thicket formation and low mallees tend to occur where there is some clay in the subsoil. Other than the dominant Myrtaceae and Proteaceae which equally make up half the 47 species present per 500 square metres, there are no grasses or daisies, but there is a reasonable population of legumes (nine per cent) and an ample presence of sedges. In the later stages of fire succession these sedges become large and develop into clumps joined by numerous small ericoid shrubs 20 to 40 centimetres high.

Salt Lake Features

Conspicuous in the central regions of the Yilgarn on the roads to Koolyanobbing and Mt Jackson are salt lake features (Plate 10). Viewed from the ranges of Koolyanobbing or the heights of Baladjie Rock, Lakes Seabrook, East Deborah, West Deborah and Baladjie stretch out like huge expanses of white water. The rest of the salt lakes are small and often recognisable only by the presence of succulent vegetation beneath woodland or Acacia scrub. These dwarf shrubs of the Chenopodiaceae family comprise the samphires on the floors of the larger salt lakes usually on raised beds. Not all lakes have these beds. The plants consist mainly of three to six species of the genus *Halosarcia*. This low shrub gradually grades into tall Acacia scrub (two metres) and saltbush (*Atriplex* species) in the vicinity of the lakes as the salt content becomes reduced on alluvial, often deep red soils which slope gently down to the lake. As conditions change again the saltbush becomes the understorey of woodlands (Plate 3) such as morrell, salmon gum, blackbutt (*E. dundasii*) and yorrell (*E. gracilis*). Woodland is sometimes replaced by teatree scrub or thicket where the saltbushes become less dominant or absent. Large lakes such as Seabrook may have red sand dunes at their south-eastern end on which trees grow, particularly the cypress pine (*Callistris columellaris*).

Much of the saltbush country is leased for sheep grazing and is utilized for part of the year by farmers living outside the area. The lack of fresh water curtails this practice and it seems unlikely that grazing has anywhere modified the plant cover appreciably.

The lowest portions of the lakes which are seasonally flooded, become dry mud, surfaced with salt crystals in summer and are devoid of vegetation. The salt lake complexes contain few species and are dominated by the Asteraceae and Chenopodiaceae families though in Acacia or teatree scrub the Leguminosae and Myrtaceae species respectively provide the most ground cover.

Even when flooded the lakes contain little more than a few centimetres of water and

the pH of the water (Table 3) varies greatly. When tested, shallow pools at Yellowdine were neutral (pH 7.3) while Lake Kookoordine near Southern Cross was very acidic (pH 3.6). This low pH could be caused by run-off from the Koolyanobbing ironstone ranges. As well as being highly acidic the water is also very saline yet swimming in the lakes may be numerous brine shrimps (branchiopods). These crustaceans are also found in the other lakes along with copepods, seedshrimps (ostracods) and some beetles.

TABLE 3.

Location	Lake water parameters		
	pH	Depth (cm) Sept. 1983	Chloride (ppm)
Lake Deborah East	6.4	2	16400
Yellowdine Lake pools	7.3	0.8	16400
Lake Koorkoordine	3.6	4.0	12633
Granite outcrop pool	8.3	14.6	58
(Duladgin Rock)			

Rock Outcrops

Another vegetation complex common to the region occurs on rock outcrops. These include the hilly greenstone belts with banded ironstone ridges and the more widespread, sometimes large and extensive domes of outcropping granite. These latter outcrops consist



Plate 11: Granite outcrop (Duladgin Rock) showing blue lichens and brown moss (foreground) on bare rock. In mid picture are green (winter) and orange (summer) forms of *Borya nitida*. Background is mixed shrub with salmon gum woodland on horizon.

of two types, the Granite Exposures and the Granite Hills. The Exposures are mostly low and fairly flat with mainly bare rock and are able to support only a thin sparsely clad crust of lichens. Here and there depressions and holes occur which fill with water after rain. On these may occur a growth of algae and mosses on patches of soil perched upon the rock. These skeletal sheets of soil accumulating in slight depressions or along faint drainage lines are weathered from the granite rock. The process begins with acid secretions from the algae, lichens (Plate 11) and bacteria flaking the rock and allowing some dust and sand to become trapped. Lichens are capable of growing on bare rock because they consist of two closely associated plants: algae which have chlorophyll and provide organic food and fungi, which act as a sponge in obtaining water and nutrients.

As more soil particles accumulate, ephemeral vascular plants colonize by growing and reproducing in the wet season. An increase in soil depth causes an increase in plant height and in the number of species and an increase in structural complexity. A dominant plant in the shallow soil is the pin-cushion (*Borya nitida*) growing in herbaceous tussocks. In a similar manner to the more primitive species these plants dehydrate during dry periods surviving in a dormant state. The pin-cushion appears orange in summer due to the pointed leaves producing a heat protective pigment and to the loss of chlorophyll. The plant remains dormant until moistened when it turns green (Plate 11) and resumes growth. It can remain alive in a dry state for up to four years.

Growing with it are often sundews (*Drosera* species) which overcome lack of soil nitrogen by capturing and digesting insects. Soil depth can vary from shallow to skeletal over less than a metre which results in rapid changes in vegetation structure and species composition. Around granite outcrops, on average, 44 species per 500 square metres are found with annuals of Asteraceae common in spring and above average numbers of grasses and perennial sedges. The species richness tends to decrease with average annual rainfall. As these herbs break down more granite and accumulate more soil, certain shrubs characteristic of this habitat appear, for example, heath vegetation including *Thryptomene australis* seen on a typical exposure at Moorine Rock town site. Where soil has become still deeper, casuarina trees (*Allocasuarina huegeliana*) and large shrubs of wattle may grow.

This open wattle scrub occurring in deeper phases of the young soil is joined in certain conditions by small trees up to ten metres high of york gum, or wandoo. These usually merge into sclerophyll woodland. Often on shallower phases of the soil, usually peripheral to the actual outcrops of granite, denser jam tree (*Acacia acuminata*) or mixed (*Allocasuarina campestris*, *Melaleuca elliptica*, *Calothamnus quadrifidus*) thicket occurs.

Granite hills, for example Duladgin Rock, differ from the exposures in being high, often more than 30 metres, and the granite soils are extensive and include many coarse rock fragments which help to prevent the soil being washed away by heavy falls of rain.

In the greenstone belts granite exposures are absent. They are frequently marked instead by abrupt ridges of banded ironstone (Plate 12). These generally have their own set of vegetation on rocky, shallow nutrient rich red sands. Here there is a relatively rich assemblage of species (56 per 500 square metres) dominated by annual everlastings and often with many ferns in sheltered rocks. On the northern ranges at Mt Jackson and Koolyanobbing, the steep rocky slopes support the yilgarn dryandra (*Dryandra arborea*) and *Acacia quadrimarginea*. Tall shrubland, *Eucalyptus oleosa* mallee, occurs on gentler



Plate 12: Ironstone ridge (Mt Jackson).

slopes with deeper soil at Koolyanobbing. Lower foothills at Jackson support the mallee, *E. ebbanoensis* and mulga (*Acacia aneura*) and the usual salmon gum-gimlet at Koolyanobbing. The greenstone belt (Highclere Hills) north of Bullfinch has more limited outcrops than further north, and although the vegetation is similar, yilgarn dryandra has not been recorded. The everlasting *Helichrysum lindleyi* is abundant in spring on all northern ironstone ranges.

Honey

The variety of flowers of the Yilgarn is a source of honey in the winter and spring. Little is known of the honey potential of this zone in Western Australia. Large crops of excellent honey, however, were obtained from mallee in the Coolgardie area for the first time in the summer of 1961-62 but were not repeated in the following year. Good years have since been recorded but in areas of unreliable rainfall such yields are likely to be irregular. In general, good flowering occurs in a year following a season of high rainfall. However, very little flowering can be expected in a year when the trees are heavily laden with fruit. For a number of years local honey from Bodallin was marketed on a small scale in the Yilgarn but the hives were affected by a disease and the bees had to be destroyed in 1985.

The plants of prime importance to bees in Western Australia belong to a very few families. The most important honey producing family is the Myrtaceae, of which the eucalypt trees and melaleuca shrubs are the richest forage plants. In the local woodlands

the salmon gum is sometimes of value giving a choice, mild-flavoured honey while the morrell produces a flow of good honey in January to March. Gimlet is worked by the bees between November and February for its abundance of pollen and a fair amount of nectar, yielding a light amber honey. York gum produces an excellent honey flow every two years from September to December. Another important family is the Proteaceae which is strongly represented in the heathlands of the sandplain country. Here a rather dark and strongly flavoured honey crop is obtained from the numerous plants, especially from *Hakea* and *Grevillea* species. The heathland is of greatest value as a source of pollen and it builds up colonies for the honey flows from adjoining areas of mallee and mixed eucalypt woodlands.

The pea family (Leguminosae) is also useful particularly the genus *Daviesia*. The genus *Acacia* provides a source of pollen but not nectar in Western Australia. The Asteraceae is also a valuable source of pollen. An introduced weed of the area, Paterson's curse or salvation jane (*Echium plantagineum*), is important for honey production. Paterson's curse contains alkaloids which exert a slowly developing toxicity in grazing animals. The effects of the alkaloids are cumulative and progressive even at low intake rates. Field evidence strongly indicates that horses, pigs and, to a lesser but significant extent, sheep, are poisoned by the plant. Humans may also be exposed to the toxins through the honey made from the nectar. Honey collected from this species has been shown to contain one part per million of the alkaloid.

Toxic Plants

Plants are thought to produce toxic chemicals as a defence against grazing animals, mostly insects. However, this may be a problem to stock if they are allowed to graze on certain species. Intoxications from most native species are declining but poisoning by introduced plants, notably the very pastures and crops cultivated by farmers, seems to be increasing. It is essential that those engaged in the introduction and spread of new pasture plants be aware of this and take the precautions necessary for safe management before releasing new plants on unsuspecting communities. Whereas most plant alkaloids, for example strychnine, nicotine and morphine, are poisonous because they exert an effect on some part of the mammalian nervous system, the pyrrolizidine alkaloids of Paterson's curse causes acute and chronic liver disease in animals. The chemicals become toxic only when metabolised in the liver to a highly reactive form when they eventually possess carcinogenic properties that can cause chromosome abnormalities. It has been estimated that the loss of stock to pyrrolizidine alkaloid-containing plants alone (others include *Senecio* species, *Crotalaria* species and *Heliotropium* species) in N.S.W. and Victoria is in the region of \$10 million per annum. Mortalities in N.S.W. from Paterson's curse for the period 1978-1983 were sheep 1015, cattle 88, horses 42 and pigs 16.

Several species from various habitats of the Yilgarn have been tested for alkaloids and cyanogenic components (carbohydrates containing cyanide). None of the latter was found to be positive. The results of these alkaloid tests are presented in Table 3 which are given as percentage positive plants from various habitats.

TABLE 3

Frequency of plants containing alkaloids from various habitats of the Yilgarn. Most results were weakly positive.

Habitat	Number tested	Per cent alkaloid positive
Broombush.....	36	6
Heathland.....	21	24
Salt lake.....	43	21
Mallee woodland.....	23	17
Salmon gum woodland.....	30	40
Granite outcrop.....	26	42

It should be noted that the possession of alkaloids does not necessarily mean that the plant is toxic to the local fauna but, notwithstanding, there are an extremely large number of species which are positive in the habitats surveyed.

While the broombush possess only 6 per cent of species containing alkaloids, the heathland, mallee woodland and salt lake aprons contain between 17 and 24 per cent. The salmon gum woodland and the granite rock outcrops contain 40 or more per cent. The families containing the most toxic species are the Solanaceae, the potato family, and the Chenopodiaceae, which includes saltbushes (*Atriplex* species) and bluebushes (*Maireana* species). Both the latter grow around salt lakes or on woodland near salt lakes. Although these Yilgarn habitats contain high proportions of alkaloid containing plants, there may in fact be many more poisonous species. Other plants are known to contain varying concentrations of other toxins such as oxalic acid, nitrates and fluoroacetate, as well as numerous unidentified injurious chemicals whose symptoms are only suspected.

Species of *Gastrolobium* and *Oxylobium* are palatable and the most widespread and lethal of the Western Australian endemic plants (though not all 33 species are toxic). At times ingestion of less than 15 grams of the plant with its contained monofluoroacetic acid will kill a sheep. The sodium salt of this compound is the well known 1080 poison used extensively for the control of rabbits. Prickly poison (*Gastrolobium spinosum*) was found along with the closely related *G. trilobum* in the mallee woodlands of the district and there have been several reports of heavy losses of stock due to the consumption of this plant in recent years. In these poisonous shrubs it is the young shoots and flowering material that are most toxic.

Several species of native mammals in Western Australia have been thought to have developed immunity to these plants while eastern states mammals are less tolerant. Western grey kangaroos, possums and bush rats are all capable of detoxification of artificially fed 1080.

The very high proportion of alkaloid containing plants may be an indication of the low nitrogen balance of the soil as it is claimed that these chemicals, along with cyanogenic glucosides, are formed in low nitrogen environments as storage materials for use in nitrogen (protein) metabolism.

The high number of potentially toxic plants in Australia generally may be because it contains mostly slow growing, evergreen, perennial species which have their foliage

exposed to grazing animals for a long period of time and thus have a greater need for protection than faster growing species which are short lived and have their leaves exposed for shorter periods. The possession of alkaloids as an anti-herbivore defence compound would explain why salmon gum woodland and granite outcrops in the Yilgarn have twice the incidence of alkaloid plants. Woodlands have the largest animal populations and the outcrops contain water holes which would attract most animals at some time during the year, thus exposing the plants to a greater number of hungry herbivores.

In many species of higher plants found on other continents, toxins are not the only defence mechanism as some plants such as the thistle *Parthenium hysterophorus* manufacture repellent chemicals that discourage insect predators from feeding or laying eggs. Bugleweed (*Ajuga remota*) mimics natural insect growth hormones which cause the larva to develop several head capsules, causing death. The wild potato (*Solanum berthaultii*) manufactures a chemical produced by aphids which is an alarm pheromone released when the aphids are under attack and warns others that an insectivore is present. Aphids usually flee from the plant when the chemical is formed. The tomato when chewed will manufacture a proteinase inhibitor which stops the insect's digestion of many plant proteins. Therefore, as the local plant population displays such a high proportion of alkaloid containing species, there must be a very high probability that Yilgarn plant species possess a wide variety of secondary plant chemicals of the type just mentioned which determines the suitability of each species as a food source. It may in fact be the high variety of plant species which has caused the evolution of such a rich variety of insects in Western Australia.



Plate 13: Climbing dodder laurel, *Cassytha micrantha* on *Acacia acuminata* (Yellowdine).



Plate 14: Salmon gum with mistletoe. *Amyema miquelii*, in branch near top of tree (Yellowdine).



Plate 15: Blue salmon gum leaves and similarly shaped yellow-green mistletoe leaves of *Amyema miquelii* (red flowers are parasitic).

Parasitic Plants

The Yilgam soils give rise to a number of plant species which derive their food from host plants — a feature that could be caused by the paucity of soil nutrients and/or water. Such parasites are well represented in the local habitats, including the climbing dodder vines (*Cassytha glabella* and *C. melantha*), which are stem parasites of a wide variety of plant hosts (Plate 13). They are recorded in most vegetation types. In addition, stem hemiparasites such as Australian mistletoes (*Amyema* species) are present. Many of these mistletoes have leaves that bear a close resemblance to the leaves of their usual host. This is interpreted as protective mimicry, a requirement caused by the seemingly high palatability of mistletoes compared with that of dominant Australian forest trees. Such examples found at Yellowdine are: *Amyema miquelii* (Plates 14, 15) and *Lysiana murrayi* (Plate 16) as parasites on salmon gum and *Acacia coolgardiensis* respectively. Both parasites possess leaves similar to those of the host.

Root hemiparasitic shrubs are also found often with *Amyema* species presumably parasitic on the nearby eucalypts such as salmon gum, rough-fruited mallee and some tall shrubs. One such example is the leafless *Exocarpos aphyllus*. The best known hemiparasite is the sandalwood (*Santalum spicatum*) once represented by large trees of which few now remain. The massive commercial exploitation of sandalwood began in 1845 and was not controlled until 1918 after the foundation of the Forest Department. The present distribution is mainly in the north of the shire including one reserve and it is present in most habitats surveyed except heathlands. The first of the many hosts of the sandalwood to be discovered was the jam tree (*Acacia acuminata*). Another common parasite widely distributed in the Yilgam is the quandong (*Santalum acuminatum*).



*Plate 16: The mistletoe, *Lysiana murrayii* on *Acacia coolgardiensis*.*

Fire

All large areas of heathland, thicket and mallee show burn patterns in aerial photographs. Dense shrublands of the sandplains and mallee are highly inflammable and their component taxa show so much adaptation to fire that they must have been subject to burning since early evolutionary periods.

Observations of burnt sandplains suggest that the vegetation takes 20 to 25 years after a fire to grow sufficient material to carry another bushfire. Mallee woodland often shows regeneration from suckering. All that remains after the fire are the woody bulb-like bases of the mallee eucalypts and melaleucas (for example *M. uncinata*) resulting in successions of even aged stands (Plate 8). Heathland is also regularly burned and these and taller shrublands contain pioneer species such as *Grevillea excelsior* and a preponderance of fleshy-leaved shrubs rather than sclerophyllous species. These are relatively short lived and give way within five years to other species. However, since fire appears to be an ever present ecological factor, it is difficult to say what the true climax vegetation would be in its absence.

In the Yilgarn, bushfires are localised because of the barriers of broad valleys and salt lake features. The sclerophyll woodlands contain open stands of trees with extremely sparse undergrowth and litter. These will not carry a wildfire under normal circumstances. However, they suffer badly when burnt: salmon gum is particularly fire tender and is damaged or killed after fire. It does not regenerate by suckering but from seed, and an even aged stand results. Saltbush, a common groundlayer of woodlands and salt lake features, as well as the succulent halophytes of the salt lakesides will not burn under ideal wildfire conditions. Vegetation in the northern Jackson section has been little modified by fire either in recent or Aboriginal times. Earlier the Aboriginals are thought to have systematically fired areas of alluvial soil with maximum sclerophyll understorey such as york gum and salmon gum woodland. Burning was undertaken in middle to late summer which served to encourage fresh young herbaceous growth in the ensuing rains, which attracted more game from outside.

Aliens

Since the settlement of Western Australia by Europeans, bushfires have encouraged the colonization of natural habitats by plant species introduced from Europe and South Africa. These aliens are not stress-tolerant plants and therefore the ones which are able to withstand drought and nutrient deficiency are winter annuals. These complete their life cycle in the period during and following winter rains but are also very competitive with indigenous species during the provision of a temporary pulse of readily-available mineral nutrients provided by the ash from a bushfire.

Except on land developed for agriculture, very few exotic plants are found in the Yilgarn region. The highest number are on morrell woodland, followed by granite outcrops and salt lake features found close to settlements. However, the Agriculture Protection Board has listed many declared plants (Table 5) some of which are widespread or occur in a significant portion of the shire. They are declared plants because they compete with crops for light, moisture and nutrients. They may also be poisonous because of their antiherbivore defence-compounds or their seeds may contaminate agricultural produce.

The introduction of plants into Australia has often been deliberate. The double gee arrived in 1830 as a garden vegetable from South Africa. It contains oxalic acid and is unpalatable. As anyone who has encountered the weed will know, its sharply spined seed capsules cause lameness in sheep, working dogs and other stock. With present technology, it is not unfeasible to eradicate the plant State wide. Attempts are being made to find a biological control agent to reduce the overall density of double gee infestations. Paterson's curse, a problem weed in undergrazed sheep pasture, is seldom a problem in crops. It was introduced as an ornamental in the late 1850s. Two cape tulip species were brought to Australia from South Africa as garden ornamentals in the early 1850s. Saffron thistle, a European species, was introduced inadvertently in cropseed late last century and is a serious weed widespread in parts of the wheatbelt. If its seed contaminates wheat a dockage is incurred by the Australian Wheat Board. As its seed can have up to an eight year dormancy period the plant is difficult to eradicate unless a systematic programme is followed.

TABLE 5

Weeds, Natural and Feral Pest Animals of the Shire.

Those marked with an asterisk are widespread or are present in a significant portion of the shire (APB, W.A.)

Plants	Animals
bathurst burr (<i>Xanthium spinosum</i>):	*Australian plague locust (<i>Choroicetes terminifera</i>)
*caltrop (<i>Tribulus terrestris</i>)	*small plague grasshopper (<i>Austroicetes cruciata</i>)
cape tulip-one leaf (<i>Homeria breyniana</i>)	*dingo/wild dog (<i>Canis familiaris dingo</i>)
-two leaf (<i>Homeria miniata</i>)	*emu (<i>Dromains novaehollandii</i>)
common heliotrope (<i>Heliotropium europaeum</i>)	feral donkey (<i>Equinus asinus</i>)
cotton bush (<i>Gomphocarpus fruticosus</i>)	feral goat (<i>Capra hircus</i>)
*double gee (<i>Emex australis</i>)	feral pig (<i>Sus scrofa</i>)
hoary cress (<i>Cardaria draba</i>)	*fox (<i>Vulpes vulpes</i>)
onion weed (<i>Asphodelus fistulosus</i>)	*euro (<i>Macropus robustus</i>)
*paterson's curse (<i>Echium plantagineum</i>)	*red kangaroo (<i>Macropus rufus</i>)
*saffron thistle (<i>Carthamus lanatus</i>)	*western grey kangaroo (<i>Macropus fuliginosus</i>)
skeleton weed (<i>Chondrilla juncea</i>)	*rabbit (<i>Oryctolagus cuniculus</i>)
soursob (<i>Oxalis pes-caprae</i>)	
steinless thistle (<i>Onopordum acaulon</i>)	
thornapple (<i>Datura stramonium</i>)	

Animals

It is only recently that detailed surveys of the Yilgarn fauna have been attempted by the Western Australian Museum and little or no published work has been included on invertebrates. The numbers of these animals is therefore unknown. Vertebrates, particularly birds, on the other hand have been collected, sighted and catalogued in more detail mainly from the many nature reserves in the area. The interest has been created because the region consists of a blending of fauna from arid-adapted elements from the north and east with meso-temperate elements from the extreme south-west of Australia. This desert fringe area has given rise to a variety of animals. The fauna well adapted to arid conditions, partly because of their impermeable body covering, are the insects, lizards and birds.

Birds

A total of 159 species of birds have been recorded within the Yilgarn shire boundary. Many are migratory and stay for only a short period but many also breed or feed for longer periods or are permanent residents. The avifauna differs from north to south of the shire probably owing to water availability. In the northern Mt Jackson and Bungalbin Nature Reserves there are wide-ranging taxa of which only four species were typical of arid zone species. In this district where grazing has had little impact on the vegetation almost half the population was the ring-necked or Port Lincoln parrot (*Platycercus zonarius zonarius*). This wheatbelt parrot has no red on the forehead, has a yellow belly and utters a two-noted whistle sounding more like "twenty" than the "twenty eight" uttered by the parrot of that name which resides in the south-west. These birds constitute the commonest parrot in Western Australia (the Perth Metropolitan type is a variable hybrid between the two subspecies) and though once declared vermin is now a declared species only in restricted areas. They feed on the pulp of eucalypt capsules and have learned to eat a variety of introduced and cultivated plants.

Many species of honeyeater, some of which are highly nomadic, have been recorded with greater numbers found in the south where nectar is more generally abundant. Insectivorous birds are the commonest type in the north. Other frequent northern species are flocks of little crows (*Corvus bennetti*), the common bronzewing pigeon (*Phaps chalcoptera*), the weebill (*Smicromis brevirostris*) and the chestnut-rumped thornbill (*Acanthiza uropygialis*).

In the south there is a greater density and larger number of bird species present. This species richness is most probably related to a greater habitat diversity which is associated with a higher rainfall than in the north. The presence of more woodland would also increase bird numbers as this habitat is known to support the largest assemblage of birds.

Of the ground dwelling birds the mallee fowl (*Leipoa ocellata*), protected since 1930, has huge earthen nests often one metre deep by five metres across and the birds are engaged at the mound for the greater part of the year. These large sandy compost heaps are constructed in order to incubate the buried eggs by heat generated by fermentation when the weather is cool and by solar energy during the day. The male controls this internal temperature, which he is thought to measure with his tongue, by scratching earth onto or from the top of the mound.



Plate 17: Gecko, Diplodactylis pulcher.



Plate 18: Gecko, Diplodactylis spinigerus.

The emu is widespread throughout the shire. It is capable of building up into vast numbers, for example, in 1932 it reached such proportions (an estimated 20,000 trampled the local farmlands) that farmers persuaded the government to send a military unit composed of the commanding officer of the 7th Heavy Battery, Royal Australian Artillery, a sergeant and a gunner with one machine gun to eradicate the problem. The party commenced its offensive and one day near the vermin proof fence in Westonia some 50 settlers ambushed up to 1000 birds. In comic fashion twelve birds fell before the Lewis gun jammed and the rest dispersed. During the three day offensive about 74 emus were killed and only a quarter of the ammunition used. Finally the defence authorities recommended withdrawal of the force from the combat zone and the November Emu War was called off despite the claims by dismayed "Cockies" that only 500 of the noxious birds had been destroyed and, anyway, the allocated 10,000 rounds of ammunition had not been expended.

Reptiles

The second largest vertebrate component is the herpetofauna. These reptiles and snakes indicate zoogeographic relationships with both the moist south-west and, more predominantly, the eastern arid zone. Though none is endemic to the wheatbelt many are at their extreme known range. A total of 99 species have been recorded in the shire of which 18 are snakes. Of the five families of lizards there are 3 monitor lizards, 6 legless lizards, 15 dragons, 18 geckoes (Plates 17 and 18) and 39 skinks.

Many factors are responsible for the distribution of the herpetofauna, of which the



Plate 19: Dragon lizard, *Ctenophorus* species.

richness of floral species within the habitat is a significant one. However, the most strongly correlated is the number of plant associations found within the region. The most important association responsible for carrying the greater lizard assemblage is woodland, which often has twice the number of species present compared to others such as shrubland, rocky outcrops, heathland and mallee woodland. They require a greater area to support the same lizard population. The frequency of bush fires in heathland and mallee woodland may be the cause of smaller numbers in these two habitats.

The cryptic nature of many of the lizards is best exemplified by the mountain devil (*Moloch horridus*). This medium sized spiny dragon can change colour from brownish-yellow to reddish-brown in a matter of minutes. It is common on sandy areas where it eats ants voraciously. Many lizards display only the colour of one background (Plate 19).

A rare group of animals in the semi-arid region is the nine recorded amphibians which are resident near wet areas around clay pans and large granite exposures.

Mammals

Unlike lizards, mammals have suffered a dramatic reduction in species, in recent times, particularly the medium sized species. This has been attributed to a combination of factors: clearing and over grazing by stock and rabbits; the introduction of predators, particularly the feral cat (*Felis catus*) and the fox (*Vulpes vulpes*); fires; disease or even hunting to extinction. It is probable that many of the above, operating separately or together, have played a role in the reduction of mammal fauna in the wheatbelt. However, most of the species of mammals now extinct in the wheatbelt began to disappear long before the introduction of foxes and rabbits to the region. It has been suggested that diseases carried by introduced stock may have been a primary cause as also was regular extensive burning which reduced large areas to a similar seral stage exacerbated by stock grazing. Many mammals that have become rare or extinct have very specialised habitat requirements, needing particular seral stages, which makes them vulnerable to environmental changes. These include the woylie (*Bettongia penicillata*), the boodie rat (*B. lesueur*), the banded hare-wallaby (*Lagostrophus fasciatus*) and the western hare-wallaby (*Lagochestes hirsutus*).

It is supposed that the intermediate-sized species would be most susceptible to the alteration in environmental patchiness. The smaller feed on existing patches and the larger species being more mobile can select from distant patches. Intermediates may expend too much energy foraging thus costing them their persistence.

Of the 37 species of mammal recorded in the shire, eight are introduced species (Table 5). There are five dunnarts, (Mitchell's hopping mouse, *Notomys mitchelli* is the most common) seven native mice and nine bats of which Gould's wattled bat (*Chalinolobus gouldii*) found at Mt Jackson in quite large numbers can be seen hanging among leaves in the daytime. The echidna (*Tachyglossus aculeatus*), the mundara south western pigmy possum (*Cercartetus concinnus*) and the three declared indigenous kangaroos, the red, the grey and the euro are also local species. The latter three along with the echidna have adapted to cultivated or disturbed country between reserves. The echidna has been able to do so because its diet, ants, are a group of animals that quickly re-establish in disturbed regions.

Invertebrates

The prolific development of plants has also led to the evolution of a rich insect fauna. During the months of September through to early March, a variety of flowers provide food for anthophilous insects, in particular the jewel beetles (*Buprestidae*), and wasps, bees and ants (*Hymenoptera*). Native bees are currently being studied by the Western Australian Museum and the endemic desert type flora has revealed probably one of the richest areas in Australia for these insects. A 1929 catalogue of Australian Buprestidae listed 76 species of a large jewel beetle (*Stigmodora* subgenus *Themognatha*) of which almost one third were collected from the Yilgarn. Since the compilation of that catalogue a further 29 species of the *Themognatha* subgenus have been collected from the Yilgarn. This is indeed a rich source of these most attractive insects.

As well as a rich source of insects, a wide variety of spiders has also been collected in the Yilgarn. Twenty families of the smaller araneomorphic spiders have been recorded which include, wolf spider, jumping spider and orb weaving spider, most of which are very aggressive and some of which are well camouflaged, in particular, the flower foliage and ant mimic spider.

Some carefully hidden and nocturnal species are the trapdoor spiders (*Aganippe* species) which have been observed at Yellowdine. They are a very dangerous species and along with the red back spider (*Latrodectus mactans hasselti*) and the black house spider (*Ixerticus robustus*) should be carefully avoided.

Five scorpions have been collected along with the larger species of centipede all of which deserve careful handling.

Pests

Introduced species of both animals and plants can be a problem to indigenous taxa in Western Australian because species have been isolated by desert from the rest of the continent and often possess highly specialized environmental requirements. When European settlement started, the environment was disturbed by clearing, by the introduction of new predators and by competition. In the following 200 years it was changed as much as it had been changed in the previous 50,000 years. Naturally, most native species suffered. On the other hand many introduced species, free from the competition which had held them in check at home, thrived. The rabbit is a prime example. This lack of ability to compete by Australian species is common but not universal. Kangaroos have become established on the Penine Moors of the North of England, paperbarks are pests in Florida and possums and wallabies proliferate in New Zealand; but these are exceptions.

Many introduced European animals have become feral and these cause as much concern as soil erosion and salinisation. At the turn of the century, acclimatisation societies thrived in nearly every state. They, and many private individuals, deliberately introduced animals as well as plants which often turned out to be pests in due course. Fortunately this attitude has largely disappeared. The first feral animal to arrive some 4000 years ago accompanying migrant Aboriginals from south-east Asia was the dingo. They are the same species as the wild dog and are highly social animals that kill more sheep than they eat and can be a problem to pastoralists.

The fox, which preys on free range poultry and lambs, was introduced for hunting in

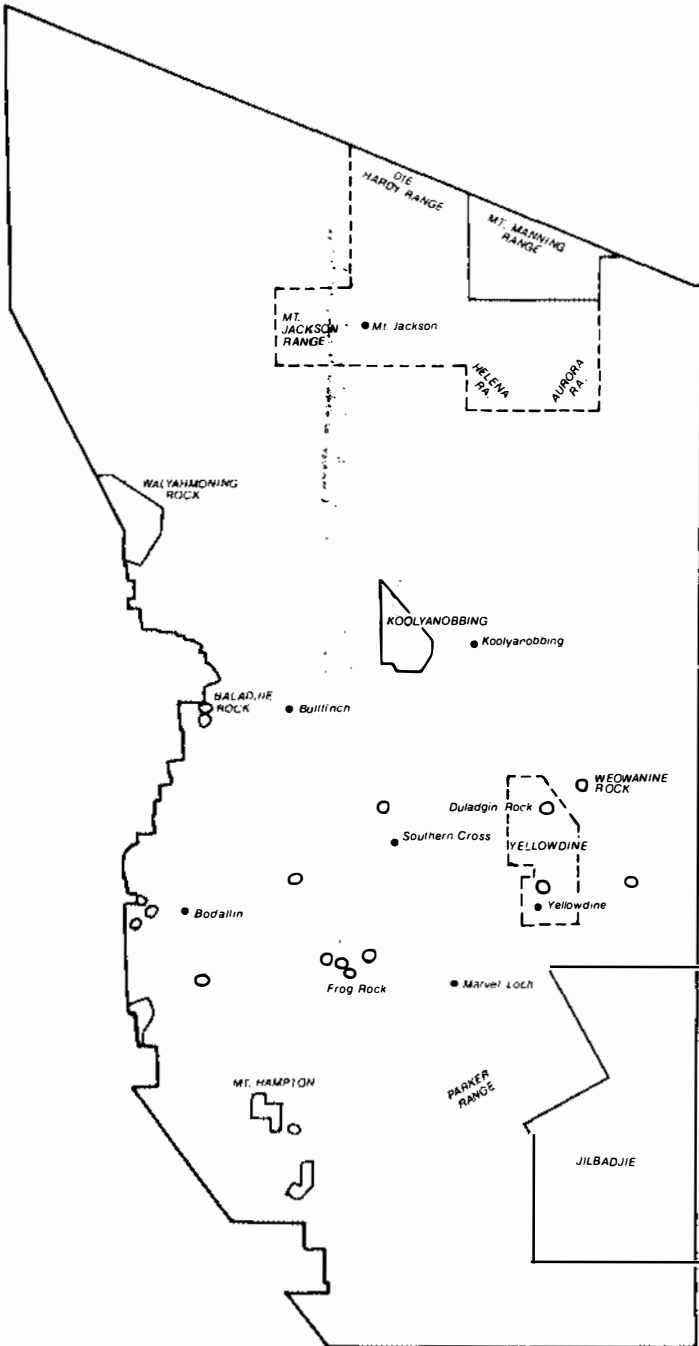


Fig. 2: National Parks and Native Reserves of the Yilgarn Shire. District lines indicate proposed reserves.

Victoria in 1868 and in seventy years it has colonized the whole of Australia. In Europe they are the main carriers of rabies. If this virus disease ever came to Australia, the control of foxes to eradicate the disease would be a major problem. Of the introduced species the rabbit causes the most damage in this country but the numbers in the Yilgarn are limited by the shortness of the winter breeding season. They are descended from twenty-four European wild rabbits released near Geelong in 1859. The domestic cat has also become feral and can be troublesome to native birds, as well as to poultry and lambs on Yilgarn farms.

Many native species are also agricultural pests. The emu eats ripe grain but can cause greater damage by trampling wheat. It migrates very long distances which can make it hard to control.

Some pests are protected species but are controlled in Western Australia. These include the red and western grey kangaroos and the euro. They graze native grasses and shrubs, eat crops, trample much more, break fences and gates and generally reduce pasture quality. Their increased numbers is thought to be due to the displacement of tribal Aborigines, reduced control by dingoes, and easier access to water.

There are many invertebrates which are also pests to the farming community, the locusts and grass hoppers being considered the worst. The latter is the most important pest in Western Australia causing damage in drier margins of the wheatbelt with 250mm to 340mm average annual rainfall. Outbreak years tend to follow years of intermediate rainfall.

Conservation

The Yilgarn shire occupies an area of 3,072,000 hectares. In 1982 there were 28 nature reserves (Figure 2) with a total area of approximately 306,775ha or 10 per cent of the total area of the shire. This compares very favourably with the whole of the Western Australian wheatbelt which has approximately 500 nature reserves with an area of 330,000 hectares or 2.4 per cent of total area. Three quarters of these are less than 400 hectares in area whereas the Yilgarn shire has only 40 per cent of its reserves less than this size. In fact only four are less than 200 hectares and six are between 1000 — 2000 hectares. The largest is Jilbadgie Nature Reserve with an area of 208,866 hectares of which 194,166 hectares are in the shire. Mount Manning Range is the second largest (153,293 hectares) of which 70,000 hectares are in the shire. The other two large reserves are Walyahmoning Rock and Carinta Nature Reserves, each with an area of over 13,000 hectares. Walyahmoning Rock has a rich fauna of both South-Western and Goldfields forms — one important mammal is the common dunnart (*Sminthopsis murina*). Among the reptiles there are two south-west and two dry country dragon lizard species represented. The geckoes *Diplodactylus maini* and *D. viltatus* are common also.

The Mt Manning Range Nature Reserve, an ungrazed mulga association, is important floristically. It contains the most inland occurrence of any species of *Dryandra*, a genus confirmed to the south-west of Western Australia, while *D. arborea* is one of the unique species of these hills. It has been recommended by the Environmental Protection Authority (System 11), and is in principle now a government policy, that the Mt Manning Range area be declared a Class C reserve for the purpose of the conservation of flora and

fauna, vested in the Western Australian Wild Life Authority. It also recommended that this authority examine the possibility of extending the boundaries of the proposed Class C reserve in the Mt Manning area to include Mt Jackson and the Die Hardy Range.

Near Yellowdine there are four small flora and fauna reserves on rock outcrops. They contain a number of plants of interest — some unique to the area. As with other outcrop reserves of the shire, they are a meeting place of plants and animals ranging into wetter and drier areas. Many animals occur at or near their eastern limit. The animal pollinators along with many other woodland species live in the surrounding salmon gum-gimlet woodland — an ever decreasing plant-association of the shire.

It was proposed in 1975 by the Environmental Protection Authority, that the four Yellowdine reserves, along with the surrounding salmon gum woodland, salt lake features and thickets of vacant crown land and timber reserve, be made into a reserve consisting of approximately 45,000 hectares. If this area were incorporated along with the proposed Mt Manning district, it would ensure the conservation of several representatives of the highly variable vegetation associated with the ranges, together with large and relatively unmodified areas of rich faunal eucalypt woodland, mallee and tall shrubland. There is still a need for more reserves as the unique Yilgarn Vegetation System is not within any existing reserve and only 106 square kilometres out of 800 square kilometres of the Parker Range Vegetation System is protected. There are also few salt lake features within current reserves. The surveyed mallee woodland at South Carrabin, 70 kilometres west of Southern Cross, is the only virgin stand in the area of any size (1700 hectares). It is vacant Crown land surrounded by cleared arable land and is worthy of permanent protection. The woodland harbours a number of animals, particularly birds, many of which were nesting when the area was investigated; there was also evidence of mallee fowl (an unused nesting site) though none was sighted.

Environmental protection, as explained at a Royal Society of Western Australia Presidential address, can and should be accommodated to a large extent as part of general land use planning, rather than be left as an institutionalised after-thought achieved through present requirements for environment impact statements and environment review and management programmes. For instance, there is a need for general land-use planning with regard to reserve size and the retention of corridors between reserves. Regarding the latter, bird species have been observed on road and railway verges. Natural vegetation should, therefore, be retained alongside these systems as well as on agricultural land. Such corridors act as links between small reserves permitting the reinvasion of mobile species and allowing immigration following fire, which reduces the dangers of inbreeding in small populations, as well as leading animals such as the black cockatoo from one food source to the next.

The optimum size of reserves is a contentious issue but a conservative estimate for resident birds is 31,000 hectares. For extant mammalian species the recommendation is 43,000 hectares while 1500 hectares is recommended for lizards. However, reserves as small as 200 hectares and less are of immense value to the conservation of lizards and areas of only 30 hectares provide breeding sites for a few small local and many migratory bird species. The value of these smaller nature reserves is likely to be greatly enhanced if they can be closely positioned, or have connecting corridors. Botanically, the requirement is the inclusion of as many vegetation formations as possible in an area as big as possible,

particularly in the Yilgarn because the low rainfall compared to more western wheatbelt areas reduces the capacity to carry some fauna and the capacity to recover from the recurrent catastrophies.

Future, thoughtful, land-use planning might, therefore, leave some of the "distilling warmth and richness from a stinting soil" to a generation "finer than our dull race".

Bill Foulds.

Methodology

The principle source of information on the Yilgarn soils and flora were vegetation surveys of Western Australia by Beard. The System II report also provided some useful information. The majority of data for the Yilgarn fauna and general conservation proposals were taken from numerous surveys undertaken by personnel of the Western Australian Museum.

The areas of knowledge which required further investigation such as soil nutrients, plant abundance on various habitats and the occurrence of poisonous plants were researched by groups of students from the Western Australian College of Advanced Education and the writer in the following manner. Soil was collected from the surface 10 centimetres unless otherwise stated and each value consists of a mean of five samples. Spectrophotometric determination was undertaken on sodium bicarbonate extractable phosphorus and potassium and potassium chloride extractable ammonium ions. The water soluble nitrate nitrogen was calculated with a nitrate specific ion electrode at 25C and the chloride with a chloride ion electrode. The reactive iron was extracted with ammonium oxalate-oxalic acid and measured by atomic absorption. It should be noted that this method provides a measure of the amount of iron that will react with phosphate in the soil, but it is not an indication of the iron available to the plant.

Typical vegetation sites were surveyed using 10 metre by 10 metre quadrats. Cover abundance was estimated as a percentage unit. Five such quadrats were included for each habitat type and species outside quadrats were also collected and identified. Species nomenclature follows the recent herbarium format of Green (1986) and a voucher specimen was kept at the Western Australian College of Advanced Education.

Particular plants were collected and tested for the presence of cyanide (cyanoglucosides) and alkaloids (for methods see Foulds, 1982 and Culvenor and Fitzgerald, 1963) in order to determine the frequency of antiherbivore defence-compounds in plants found on various vegetation types.

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YILGARN SURVEY

The following staff and students of the Western Australian College of Advanced Education participated in field work in the Yilgarn. Their contribution is acknowledged with sincere thanks.

Armstrong, Di. Barry, Andrew. Brucciani, Kathie. Burns, Catherine. Campbell, Joyce. Cartwright, Zonia I. Casey, Angela. Foulds, Pamela A. George, Jan. Giaquita, Julie. Graham, John. Holt, Jenny. How, Rick. Howse, Peter. Kay, Howard. Lake, Lynette. Lantzke, Ian (Staff, W.A.C.A.E.). Lipman, Wayne. Loftus, Keith. May, Leslie J. McKenzie, McKeown, Joanne. Newbey, Brenda (Conservationist). Newbey, Ken R. (Conservationist). Philp, Robyn. Rimmer, Lindsay. Rolston, John R. Ryan, John. Shipard, Lindy. Southern, Phil. Steene, Elaine. Stone, Margaret. Teasdale, Jane. Travers, Gregory W. Vickery, Ken (Technician, W.A.C.A.E.). Wright, Peter.

SUN MUSIC

Beginning

is a red dawn on level scrubby plains

When the mulga tree bursts
 Into bright mosaic flame
 And the small birds
 In the spinifex hop for seeds
 When the brown hawk
 Makes her first pitiless dawn patrol.

Climax

is deep afternoon's shimmering breath

On monodnock's ancient
 Summit circle of stones
 On the desert pavement's
 Hammered metamorphic sheen
 In the white intensity
 Of the salt-lake's glare

Resolution

is the blooded socket of the fallen sun

Speared by branches
 On a gashed quartz ridge
 Haemorrhaging across
 These sintered flatlands
 Leaving mullock heap
 And saltbush clump
 Stained with its crimson touch.

Glen Phillips

Chapter 5

Aborigines: The Changing Scene

The Yilgarn shire lies almost totally within the boundaries of the former Aboriginal group known as the Kalamaia. To the east were the Maduwonga, to the south-east the Kalako, to the north-west the Widi and occupying the south-west corner of the present shire were the Njaki-Njaki, a sub-group of the Nyungar. The Kalamaia of the Yilgarn were wedged between two distinct economic and cultural regions, the well-watered, coastal south-west and the arid, desert interior. Tindale described the boundaries of the Kalamaia as encompassing an area of approximately 88,000 square kilometres extending from

Boorabbin and Southern Cross; east to Bullabulling, north to Youanmi, Lake Barlee and Pigeon Rocks; west to Burracoppin, Mukinbudin, Kalannie and Lake Moore; south to about Mt Holland in the Parker Range.

The lifestyle, language and cultural practices of the Kalamaia were quite different from those of the Aboriginal groups bordering on the Yilgarn. For example, the Nyungar of the south-west of Western Australia wore skin cloaks, which were unknown in the Yilgarn and circumcision of the boys, an accepted practice of the Yilgarn and eastern groups, was rejected by the Nyungar.

In pre-European times, as in later years, the Yilgarn would appear to have been a region of cultural interaction for a number of Aboriginal groups. Daisy Bates, after interviewing Aborigines at Southern Cross during her research for what she hoped would be the definitive history of the Aborigines of Western Australia, defined their territory as an area extending from Mt Jackson to Esperance. She noted the interaction of the Aborigines at Southern Cross with neighbouring groups and their strong cultural affiliation with those to the east. Moreover, she recorded the movement of small groups between Norseman, Southern Cross and Mt Jackson and, in particular, boys being taken through the Yilgarn in preparation for initiation. This type of activity was later confirmed by Cliff Humphries, of Kellerberrin, who recalled seeing young initiates arriving at Southern Cross reserve in the 1930s, and by William Sambo of Coolgardie, who remembered lawmen coming down from the Murchison. Don Champion of Kalgoorlie, in his recollections of his father, claimed that law links had existed between the reserve people at Southern Cross and Pitjanjatjara groups to the east, extending to the South Australian border and beyond.

It is difficult to assess the original food resources of the country a hundred years after

the intrusion of tens of thousands of Europeans who drained the water-holes, disturbed the land in their quest for gold and ploughed large areas for crops. The first Europeans into the Yilgarn were particularly interested in assessing the extent of the pasture lands and water resources. They reasoned that grasslands that attracted herds of kangaroos would also support flocks of sheep and that a waterhole, sufficient to sustain a large group of Aborigines over the arid summer months, might offer an ideal location for a station homestead. These adventurers were, in the main, first generation Western Australians who combined the frontiersman interest their parents had shown towards the Aborigines with an entrepreneurial spirit that caused them to measure wealth and power by the control of the natural and human resources of a vast colony. The journals of these young colonials recorded the first tentative encounters between people of diverse cultures, their attempts to establish friendly relations with the traditional owners and fragmented observations of a living culture. They frequently used Nyungar servants to negotiate with the traditional people they met and diligently recorded the local Aboriginal names of hills, lakes and water-holes. In these journals, written beside the evening camp-fire or in the awakening light of an outback dawn, they recorded their impressions of the Aborigines with curiosity, sometimes compassionately but always with a kindred feeling for fellow humans sharing the vastness of the Australian hinterland. Yet the naive observations of these pioneers provide the first and, in most instances, the only cameos of the customs and lifestyle of the Yilgarn Aborigines prior to the gold-rush.

There are two themes in the journals of those who ventured into what is now the Yilgarn. Firstly, there is the explorers' uncertainty in an alien land and their dependence upon the skills and knowledge of Aborigines. Secondly, there is a mood of disappointment as they search for resources that simply did not exist. There came to be an acceptance that, in terms of animal and human resources, the area which is now the Yilgarn shire supported very little wildlife and was sparsely populated. As the European presence in the Yilgarn changed from exploration to settlement a third theme became apparent. There was a detectable shift in their relationship with Aborigines and a reversal of roles from a partial European dependence upon Aboriginal knowledge and skills to an increasing Aboriginal dependence upon the Europeans for the basic resources for survival. By 1888, this dependent pauperism had given way to the integration of Aborigines into the mainstream of town life.

The first detailed observation of Yilgarn Aborigines came from an early expedition under the leadership of C. E. Dempster, which left Northam in July 1861. The party included Dempster's Nyungar servant, Correll, as well as B. Clarkson and C. Harper. Near a spring named Doodlakine they fell in with two Aborigines, Gyngnich and Boodgin, who offered their services as guides. As the party entered what is now the Yilgarn shire, they were taken along Aboriginal pathways towards a low granite hill which Dempster names Mt Mackintosh. Nearby they found "a well made native hut, with a bundle of spears in it", but the owner was not to be seen.

The explorers' route took them through thickets of mulga and stunted jam trees that clung tenuously to the red sandy loam. Occasional granite outcrops were investigated and many held pools of water from the recent rains. On the 19 July, at a granite hill just north of Golden Valley, Gyngnich and Boodgin quietly slipped away without a farewell; but they had left Dempster with a story of white men that was to be repeated by other

Aborigines to other explorers and led eventually to an official government expedition into the region. Dempster's journal notes:

This man [Gyngnich] gave us to understand that a long time ago his friend Boodgin, who is also a rambler, related to him that three white men, with horses, had come to a large body of salt water, a long way to the eastward, and after travelling some time along the shore, they turned back again and were either killed by Jimbara [which they described as small humanistic creatures that attacked and killed people] or perished from want of water. He believes their bones remain there.²

Having carefully recorded the story, Dempster continued in a northerly direction, naming Hamersley Lakes and then a nearby peak Mt Correll after his servant. Then, on Sunday, 21 July he set out for a distant hill, possibly Bungalbin, passing through a dense casuarina thicket with branches exuding a heavy translucent gum that had an agreeably sweet taste. The land was now becoming less attractive to the eye of the pastoralist and that, combined with an increasing number of Aboriginal fires on the horizon, caused Dempster to change to a southerly course. He had assumed that the fires indicated that Aborigines in large numbers were gathering "for some particular occasion". However, even a small family group will travel the country armed with firesticks to ignite clumps of spinifex, flushing lizards and small game from their grassy retreats. A line of smouldering fires that marked a day's travel could suggest a large force to an explorer unfamiliar with desert customs.

East of present day Bullfinch they came suddenly upon a family group consisting of four men, two women and three children, who were startled at the sight of the Europeans. However, when they saw Correll they recovered their composure. The nights in the Yilgarn had been bitterly cold so that water in the rock-holes froze in the mornings. Dempster, conscious of his own discomfort, marvelled at the fortitude of the Aborigines as they prepared their night camp.

These poor wretches having no sort of covering make their bed by first lighting a fire on it, and when sufficiently heated, divide the fire, then loosen the heated earth or sand, and mix to a proper degree of temperature, then lay down between the two fires.

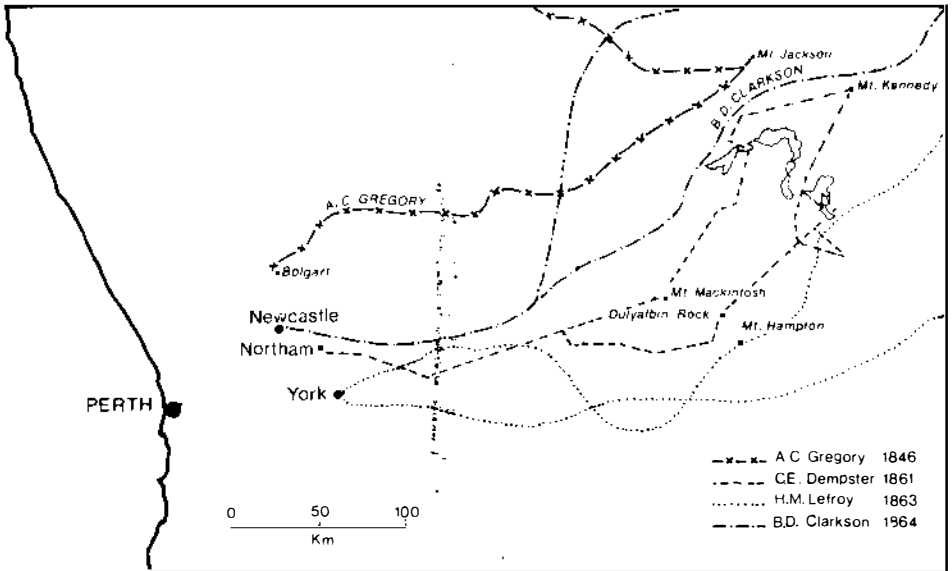
On the 31 July, there is another reference to the lost white men:

The men were asked by Correll if they had ever heard of white men being in the far east. They said they had, that many years ago, three white men had perished at some inland sea, or lake, they supposed from lack of water.

The family continued with them for the next three days guiding them to a watering place for each night's camp: first at Codgering, then Gnaberding and, finally, Dullyaling (probably Dulyalbin). There most of the family remained with the exception of two men engaged as guides.

The course was now south-westerly towards Narembeen and "Comining", Smith's frontier station homestead. On the 7 August the party crossed out of the Yilgarn and made camp amongst a grove of Xanthorrhoea (blackboys). At this place, called by the Aborigines borolokine (boro = blackboy tree), there was evidence of Aboriginal activity:

Fig. 1:

YILGARN EXPLORATION

The blackboys here are very diminutive, and cut up by the natives, who come here from the eastward for gum, they having no gum answering to the same purpose.

Dempster may have been familiar with the Nyungar reliance upon blackboy gum as a bonding agent to fix quartz flakes onto knives and spear tips as well as its use in fastening the blades of the Nyungar stone axe or Kodja. However, he was unaware that the innocuous spinifex bush provided Aborigines of the arid lands with a bonding gum far superior to that of the blackboy.

On 11 August the Yilgarn men who had accompanied Dempster from Lake Julia took their leave. They were now out of their own territory and into Nyungar land. Perhaps they had read the signs of others nearby for, soon after they left, a group of Nyungar greeted the explorers and accompanied them to Comining homestead.

In May and June 1863, Henry Lefroy led another expedition to explore the country to the east of York. Their route took them across the southern section of the present Yilgarn shire and they made camp at Mt Hampton on 21 May. The journey was made during the early months of winter, after seasonal rains had filled the Aboriginal wells along the route and put several centimetres of water into lakes that for most of the year were merely white salt pans. Lefroy was surprised at the lack of animal life and wrote: "seen neither kangaroo nor emu since leaving Mount Hampton and it is evident that this country is nearly, if not quite, destitute of the larger species of game"¹. In more than 200 kilometres of travel across the southern Yilgarn the party, which included the Aborigine, Kowitch, saw only four kangaroos, two emus and four ducks. They saw no bush turkeys or mallee hen; not even a cockatoo or parrot. During this time no Aborigines were seen, although an occasional footprint, "weeks or months old" reminded them that the land was inhabited.

On the 3 June a wisp of smoke on the horizon was recognized as an Aboriginal camp-fire and Constable Edwards and Mr Robinson were sent to make contact. They found the smouldering fire but the Aborigines were nowhere to be seen. Other attempts to make contact were more successful and on the 29 June they found a woman and child beside a fire. The woman was astonished at the sudden appearance of the strangers and with the child on her shoulders, sought refuge in a dense thicket. After a great deal of persuasion on the part of Kowitch and a little force, she was eventually brought to the explorers' camp-fire:

Here she seemed gradually to recover her self-possession and talk very fluently to Kowitch, though little to his satisfaction, as he was able to understand nothing of what she intended to express.

Lefroy wanted to employ her husband as a guide but he found it impossible to gain any clues as to his whereabouts. The woman was offered tea, sugar and meat which she refused to taste and she angrily parried any attempts to feed the child. After an hour, Lefroy gave up and sent her back to her camp-fire insisting, however, that she take the food. But less than a hundred metres from the camp she disdainfully threw it away.

On 9 July, in the vicinity of Mt Finnerty, Lefroy was approached by three Aborigines - Kimber, Dandogoert and Kiddy Murrin, who surprised him by their use of the English word "men" to describe themselves.

I immediately despatched Kowitch alone to them fearing that, if more of us went towards them, they might be frightened and run away, and I was happy to observe that he had not much difficulty in making himself understood by them. He soon learnt that one had been to Lake Dambeling [Dumbleyung] near Kojonup and another had been to Comining, Mr Smith's station [near Narembeen], that both had seen white men and sheep and had tasted damper and tea.

In the days that followed they showed Lefroy the water-holes in the south-west sector of the present Yilgarn shire, providing the traditional names for these and other physical features. When he wished to record a name he had them repeat the word to Kowitch who then broke it into syllables distinguishable to the European ear.

Lefroy was delighted with these men for not only did they meet his immediate need for guides, but they were potential shepherds if he took up a pastoral lease in the region. This view of Aborigines as a natural resource reflected the prevailing attitude of an emerging squatter class in colonial society. Throughout the settled area, from Geraldton to Esperance, an increasing corp of Aborigines was meeting the rural demand for servants, farm labourers and shepherds. It seemed logical that the Kalamaia of the Yilgarn would follow suit.

By 1864 the fringe of European settlement was moving closer towards the Yilgarn as Clarkson had established a station at Doodlakine. From here on the 5 July of that year he set out to explore eastwards with Harper and Lukin, and the Aboriginal guide, Gyngnich, whom he had first met during the 1861 expedition with Dempster. Clarkson was keen to obtain the services of Aborigines living in the Yilgarn. On 16 July, as the party searched in various directions for signs of Aborigines, he assessed their chances of success on their own: "We must get one, for I feel certain we shall not be able to get on without, with the country in its present dry state". Two more fruitless days passed and Clarkson and the two

Europeans made camp at a water-hole while Gyngnich was sent to locate Aborigines. Clarkson's faith in his guide is at first glance quite surprising but expresses both the European dependence upon local Aboriginal knowledge for survival and the deep sense of loyalty displayed by many Aboriginal servants and guides. Three days later, Gyngnich returned with a family group of four men, three boys and one old woman. Clarkson described the diet of this group as including: "rats, grubs and vegetables of several kinds; the root of the gnargan is sweet and juicy and they pound up fine the root of a eucalypt which they call narlow".

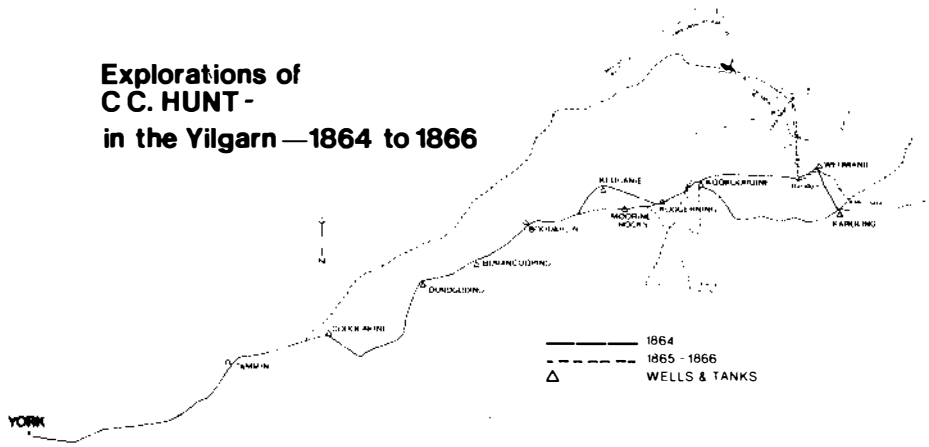
This group of Aborigines led Clarkson's party to the water-holes of the western and northern sections of the Yilgarn. Fifty kilometres north of Koolyanobbing they were joined by another group who "with the exception of one, had never seen whites before". Two days later Clarkson responded to a warning that he was heading into an area devoid of food and water for the horses and changed direction towards Mt Kennedy (Bungalbin). Here two of the guides left them after claiming that the neighbouring Aborigines were fierce and that some time previously about thirty people had been killed during inter-tribal conflict. In the vicinity of Hunt's Range he described the minimal local resources available for human survival. It seemed as though it had not rained for two years; the soil was poor, the trees stunted and half dead. "The only things we saw in the shape of animal life were a few small birds and two or three starved rats". Their guides again warned them not to proceed. On 30 July they made camp and the local Aborigines entertained Clarkson with an exhibition of dancing. The natives of this country have a different way of dancing to those of the settled districts. They make a wreath of leaves through which they poke their faces and part of the head ... the women and children are not allowed to witness much less attend a dance; they lie down at a distance with their faces to the ground.

Clarkson compared this with European social events: "What a small amount of pleasure a European would have at a dance if the ladies were excluded".

Early in August, when Clarkson ignored the warnings of his guides and continued beyond the Hamersley Lakes and into the north-east sector of the Yilgarn, Gyngnich and another Aboriginal left them. After a day of fruitless searching for water in the flat spinifex country he changed course to the south-east, camping at the Yealgarn Hills (probably the Yilgarn Range) on the 6 August. During the previous ten days they had seen no sign of wildlife except a one-eyed parrot and a black cockatoo, "which was so tough and strong tasting that even Harper would not eat it".⁴

In the same year that Clarkson searched for pasture, Charles C. Hunt led the first of his three expeditions across the Yilgarn. Between 1864 and 1866, Hunt assessed the potential of the region and mapped the natural water-holes that might become staging camps on a stock-route if good pasture lands were located. An Aboriginal water-hole beside Lake Koorkoordine, near the present Southern Cross Golf Club, was cleaned out and lined with stones in 1865. Alexander Forrest, accompanied by Tommy Windich and Jimmy Mungarar, camped here on 19 August, 1871, and in the years that followed it was used by many pastoralists, shepherds and prospectors. Hunt located other Aboriginal soaks in the Yilgarn, the most notable being, Keokanie Rocks, Geogarling, Yarkarakine (Bodallin), Kodjering, Moorine Rocks, Lake Koorkoordine, Dulagdin, Reen's Soak (Yellowdine) and Weowanie.

Fig. 2:



The first Hunt expedition included two Aboriginal guides, Kowitch [Cowich] and Mendal [George]. The party left York on 10 July, 1864, and seventeen days later arrived at Duldagin Rock in the Yilgarn where they met Aborigines who had been with Clarkson two weeks before. They accompanied Hunt to the vicinity of Koolyanobbing and then departed. On the 6 August, south-west of Duldagin, Hunt wrote: "Native huts were met with today for the first time; they were built of broad strips of bark, and contained the usual quantity of ashes which served as blankets".⁵

The largest group of Aborigines that Hunt encountered was assembled at Moorine Rocks, where he camped on 20 October, 1864. The scene was captured in his journal:

Here we fell in with a party of seventy natives, men, women and children; several of them had never seen a white man and were consequently shy. I gave them the remainder of our biscuit . . . It appears that they had assembled to fight, but I made Kowitch give them to understand we should be very angry if they did, and I am happy to say that the intended battle ended in a grand corroboree.

Later, while camped at Koolyanobbing, Hunt's party was joined by a band of local Aborigines who repeated the story told to Dempster in 1861. According to the informant, two Aborigines had died in an encounter with a white man thirteen days travel to the north-east at a lake which they referred to as Gnidalli. In the incident, several years previously, the white man and his Aboriginal companion had been speared while they were making damper for a meal. Reports such as these led to conjecture that the white men had been members of the ill-fated Leichardt expedition that had attempted an east to west crossing in 1848 and disappeared without trace.

John Forrest's government-sponsored expedition of 1869 was organised to ascertain the accuracy of these reports and to shed some light on the fate of Leichardt. The complement of six persons, included two Aborigines — Tommy Windich already renowned as a police tracker and guide and Jemmy Mungaro (Mungarer) whose communication with eastern Aborigines had sparked the investigation. The party left

Perth on 15 April, 1869, on an easterly course, turned north and then north-east crossing the corner of the present Yilgarn shire towards Lake Barlee. Four months later they returned to Perth without finding the remains of the supposedly murdered white men. Forrest's report highlights the differing perceptions that Europeans and Aborigines had of the same stretch of land. Jemmy had led them to expect a river where they found only a dry creek and a salt lake, and good country that instead was arid. As Forrest commented, "the fine country he described we never saw, what a native calls good country being where he can get a drink of water and a wurrong [a small kangaroo]".⁶

The settler expeditions of the 1860s failed in their quest for rich pastures and in the two decades that followed it was not the golden fleece but the gold in the quartz, that the Aborigines called Yilgarn, that was to bring Europeans flocking into the region. Like the explorers who preceded them, the early prospecting expeditions relied upon Aboriginal guides. In many instances there developed between white and black a bond of trust and friendship far beyond the relationship of masters and servants. This was never better illustrated than in the experiences of Richard Greaves, Harry Anstey and Edward Payne who employed as guides first Murruma Jack, a man working at Lukin's property east of the present town of Kellerberrin, and later Philip, described by Greaves as "as real honest fellow". One morning when the horses were missing Philip was sent to find them but he was gone so long that the prospectors thought that he had abandoned them. Four days later he returned, having tracked the horses for nearly seventy kilometres.⁷ During the days that followed, the three prospectors examined every stone and reef in their path and at last, in the Yilgarn Ranges, a sample handed to Anstey brought the response, "Dick, old man, that looks like a speck in that piece". They had struck it rich! A fifty pound flour bag was filled with specimens and Anstey was despatched with it to Perth.

Payne and Greaves continued to prospect the area and were visited by a group of local Aborigines who recognised Philip as a kinsman. The prospectors entertained the visitors with a mirror and made them sugar toffee. The Aborigines were delighted, demanding more toffee before it had cooled. Payne and Greaves roared with laughter as the tribesmen tried to remove the burning syrup from their fingers, until a spear just missed Greaves.

They saw us laughing at them, and one fellow threw a spear which stuck into a log, just within an inch of my leg. I pulled out my revolver, which we always had ready buttoned on to our waist straps, and fired the whole six chambers in rapid succession over their heads to frighten them.⁸

That night the prospectors were alert for a possible retaliatory attack but none came. They moved on and a few days later discovered gold at what was to be known as the Golden Valley. However, as their water was getting low and none seemed to be available in the district, they returned to Eenuinn. From there, Payne and Greaves rode north but a serious bout of sandy blight temporarily blinded them both so that they were dependent upon Philip to lead the way while they rode their horses through days of weary travel. Eventually he brought them to a gnamma-hole where the grateful prospectors made their base camp. A band of Aborigines was attracted to the camp and Greaves recalled: "The blacks seemed to be wilder here than any we had previously met, and we slept turn about as a precautionary measure, because we had been warned that they were very treacherous".

In returning to Eenuinn, their supplies of food and water were exhausted and without water to bathe their inflamed eyes, Payne and Greaves were again forced into a dependence upon Philip. Undoubtedly the Aboriginal's knowledge of the country and its resources saved their lives. He detoured via Mount Jackson where he knew that water was normally available, but the native well was dry. For three more days the prospectors rode blind without food or water. Then Philip recognised a tree he knew stored a large amount of moisture in its edible roots. He immediately made camp and after gaining a small amount of fluid for himself and his companions, gathered a supply of bardies. These, together with the pulped roots, provided the prospectors with their first food for days.

They then continued on to the main base at Eenuinn where Philip set up camp. While they rested, an elderly Aboriginal woman named Maggie came into the camp and, when shown gold samples, claimed that similar rock and gold were to be found to the east. She offered to take Greaves there but the prospector was in no condition to accept as his failing health forced him to seek a doctor's attention.

Some weeks later while Greaves was hospitalised, Philip travelled from the Yilgarn to Perth to visit his friend. Ironically, at the same time, Anstey was collecting the full reward as discoverer of the Yilgarn field and Colreavey, acting on directions given by Greaves, laid claim to the Golden Valley reef. Philip's loyalty and friendship made a lasting impression on Greaves who years later wrote:

I cannot say too much for the kind-hearted black guide we fortunately possessed, and it was mainly owing to his attachment to "Big fellow Dick" that I am here to relate this story.⁹

Tom Risely, who followed Greaves into the Yilgarn, claimed to have been guided by the constellation, Southern Cross. He later wrote: "We discovered gold about four miles from Kokerdine. I named the place Southern Cross and it goes by the name to this day".¹⁰ Risely had the services of an Aboriginal nicknamed "Wheelbarrow" who boasted he could find good "gabby" (water) anywhere.

McPherson was another prospector who nearly perished near Southern Cross in 1888. Other prospectors recalled:

Had it not been for Toobey being such a good black-fellow, McPherson would never have returned. He was so bad he gave Toobey his revolver and asked him to shoot him but Toobey would not do so but got him back into Southern Cross.¹¹

Other rich fields in the Yilgarn were located by utilising Aboriginal knowledge of the region. One man, who saw the railings around the graves in the Southern Cross cemetery told William Parker, "If you put a fence around my brother's grave I take you and show you plenty gold". Parker accepted the agreement and marked a site south of Southern Cross that became known as "Black-fellow's Grave". The unnamed Aboriginal then took him to an outcrop of gold-bearing rock at what is now Parker Range. Not long afterwards, John Ford, the co-discoverer of the Coolgardie fields, with Jacoletti and Withers, followed up Parker's trail and found gold near Black-fellow's Grave. However, it was not a profitable show and the trio soon split up. Withers headed east with an Aboriginal boy. Some days later he was speared in the shoulder and was grateful for the loyalty of his young companion who brought him back to Southern Cross for medical attention.

In his short time out, Withers had picked up ten grams of gold and although he did not advertise his find, something in his behaviour alerted Ford. He teamed up with Arthur Bayley to follow Withers' tracks eastward where, just beyond the present town of Coolgardie, they found the remains of two prospectors who had been fatally speared. Nearby, at a site that became famous as Fly Flat, Bayley and Ford found gold. Ford recalled their elation, "We gathered nuggets like spuds in a paddock. I was afraid gold would be going cheap".

Sir John Kirwan, who was on the Eastern Goldfields in 1897, claimed that G. A. McPherson, who prospected with an Aboriginal companion, met Bayley in Southern Cross in 1888 and told him he had found gold to the east but lack of water had forced him to retreat.¹² When Bayley and Ford returned to the Cross, three out of work young miners, Harry Baker, Tommy Talbot and Dick Fosser sniffed out their secret. They bought four half-broken brumby horses with one saddle between them and gained the services of an Aboriginal tracker to trail Bayley and Ford. However, the Aboriginal left them and their own inexperience cost them a fortune when they failed to peg a claim at Coolgardie.

After a while the Aborigines ceased to lead prospectors to gold. One explanation is given by Clara Saunders who travelled through Southern Cross to Coolgardie where, with her husband, she managed the Coolgardie Hotel. At one time she cared for a young Aborigine named Topsy, who had been speared in the leg and apparently abandoned by her family. Several of the prospectors brought gold to the hotel to see if Topsy could recognise it. When Clara Saunders asked the girl if she had seen anything similar, she placed five stones on the ground to indicate that at five days travel there was gold. Despite the attempts to bribe her with a new dress, a ribbon in her hair and a small mirror, Topsy replied with a curt, "no show white man". She went on to explain that the tribal doctor had warned everyone that he would make them blind if they showed the white men where gold was located. Mrs Saunders continued: "The blacks know that where the white man finds gold the white man always stays and the black man has to go".¹³

As more prospectors came into the Yilgarn, relations between the Europeans and Aborigines deteriorated. Aboriginal raids on unattended prospector's camps and unoccupied town houses became a serious problem of the 1890s. One of the most inviolate of all the unwritten laws of the Australian goldfields was the sanctity of the digger's camp. Tents, huts and shacks were impossible to secure against a determined thief and possessions were safeguarded only by a common regard for another's property. This gave rise to a trusting society where houses were left unlocked and stores and goods unattended.

The Aborigines, however, were not members of this covenant. In their own non-materialistic society very little value was placed on the accumulation of property and goods. Even food was not stored but usually eaten soon after it was acquired. The European prospectors and town dwellers seriously affected Aboriginal access to traditional sources of food and water. In the sparsely watered region of the Yilgarn the Aborigines found themselves vying with prospectors for access to the few reliable water holes. A gnamma-hole in a rock crevice that may have supported an Aboriginal family for a week, could be drained overnight by a party of prospectors and their horses. For a people with limited means of carrying water, these natural catchments were critical to their existence. This was especially the case in summer when the daily temperatures could soar above 40

degrees Celcius. Moreover, the prospectors used guns to add bush turkey, emu and kangaroo to cooking pots, depleting an already scarce supply of large game that the Aboriginal men traditionally hunted. Certainly the men were not the main providers in an Aboriginal family, for the women, in their daily foraging, gathered a harvest of seed, roots, reptiles, small birds and grubs that formed the basis of the family diet in the desert regions. Wally Ellis, a resident of Southern Cross until the 1950s, described a succulent tuber common to the sand plain region of Mt Caudan that had the local name "yobbies". There is a report in the *Southern Cross Herald*, 27 September, 1895, of a similar food found in the Yilgarn, called "yook" which grew in loose sand near salt lakes. It was described as a small bush about ten centimetres in diameter producing large numbers of tubers about the size of lemons with a bitter skin and flesh tasting like carrots. But the gathering of such traditional foods by the women depended upon a pattern of movement around the established domain. Now, with the uncertainty of water-holes, the disruption to the natural food sources and the unpredictable nature of Europeans with guns, the capacity of the women to provide for their families was affected just as seriously as the men's ability to hunt large game. Under such circumstances the Aborigines attempted to exploit the alternative resources of the prospectors and town-dwellers.



Plate 1: Mr & Mrs Roundhead, 1904. The members of the Roundhead family lived and worked in the Yilgarn for several generations. (Southern Cross Times, 24 December, 1904).



"Gib it Tikpen."

Plate 2: This 1904 photograph of an unnamed woman, shows the transition from a traditional to a town existence. The caption suggests the increased dependence upon begging as a means of survival. (Southern Cross Times, 24 December, 1904).

Casual contact with Europeans had given the Aborigines an insight into their behaviour and introduced them to new foods such as flour and sugar as well as to the attractions of tobacco and cloth. The Europeans seemed to the Aborigines to be ambivalent in their attitude to food; some were generous, others selfish and most left food unattended and seemingly abandoned in their tents. So the Aborigines gathered this food in much the same way that they had in the past, but now with greater attendant risks.

In February 1889, reports came into the Southern Cross police station that Aborigines were raiding prospectors' camps at Lake Deborah, fifty kilometers north of Southern Cross and stealing flour, raisins, tinned milk, sugar, clothing and assorted pieces of personal clothing. By 1890, Aborigines attracted to the hub of European activity were raiding tents on the outskirts of Southern Cross. In March 1890, Murdum was convicted of stealing bread, mutton and water from a tent and sentenced to one month's hard labour. This did not act as a deterrent for, in the following month, Billy Mitchada was arrested in possession of stolen property and sentenced to three months at the notorious Aboriginal

penal settlement on Rottnest Island. But even such severe penalties had little impact on the activities of an unknowing tribal population and relations between the Aborigines and Europeans continued in an uneasy state for another decade. The Aborigines were gradually forced to adapt their food gathering strategies to an increased dependence upon European sources by working or begging. Occasionally, punitive expeditions against Aborigines were reported, at other times only hinted at. The *Southern Cross News*, 24 January, 1936, in a flash-back feature highlighting the increasing tension between the Aborigines and prospectors in 1894, recalled that "punitive expeditions have now been organised by the diggers and it will not be wonderful if bloodshed results". Greaves and Risely recorded one expedition in which a number of men, women and children were shot in the Yilgarn-Coolgardie district; and the *Southern Cross Herald*, 14 September, 1894, carried the banner "Attacked by blacks" referring to an incident on the Mt Margaret fields.

Sometimes Aborigines were attracted to mine sites with tragic consequences. At Marvel Loch there is a local legend that, at about the turn of the century, 26 Aborigines died when they unsuspectingly collected water from the cyanide tanks of the Jacoletti mine. The survivors of the group reputedly blazed the nearby trees as a dire warning to others who might venture near the tanks.

During the 1890s, several Aborigines were arrested in the Yilgarn district for absconding from their employers. The Masters and Servants Act regulated agreements between employers and employees - the employer being obliged to pay the servant and the servant being required to serve the terms of the contract. Until 1882, employees who refused to work or who absconded from their masters could be arrested and jailed. However, after that date imprisonment only occurred when a fine was not paid, but, as Aboriginal offenders were rarely able to pay the fine, they were usually jailed. In one such incident in January 1888, Couadee, alias Barnèy, was arrested at Golden Valley and charged with absconding from his master, Mr Lukin. A sympathetic magistrate found him guilty but sentenced him to only ten days, which was equal to the time he had been chained while awaiting trial.

Every outlying police station had Aboriginal trackers attached to the depot with the tasks of locating police horses when they strayed, identifying the tracks of local offenders and taking a leading role in the search for lost prospectors. Although there were no set rules on the selection of Aboriginal assistants, the police usually selected a man with no local affiliations. In this way the tracker was out of his territory, felt threatened by the local Aboriginal law holders and looked to the police for protection. The trackers at Southern Cross in 1889 were Jacky, who accompanied Constable Williams on patrols, and Gunner who was Constable McCarthy's companion. In later years a number of trackers attached to the Southern Cross police station became local identities including Jim Champion, who was believed to have come from the Geraldton district and Norman Euro and Paddy Roe from the Kimberleys. Wattì Karrawarra, serving a long-term sentence, was released on parole in the 1930s to become a tracker at Southern Cross. He was later well known for his demonstrations of Kimberley art to school children visiting the Aboriginal gallery at the Western Australian museum. Townspeople still recall the skill and expertise of these men as trackers and casual labourers in the district. Elderly Aborigines, however, remember them more for their involvement in the local tribal ceremonial life.

The maintenance of the traditional law at Southern Cross was influenced more by law men from other areas than from Southern Cross itself. In terms of local tradition, there seems to have been a strong association between the Aboriginal people of Southern Cross and those at Coolgardie, whose population had law links that extended eastward into the Pitjanjantarra territory beyond Kalgoorlie, as well as to the north through Leonora and Wiluna. David Champion recalled that his father, Ted, had high status in the law and occasionally travelled on law business beyond Laverton and Cundeelee. In his later years, Ted Champion resided at Coolgardie and was the acknowledged law authority for that district. A second law influence came from the Murchison through the visits of law men from the Paynes Find, Mt Magnet and Sandstone areas, to Southern Cross. These Murchison law men sometimes arrived with novitiates who were being taken across the country to be shown the traditional sites and to learn the dreaming stories associated with each location. These visits were times of consternation for the local boys on the reserve for they were never sure when the law men would decide that they should "go bush" for initiation. Some, such as William Sambo, decided not to stay around and went elsewhere in search of work.

The third law influence came from the group of Kimberley and north-west men who were sent to Southern Cross to serve as police trackers. Some stayed beyond their assignments, married local women and were accepted into the law traditions of the Southern Cross-Coolgardie people. These men acquired impressive reputations with both the Aboriginal and non-Aboriginal sections of the Southern Cross community. Norman Eura, a giant of a man, was employed at Mt Jackson station in 1942. Jim Champion, for many years the best known police tracker in the district, married Maggie, the acknowledged matriarch or "Queen" of the Aborigines of Southern Cross. Billy Sambo, the grandfather of the present William Sambo of Coolgardie, came from Corunna Downs south of Marble Bar, where he is reputed to have killed a man. Norman and Paddy Roe from the Kimberley district astounded the local people with their ability to call on small supernatural beings that were invisible to others. Watti Karrawarra, who took over Jim Champion's title of expert tracker, had been sentenced to death for the murder of pearlers in the Beagle Bay district. When his sentence was served, he returned to the Kimberleys and re-established his status as a law man. Other notable men included Charlie Maddocks and Billy Munday from the north and Willie Peterson from Norseman.

Southern Cross reserve was the meeting place for a transient Aboriginal population: the north-eastern Gnurlu and Maduwonga grouped under a generic title of Wongis coming south for ceremonies, joining with the Widi and Barimaia Yamagees from the north-west, the Kalako from the Norseman district and the remnant of the local Kalamaia. These transient groups sometimes arrived at the reserve with young men who had spent many months in the bush in preparation for initiation. They stayed sometimes a few days, and occasionally months, then moved on. Southern Cross was a meeting place for Aboriginal people from everywhere.

One such visitor was Ned Mippy who was twenty years old when he came to the Yilgarn to work for Sam Clarkson of Mt Jackson station. Mippy had been employed at Guildford when he approached Clarkson for a job. The three requirements for a Clarkson employec were dependability, loyalty and the ability to ride a horse. Having confessed to all three, Ned Mippy was soon on the train for Merredin where he was met by the butcher

who managed Clarkson's local meatworks and butcher shop. Sam Clarkson noted his meeting with Mippy in his diary for April 1939.

Went in to meet Ned Mippy and also settled with Walter Mingan to date. Mippy started today at twelve shillings (a week) six shillings fare advanced.¹⁴

During the months that followed, Mippy brought several mobs of cattle overland from Mt Jackson to Merredin and occasionally to Southern Cross, but he was never keen to hang around the town for any length of time in case he came under the scrutiny of the traditional law men. In 1986, forty-five years after his two year stint at Mt Jackson, Mippy recalled his concern:

My poor horse was pretty tired after the long drive into town but I wasn't intending to hang around. As soon as I got rid of the stock I turned around and kept on riding until I made camp at Perilya. Even then I wasn't sure I was safe and slept with a loaded shotgun beside me.

The general view of the Southern Cross law men was that anyone coming from another territory must abide by the local laws. This is a generally accepted practice in many Aboriginal societies. However, the major concern of the Nyungar was that circumcision was not included in their own initiations so that being put through the law in a foreign territory was a terrifying prospect. The reputation of the law men extended across the accepted boundaries into Nyungar territory and occasionally they would ride the train down the line to Burracoppin to hold law ceremonies on the reserve. At such times many of the Nyungar youth would leave town.

The influx of Aboriginal people from other law centres perpetuated in Southern Cross the traditional ceremonial life and customs that were suppressed or neglected in



Plate 3: This staged photograph taken at Bullfinch about 1910, captures the overlap of two cultures. The spears and ceremonial body art are contrasted with the European dress. (Courtesy Royal Western Australian Historical Society).

other towns. Three types of corroborees were held near the town. There were some non-secret ceremonies attended by all the reserve people. Mrs Erna Forrester of Minburra farm, remembered the men approaching her husband for permission to have these activities on the land adjacent to the reserve. There were also the more secret ceremonies conducted by the men at a site along the Turkey Hill road. However, the most memorable events were those held at the football oval which were open to the general public for five cents admission. William Sambo recalls that these were very popular and well attended by the townspeople. The Kimberley men were very prominent in these shows with their spectacular dancing accompanied by tapping sticks and on rare occasions, a didgeridoo.

The employment of Ned Mippy and others from outside the district demonstrates the problem of finding and keeping local labour. This was especially the case where the location was remote from the town, the accommodation and work conditions were poor, or the job itself was particularly unpleasant. Syd Carlson, a retired Southern Cross butcher, recalled that he found it difficult to get labour for some of the unpleasant tasks associated with slaughtering: "You had to get a black-fellow to do it because you couldn't get a white man", because cleaning up around the slaughterhouse, digging out the bloodholes and boiling the offal for the pigs was hot work and the smell and flies made it unattractive.

In some cases Aborigines were preferred as casual workers because they were more readily available than white people. White casual workers were sometimes hard to find at short notice whereas the local Aborigines were usually available for casual and seasonal work. Furthermore, the legal requirements that applied to the full time employment of Aborigines could be avoided. Under the terms of the Aborigines Act of 1905, employers were required to apply for a permit to employ an Aborigine, indicating the terms and conditions of employment. The application was processed by the local protector of Aborigines, usually the police sergeant. A formal contract was signed by the employer, the employee and the local protector and, with the payment of a fee of fifty cents, the employment of an Aborigine was legalised. The employer was then bound to provide the employee with "substantial, good and sufficient rations, clothing and blankets, and also medicines and medical attention where practical and necessary". The terms of the Act originally applied to all Aborigines "under the Act", all female part-Aborigines and all male part-Aborigines under the age of 16 years. In 1936, ten permits were issued at Southern Cross and the local police were diligent in their supervision employment. Sam Clarkson, the Mt Jackson pastoralist had occasionally to be reminded of the law. In a brief letter to the officer in charge of the Southern Cross police station in 1939 he mentioned a permit for Francis Paddy and concluded, "I will call and see you one day next week when in Southern Cross and bring permit". Many employers regarded the permit as a petty nuisance and only took on Aboriginal workers when white labour was either unavailable or too costly. Thus a measure intended to protect the northern Aborigines from exploitation by unscrupulous employers led to discrimination in the south.

After the outbreak of the World War in 1939, large numbers of rural workers were either inducted into the armed services or drawn into city factories. As a consequence, Aboriginal labour was in great demand on the home front, so the permit of employment form was amended to require only the signature of the local protector with an assurance



*Plate 4: Paddy Bullocky (l) and Ted Champion (r) worked for Ben Panizza (c) on his South Yilgarn farm during the World War.
(Courtesy G.P. Panizza).*

that the employee's medical fund contributions would be paid. Permits of this type continued until 1955 when they were finally abolished.

Despite the demand for labour, not all Aborigines accepted employment as an alternative to the government rations that were issued weekly through vouchers. The apparent reluctance of some Aborigines to sign up for farm work was raised at a roads board meeting on 11 September, 1942, when it was moved that:

The attention of the Protector of Aborigines be drawn to the fact that there are a number of able bodied natives here receiving free rations while farm work is available for them which they will not take (and) asking that rations be withdrawn while work is available.

Despite much criticism, many Aborigines were highly regarded and always in demand. William Sambo recalled his time with Ernie Beaton's team in the 1940s when they sheared the farms from Southern Cross to Bodallin. When that was finished, he worked on the farms as a shepherd, dairyhand, fencer and as a slaughterhouse labourer. Those Aborigines who worked on farms or outlying stations were expected to provide their own tents. William Sambo remembered, "If you couldn't afford a tent you sewed wheat bags together to make your camp or else you slept out in the open". Any who worked in or near the town lived on the reserve.

The Southern Cross Aboriginal reserve was located on the outskirts of the town along the road to Koolyanobbing on a narrow strip of high land extending into the western reaches of the salt pans of Lake Polaris. The sparse red soil is typical of the Yilgarn: clay mud after the rain, powdered dust in summer and a surface littered with sharp-edged rocks that must have made an uncomfortable bed. For most of the time it was in use, the reserve had no permanent water or even a catchment tank and the residents carried water in sixteen litre kerosene tin buckets from the taps at the railway station. There were no houses on the reserve. The more traditional residents lived in bush huts not far removed from the mulga branch wiltjas found further to the east. Others built semi-permanent homes from kerosene tins, flattened and lapped to make short walls and a low roof. In heavy rain these iron houses leaked but fortunately for the reserve dwellers, Southern Cross rains are infrequent. Mostly, people made a simple lean-to of sheet iron angled against a tree and draped with bark as protection against the wind. Even by outback Australian standards the conditions on the reserve were appalling. In November 1934, the Aborigines Department wrote to the Yilgarn Road Board requesting it provide a free sanitary service for the Aborigines camped near the town. The board responded that it would grant such a service when the Aborigines Department supplied the toilets. The government seemed reluctant to provide such facilities and was reminded of its obligations by the road board in March the following year, but there is no indication that the Aborigines Department responded.

While this correspondence was passing between the road board and the Aborigines Department, Henry Moseley was conducting a Royal Commission into the conditions and treatment of Aborigines in Western Australia. He was appalled by the living conditions that existed on town reserves, "which without exception are a disgrace". He continued: whole families nine or ten being huddled together in abject squalor, with no beds to lie on, no cooking or eating facilities worth the name, no proper facilities for washing and dressed in clothes a tramp would despise, unless by

begging, they are able to obtain cast-off clothing from the whites in the district.¹⁵

The health and education of children raised in such terrible conditions were severely affected for, although there was no official policy to deny Aboriginal children access to schools, they could be excluded if their health or personal hygiene was considered detrimental to the well-being of other pupils. Education to achieve the goal of a literate Aboriginal "town" population was an established ideal by 1935. The Australian public, however, was not reconciled to the concept of a liberating form of education for Aborigines that would break the established cycle of dependent poverty by giving them access to a wider range of employment. Neither were Australians of that era ready to accept the notion that education should give Aborigines equal status with themselves and access to the power structures of wealth and politics. It is not surprising, therefore, that Moseley's recommendation to close all the town reserves in the southern part of the State was disregarded. Such a measure would have required the government to re-establish the reserve families into houses and to legitimise their presence in the towns.

Most of the reserve population was sustained by a weekly issue of tea, sugar, flour and meat. Occasionally they got soap and a piece of rope tobacco. The government, via the Chief Protector of Aborigines, provided a ration system for all Aborigines who were not or could not be employed. The actual number on rations at Southern Cross varied because of the transient nature of the population, for example, the weekly average was twenty-two in 1935 and fifty-four in 1945. The police sergeant, who was also the local protector, drew up a list of people entitled to rations and the amount each could receive. The storekeeper and the butcher were given copies of these lists stating each individual's ration, for example, "Champion one and a half pounds of meat". The meat was supplied by the local butcher and usually consisted of the cheaper cuts such as the neck, flaps and tripe or an equal value in suet. Many families chose the suet as it could be rendered into fat to spread on flour damper. The rope tobacco, nicknamed "conker", came bagged in ten metre coils from which the shopkeeper or police sergeant broke off pieces for the men; the women had no entitlement.

The government did not give money in those days but any Aborigines who wanted more than basic rations could pick up a few shillings by specking for gold. Some obtained casual work, for which a permit was not required, and "sucker bashed" the young trees in newly cleared paddocks, crutched a few sheep or assisted with a muster. When casual work was not available, the reserve dwellers supplemented the government's meagre ration issue by trapping rabbits for meat and skins and by hunting kangaroos with dogs. Very few Aborigines had firearms because section 47 of the Aborigines Act of 1905 denied them access to: "any firearm from which any shot, bullet or other missile (may) be discharged" without a special licence, which was rarely given. A few gained extra money by claiming the road board bounty for eagle beaks and fox scalps while others managed to get pocket money by "picking dead wool", that is, collecting the wool from the carcasses of dead sheep. Sometimes women such as Nina, Norman Euro's companion, worked alongside the men doing fencing and other outdoor tasks.

Mrs Erna Forrester recalled the importance of Aboriginal women as part of the town labour force: During the 1920s and 30s some women did casual work for families in Southern Cross. Among these were Mary Diamond, the wife of Joe, a well respected

couple who lived on the reserve. Others were Trinda, Trixie, Noona, Eva Roundhead and Alice "Moppy" Wopp.

A few women had long term employment. Lena McPhee and Lizzie Oxenham both worked for the Forresters at Minburra farm. Lizzie later worked at the district hospital until her retirement.

The value of the Aboriginal labour may be assessed by the tolerant attitude the local magistrates had towards those appearing before the bench. David Champion recalled that the local police became very frustrated because those they arrested as drunk and disorderly on the weekend were often discharged in Monday's court by a magistrate who realised that the shearing and other menial, but often essential, jobs could not be completed with half the work force in jail. In the days before the liquor laws were amended to give Aborigines legal access to alcohol, there were severe penalties for being in possession of alcohol as well as for those convicted of supplying it to Aborigines. Although Southern Cross publicans strictly observed the law, William Sambo recalls that a few locals were willing suppliers. One sold watered claret at 70 cents a bottle while another offered a blend of mulberry juice and methylated spirits at 50 cents a bottle. When this resident exhausted the supplies of mulberry juice she would colour the "metho" with brown, shoe polish. The local newspapers occasionally published the outcome of court appearances for supplying or receiving alcohol. A more serious incident occurred in 1948 when, during a fight incited by alcohol, Ruby Jackson was fatally stabbed by Verna Ford.

Apart from the contribution Aborigines made to the district's economy, they also participated in local sporting events. In 1935, Southern Cross staged a carnival which the *Southern Cross News*, on 13 December, described as the biggest sporting event of the year. A highlight of the day was an all Aboriginal footrace, "the dinkum Aussie handicap" won by Andrew McIntosh. Local and visiting Aborigines were also the strength of the district football teams that played in towns up and down the line from Coolgardie to Kellerberrin. At various times the following wore the Southern Cross guernsey: David Champion, William Sambo, Don Roundhead, Neil Champion, Doug Neilson and Perry Jackson. Perry was short, snowy headed and full of cheek in his younger days. Don Champion recalled one constable's response to his cheek and illegal drinking: He finally said to Perry, "Look here, I'm fed up of arresting you for being drunk and you getting away with it. Next time I'll take my coat off and lay it on the ground and give you a hiding." Well, Perry liked a bit of a stoush and it suited him. He had a number of fights with that policeman, some he lost and others he came out on top.

The unique relationship between the local people and the Aborigines resulted in mutual respect and very little overt discrimination. They were still expected to have a legitimate reason for being in town and were obliged to observe the sundown "curfew" common in Western Australia, that required Aborigines without legitimate business to be out of town of an evening. But these unofficial rules were less stringently enforced than in many centres. Arthur Newlands, when interviewed in 1986, recalled that in the 1930s an Aboriginal could go to an evening picture show at Southern Cross and sit in the deck chairs, whereas at other towns such as Coolgardie, there was a special "Native section" of the theatre where Aborigines sat on hard benches without back rests. Others, interviewed in 1986 about their experiences at Southern Cross, declared that it was a "good town" where they had been treated fairly and without prejudice. Yet this relationship was not to

the satisfaction of every resident for, in September 1934, the Yilgarn Health Board resolved: "That the Aborigines Department be asked to have the natives now camped near Southern Cross moved on". Three years later, in December 1937, a Mr Whinfield complained about the increasing Aboriginal population living on the reserve, petitioned to have it removed further out and asserted: "There is not another town in the State where natives are allowed to roam the streets as in Southern Cross". It was implied in this article that, although the reserve population was transient, there was some concern that the Aborigines "would make their headquarters in Southern Cross".

Yet, as in most towns, there were those who were sympathetic to the needs of the Aborigines. On 10 November, 1944, the editor of the *Southern Cross News* attacked the general public apathy and the lack of concern for the needs of the Aborigines. Action to ameliorate their condition he saw as a "nine day wonder" that usually followed some scandal or report of their ill treatment. The plight of Aborigines he regarded as the consequence of Australian indecision: "They refuse to civilize him properly, and they refuse to allow him to live according to his native customs". He decried the lack of social conscience amongst the judiciary, who administered unjust and discriminating laws without voicing a protest, and insisted: "that proper educational facilities should be provided for the natives".

The people of Southern Cross had a chance to witness the results of a "proper educational facility" when the Aboriginal children of Mount Margaret Mission visited the town in 1945 and combined with the local school to present a concert to a most appreciative audience in Goodin's Hall. The Mount Margaret choir was accompanied by an orchestra of mouth-organs, accordions and tambourines. A year later they gave a second performance at Goodin's Hall, before what the editor of the *Southern Cross Times* described as "a very good house". The programme included musical numbers on the gum leaf, and a recitation by Miss May Miller, "Who ever heard". An orchestral medley and items by Misses Coele, Sadie Corner and Morfel Atkinson were the other principal items on the programme.⁶

Two of these mission children were to achieve significant success in the Western Australian community — May O'Brien as the first Aboriginal superintendent of education and Sadie Canning as the matron of Leonora hospital.

In 1974, the Furnell Royal Commission into Aboriginal Affairs recorded 86 people of Aboriginal descent at Southern Cross but none on the reserve. However, as the economic situation changed, there was less work available and several families left the district. As Bruce Dalgetty observed in 1986, "There's nothing here for a family unless they own something like a farm or their own home".

In 1986 there were four Aboriginal families living at Southern Cross, though none had traditional links with the district. The Dalgetty brothers, Bruce and Kevin and their sister, Barbara Counsellor, were the longest residents, having come to Southern Cross 18 years before with their parents, Bob and Cecillie Dalgetty. It was a time when both the Western Australian Government Railways and the Goldfields Water Supply were recruiting Aboriginal employees from the South-West and Murchison districts for work at Southern Cross. Those who arrived included Les Pickett, Clive Counsellor, Graham Bennell, Jimmy Robertson, Ray Dann, Timmy Simpson and Sid Websdale. Violet Graham was one of the few Aborigines with roots to the east and, although she left the

district for Menzies, her daughters, Elizabeth and Ethel Dalgetty have remained in Southern Cross.

One of the few reminders of the Aborigines who lived in Southern Cross is to be found in a corner of the town cemetery. Near the eastern boundary a rusting iron crossbar bears a solitary word in welded lettering: "Graves". Beyond this, rank weeds and low brush have over-grown the undesignated burial mounds. Yet two sites attract the eye. One is a neat little grave with a simple marble heart, bearing neither date nor family name, merely the inscription:

With all our love to our baby boy Gilbert from Mum and Dad and Auntie Lynda.

The second headstone, older and partially concealed by wild oats, is dedicated to the memory of Ruby Jackson, the young and popular sister of the local football hero, the victim of a fatal stabbing. Here also is the grave of a young man who is believed to have originated in the Wiluna district. *The Yilgarn Citizen* of 26 August, 1960, carried the unusual story of the lone survivor of a tribal war who was found by Bernard Colreavy and brought to Southern Cross. There he was given to Mr and Mrs Alex McKay who gave him a home, an education and their own name. When he died in 1912, he was buried as Alexander McKay. Amongst those who rest in unmarked graves are old people who passed unheralded, like Mary Boanjan and Eva Diamond. Others such as police tracker, Jim Champion and Willie Walgreeni attracted editorial comment. Jim's official age was 78 years but he was thought to have been much older. When Willie died in February 1949, some said he had passed the century because he was reputed to have been at Southern Cross when the town was first settled in 1888.

Today the reserve is silent, abandoned by Aborigines in the mid 1960s when their dogs were shot. As a long time town resident, Syd Carlson, recalled: "They split up everywhere. Most went to Kalgoorlie. They never came back". A growth of low melaleuca scrub is reclaiming the reserve, but it fails to conceal the signs of past human occupation: the rusting cans, the sheets of flattened kerosene tins, fragments of pottery and an occasional worn horseshoe. And the Yilgarn wind, whispering through the fine leaved broombush that dots the reserve, is a gentle remembering sigh for a group of people who, for seven decades, tried to hold onto an ancient yet fragile tradition against forces of great social change.

Neville Green

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Chapter 6

The Gold Rushes 1887-1915

The Yilgarn was opened up to European settlement by gold after earlier surveys by expeditions seeking pastures for sheep and cattle. A. C. Gregory penetrated the region near Mt Jackson in 1846, but detailed exploration awaited the 1860s when concerted moves were made eastwards of the settled districts of York and Newcastle (Toodyay) by pastoralists, including B. D. Clarkson, who explored the northern Yilgarn in 1864. H. M. Lefroy, reporting on the nature of the country he had passed through in the south Yilgarn in 1863, casually observed that it was "very probable that in these quartz reefs gold will be found"; but nothing came of this.

The most important of these early expeditions in terms of opening the field for the gold prospectors of the future were the three undertaken by Charles Hunt between 1864 and 1866. Hunt, a public service surveyor, was sent out under the patronage of Governor Hampton and the York Agricultural Society, specifically to look for both pastoral and mineral country. His work is memorable for two reasons. Firstly, he blazed the trail known as Hunt's Track, which ranged from east of York through the Yilgarn and north of Lake Lefroy to the Hampton Plains which he named after his patron. This track was followed by three escaped convicts who were recaptured at Boodalin Soak in 1866. It became the Old York Road, the route that was to be followed by the telegraph, the eastern railway and the pipeline of the goldfields water scheme. Hunt's Track from York and the sandalwood cutters' track from Newcastle through Mangowine towards Lake Deborah were for many years the recognised ways for pastoralists and prospectors moving into the interior. Secondly, Hunt established water supplies essential to travellers, who, for whatever reason, were faring by foot, horse, camel or donkey with their faces to the east. Under official instructions he established a number of wells, some of them enlargements of Aboriginal gnamma holes or soaks which he shored up with rock. Others were built in places where outcrops of granite provided watersheds for the life preserving liquid. The pioneers were to depend on Boodalin Soak, Keokani Rocks, Moorine Rocks, Koorkoordinate, Duladgin, Reen's Soak (Yellowdine) and, above all, on Gnarlbine Rock - oases in a thirsty land. Rumours that Hunt had found gold in the Yilgarn were never substantiated. Nor is there firm evidence to back the story of "Convict's gold", which had it that escaping convicts attached to Hunt's third expedition found nuggets of considerable value.

The great gold finds of the 1850s in New South Wales and Victoria had aroused speculation about possibilities in the west, and the Legislative Council in 1862 offered a handsome \$5000 reward for the discovery of payable gold within a radius of 80 kilometres



*Plate 1: W.A. Syndicate who discovered the Eastern Goldfields, October, 1887.
 (Courtesy Royal Western Australian Historical Society)*

of Perth (later extended to 480 kilometres). But this event occurred 2000 kilometres away, in the Kimberleys where the colony's first goldfield was proclaimed in May 1886. Though quickly worked out it proved the existence of gold in the west and provided the incentive for those who participated in the "big stunt": the Yilgarn, Fly Flat and Hannan's. Those seeking gold in the country east of Perth, using Hunt's Track, were helped along by pastoral settlements that had been established well out beyond York. The most important of these was Robert Leake's property at Mooranoppin, 22 kilometres north-east of where Kellerberrin now stands. There water and food for men and beasts could be obtained. The homestead of Mangowine, built by Charles Adam, soon became a wayside inn and a police post facilitating movement into the Yilgarn on a more northerly track.

It is significant that the early prospectors were T'othersiders, men with experience on the Victorian 'fields. Such were Greaves, Payne and Colreavy, the main actors in the drama of the Yilgarn. Coming from the milder climate and the wooded and well watered gold areas of the east, they must have been ill prepared, not to say appalled by the harshness of the Westralian interior. They had to face a vast tableland, clothed with scattered eucalypts, saltbush, spinifex and mulga, with salt pans which occasionally became lakes, and marked with scattered residual outcrops of ironstone, granite and quartz. It was a challenging and haunting landscape, unchanged since before the advent of man. It was no place for the faint hearted and was at the time known only to sandalwood cutters who had penetrated the area well before the coming of the gold seekers.

Two partnerships were formed at about the same time in the year 1887 to prospect for gold in the eastern districts. One, a syndicate of "gentlemen" was formed by the mayor of Perth, Dr Scott and William Lawrence, a Perth boat builder, "to mine for gold or any other metals or minerals, also select any grass country that might be met with". The prospecting party consisted of Dick Greaves, a builder with some mining experience in Victoria, Ted Payne, chosen perhaps because he was a "confectionery cook of no mean ability", and Harry Anstey, a mineralogist who was appointed leader. The syndicate provided a cart, food, mining tools and other necessities, while the government chipped in with "two good draught horses". The other party, organised by the Northam Pastoral Association and led by Bernard Colreavy, included H. Huggins and others.

Anstey's party went inland via Hunt's Track, worked along the Yilgarn ranges, and finished up in the vicinity of Lake Deborah, at a place the Aborigines called Eenuinn. Here Ted Payne picked up a quartz floater showing specks of gold, and so inspired a search for the parent reef from which the party filled a flour bag with specimens of gold-bearing ore. Anstey returned to Perth with the specimens whilst Payne and Greaves continued prospecting south of Eenuinn, finding a very promising reef which Greaves called the Cordelia, in the area to be known later as Golden Valley. Forced back to Eenuinn by lack of water, they made an unlucky skirmish into the regions of Mt Jackson further north. Back again at Eenuinn they worked on the reef till the arrival of another party convinced them that Anstey had broken a promise of secrecy about their find, for which there is some circumstantial evidence. Ordered back to Perth, they appear to have got their own back on Anstey by telling Colreavy and H. Huggins, whom they met on the track, about the Cordelia reef. Colreavy made a bee-line for the area, pegged a claim, which he named Golden Valley, and so established a right to be considered the first finder of payable gold on the Yilgarn. Shea and Beadles, sent up from Perth by Anstey to work

on the reef at Eenuinn, tired of the hard work for little result, tried to find the Cordelia, lost their way, ran out of water and died. They are the first two recorded men to do a perish on the Eastern Goldfields. Anstey and Greaves appear to have experienced a clash of personalities, exacerbated by subsequent happenings. Greaves had some doubts as to Anstey's ability as a geologist. Anstey, for his part, found the harsh conditions of the outback difficult and, on two occasions, left the others of his party to slog it out whilst he lingered in the comfort of the capital. Later events and contemporary accounts have clouded the issue which most divided the two men: to whom belonged the credit for finding the first payable gold on the Yilgarn?

H. P. Woodward, government geologist, ordered in 1891 to make an official investigation, concluded that Colreavy, Risely, Parker and others be ruled out since their finds did not lead to the opening of a viable field. For him the answer was "pretty simple, and if anyone is to be rewarded it should be Mr Anstey, as he was the first discoverer".¹ Greaves was very bitter about having been excluded from the reward. He was persuaded by friends to write an account of the find at Eenuinn. In it he states: "Though Payne and I found this gold, Mr Anstey stepped in and obtained the reward from the government, as the first discoverer". He further lamented that Colreavy, during Greave's absence in Melbourne recovering from a debilitating illness, "had the audacity to announce himself the discoverer of the Golden Valley, as he called it".²

Anstey was paid the government reward of \$1000 because he was the nominal leader of the party and the one to whom specimens were referred for identification. Payne had left Australia by this time and was not in the running. Even when due allowance is made for Greaves' bitterness and the elapse of time between the events and his recollection of them, it nevertheless seems clear that he had at least a case to be included in the reward. There is a footnote to the story which Greaves must have felt to be the final insult. While in Melbourne he received \$10 from Anstey together with a comment that "those curs of Lawrences have collared the rest". There is no evidence to support or refute this claim by Anstey that the sponsors had claimed the reward money.

Golden Valley became the first official centre of the Yilgarn, with a police station and a warden's court. Here the first mining lease was taken out by W. T. Loton and J. H. Monger, for the Kathleen mine. In 1929 a memorial tablet was erected marking the site. Eenuinn proved to be something of a duffer and Golden Valley itself, despite its glamorous name, was no bonanza. Nonetheless, the results were sufficient to inspire an ever-increasing flow of prospectors into the Yilgarn. They took the train to Northam or York, after which most of them had to "pad the hoof" along Hunt's Track, to water supplies at Koorkoordine, Reen's Soak and Strawberry Rock, 20 kilometres south of where Southern Cross now stands. They carried food, basically flour and canned meat, a water bag, a compass if they were wise, and the essential prospector's tools: pick, shovel, napping hammer and two tin dishes. Their ability to go beyond the known places was limited by the availability of water. They soon learned to wait for the rains to refill the water holes before heading into the intimidating heat, dust and flies that lay before them. A few of the newcomers were experienced diggers from the east, but most were men whose lives hitherto, as clerks, teachers, storemen, failed professionals or what have you, had given them little preparation for roughing it outback. It was a case of learning quickly, toughening up, maintaining hope and having the ability to team up with mates on whom

one could rely. Jules Raeside, himself a prospector in the red earth country, maintained that, in order to "make a strike" you needed "instinct, a stout heart and infinite patience". Those who were successful sold their finds for shin-plasters: merchant's money orders which could be exchanged for food, clothing or equipment for another dash into the blue. Among the early ones who followed the colour with success were William Parker; George Withers, William Ford and Luigi Jacoletti; Gilles McPherson, and Speakman, Ryan and Erickson. Parker, following information from an Aborigine, found gold 50 kilometres south-east of Southern Cross in 1888 in an area later called Parker's Range. Ford, Withers and Jacoletti pegged the Native Grave claim in 1889 and sold it for \$600. McPherson went further afield to Fraser's Range, while the latter three, moving out from Golden Valley, found gold at Ularring. But the outstanding strike of the time was Southern Cross.

The origin of Southern Cross seems fairly clear. C. M. Harris, better known to older denizens of the 'fields by the pen name "Diorite", in his narrative entitled "In Hunt's Tracks", recalls a tale told by Charles Crossland, government surveyor at Golden Valley.

One evening, Risely and his Phoenix prospecting party, came into the surveyor's camp, and asked him if he could put them on to some country to prospect. Mr Crossland, pointing to the Southern Cross said, "If you steer a few degrees east of the constellation you will strike a line of ironstone hills where natives say there is "plenty feller gold". The Phoenix party left the next day and found the hills and the gold. They called the find Southern Cross.³

On 14 January, 1888, Risely and Toomey found gold a little south of Lake Koorkoordine. Returning to Golden Valley to report their find they talked to Fraser and Rogers, who had recently found gold-bearing reef at Mt Jackson. Impressed by what they heard, Fraser and his mate headed for Southern Cross to peg a claim which subsequently became the central mining area known as Fraser's. Risely and Toomey returned to work their claim, followed by others, extending the camping area. It was the richest find so far on the Eastern Goldfields, and the camp of Southern Cross grew to become a provisioning centre and jumping-off place for further prospecting.

The Yilgarn was proclaimed a goldfield on 1 October, 1888, the same day as the Pilbarra field in the north-west. The first warden was A. F. Thompson. He was succeeded by the famous J. M. Finnerty who took up the post in May 1889. Henry Sandford King, government surveyor, selected the site of Southern Cross on the western edge of a salt pan called Lake Polaris. It was always referred to as The Cross following that old Australian habit of applying the definite article to place names in remote country areas.

There was something of a lull in prospecting far afield, as the areas around The Cross were explored and reef mining operations were developed. The land to the east seemed to be desert, lacking any possibilities for productive settlement, inhabited only by a few tribal Aborigines, and so providing no support in the way of supplies for those wanting to move out into the unknown. Above all the absence of much alluvial gold in the Yilgarn did not hold out hope for any discoveries further east.

In his history of gold mining, Geoffrey Blainey gives the main credit for the rich finds at Coolgardie, Kalgoorlie, Kanowna and elsewhere on the eastern goldfields, to a "distinct breed" of prospectors, men who hailed from the dries of North Queensland, the Territory, the Kimberley, the Pilbara and the Murchison. They were men who knew the methods appropriate to prospecting in arid country, the techniques of specking and

dry-blowing, the necessity to enlist the help of Aborigines as guides and water finders. Arthur Bayley was one of these. He came to Southern Cross first in 1888, working as a mine superintendent, then prospecting with some success on the Murchison before returning to the Yilgarn in 1892 where he prospected at Parker's Range. He was the archetypal desert prospector, big, tough, adventurous. His famous strike at Coolgardie was no matter of mere luck. He knew the value of thorough preparation for a prolonged push outback. With William Ford, another Victorian, he set out along Hunt's Track, penetrated 250 kilometres east of The Cross and, in turning back as water supplies ran low, camped on the site of what became one of the most famous alluvial fields in the west. With bags full of specimens they returned to The Cross for re-provisioning, determined for the present to keep their find a secret. On setting out again they were followed by men who had learnt to watch like hawks for tangible evidence of a find, or signs of gold fever in all who came in from long periods in the blue. This circumstance forced Bayley to return to Southern Cross in order to apply for the reward claim, which he did on 17 September. On 20 September Warden Finnerty declared the new field open. The very next day the rush was on. Bayley's find came at a critical time for The Cross. The Yilgarn was not a profitable 'field for the alluvial digger, so most men were engaged in wage labour for mining companies. Smaller shows, run by two or three partners, quickly petered out, since the reefs did not continue to hold gold at depth. The larger mines, whilst not making fortunes for their owners, nevertheless remained viable. By 1892 The Cross had three mines: Fraser's, the Central and the South, all operating with stamper batteries brought up from the coast by horse drawn wagons. Several hundred men were working for wages. In August of that year, impelled by decreasing yields, the companies reduced wages, to make them comparable with rates paid in Victoria. But the price of food and water in the Yilgarn was such that it took practically all a man earned just to live. So the miners launched what must have been the first labour strike in the history of the gold mining industry in Western Australia. Fraser's, in the hope of holding its labour force, shrewdly paid the men off with I.O.U.s negotiable only in the town. But as the strike wore on men began to leave the area, not only miners, but others whose livelihoods depended on the wages of the miners and on the demand generated by the continued operation of the mines. The strike was over by the time Bayley's find became public news, but almost all "drew their time" and joined in the rush to Fly Flat, emptying The Cross of nearly all its male population. The *West Australian's* reporter, on Monday, 21 September, telegraphed head office:

The town is entirely deserted, everyone who can possibly go has left, including the bakers, the butchers, the banker, the shoemaker . . . everybody who can raise a five or ten pound note or horses is off to the new find.⁴

The men who joined the rush followed the route pioneered by Hunt in 1864-5. In later years these diggers referred to it as "The Old Track". Most walked, with or without handcarts. Some pushed wheelbarrows. A few, who could afford the price of a horse at \$80 to \$100, rode or loaded their animals with mining tools and provisions. Fortunately good rains had recently fallen, the gamma holes were full and there was some food for the horses. Among those who left The Cross on this rush, and walked into history, was Irish born Paddy Hannan, who had come to the West in 1889 and followed the colour for a time at Parker's Range.



*Plate 2: Heading for the Goldfields, c. 1890.
(Courtesy Eastern Goldfields Historical Society, Boulder)*

In those days news of gold strikes spread with astonishing speed. Within one week scores of men were heading out from Perth. Before the end of another week miners were leaving the far off Murchison for the new bonanza. The experiences of Albert Gaston, who threw in his job at York as soon as the news broke, were typical of most gold seekers. Teamsters were charging one shilling per pound to carry a prospector's swag and provisions, so he decided to walk the 480 kilometres "travelling light". His swag consisted of a six-by-eight tent, a pair of blankets, a spare shirt, a small billy and a gallon water bag, "the best friend I ever had on the goldfields". He travelled "Irish tandem": swag on back and tucker bag in front. For meals he ate tinned dog (canned meat) mixed with preserved potatoes followed by johnny cakes baked on the hot ashes. Julius Price tells how in 1895 he was "astonished to find that preserved provisions . . . were cheaper in Perth than I could have brought them out from London, coming as they do from the other colonies". When Gaston arrived at The Cross he purchased his miner's right for \$2, stocked up with tools and food, and headed for Coolgardie, this time carrying in addition, "6lbs flour, 4lbs oatmeal, 6/11b tins of meat, 1/2lb tobacco, a small miner's dish, a small shovel, a 3lb pick, a small saw and odds and ends". It is not surprising that he "found it too heavy". So he diced the walls of his tent, one blanket, his coat and the pick handle. Even so, the weight left was about 31 kilograms, which he expected to hump another 200 kilometres. "The flies were terrible" and the ground rough going. It was a relief when he could walk on the smooth ground of a camel pad.⁵ Gold seekers who came just over a year and a half later were able to take the train to "the end of the line", the railway having reached The Cross in June 1894. Two years later it reached Kalgoorlie.

With the opening of the Coolgardie 'field, Southern Cross entered a new phase as a base for prospecting further inland. There was an incentive for some, who did not want to face the rigours of the gold search, to set up in trade. There was a good living to be made in supplying the needs of the eager hundreds coming up from the coast, passing through and making a push for the gold camps further east. Southern Cross had the typical mushroom-like growth of all goldfield towns, though its lean gold base did not allow it to attain the size and population of the twin cities of the Golden Mile. It began as a place of tents for dwellings, and timber framed and hessian walled huts for stores and offices. The first court house was a bush structure and warden Finnerty is said to have "sat on a gin-case, and his clerk on a candle box" as they transacted business. The town's growth was helped along when it became the administrative centre of the Yilgarn in place of Golden Valley. Building lots laid out by surveyor King, were put up for auction at an upset price of \$60 each. It was in keeping with the origins of the Cross that streets were given the names of constellations, such as Antares, Altair, Spica, Orion and Canopus. We have an early resident's recollection of The Cross as it was in 1891.

The town simply comprised the south end only with two public houses, a few shops, and some private residences, the chief of which was the Warden's Palace - a house made of canvas with an iron roof, two windows that would not shut, a door in a similar plight, and a floor made of retired meat cases . . .

There was a "wattle and dab" Commercial Bank, a post office made of chaff bags, and a tin court house. The Anglican Church services were held in an ex-lemonade factory often ankle deep in mud, with a congregation of four . . . the streets were not paved with gold but with jam tins, stumps, logs and salt bush. "

Police barracks and stables were erected by 1892 and there was "fair hotel accommodation". Among the first substantial buildings were Hampton's store and Cameron's hotel-cum-store. By the end of 1894 there were substantial government buildings accommodating a court house, a post office and the warden's quarters. Among other public buildings were a miner's institute, two churches, a public hospital just outside the town, and a public school built of stone. By this time also the town was connected to Perth by telegraph.

Government officials: station master, postmaster, police officer, headmaster, were always prominent figures in this frontier town. A notable example was Dr V. Black who was appointed government medical officer in June 1891. He took a keen interest in civic affairs as a member of the Yilgarn Road Board at its inception on 2 March, 1892. He also served terms as mining warden and resident magistrate. None, however, reached the stature of John Michael Finnerty, J.P., mining warden in 1889-1894 and resident magistrate in 1891-1894. Apart from Bayley and Hannan no name is more closely connected with the roaring days of the nineties. He had been a clerk, had played a part in pearling in the north-west, trading in Malaya, and in the pastoral industry. He had been inspector of police for the Kimberley, and warden and resident magistrate when the first goldfield was opened up at Hall's Creek. With this experience behind him he was an obvious choice for the post of warden of the Yilgarn. He was universally spoken of with admiration and respect. In the tough social environment of the early goldfields he

dispensed justice so that his decisions were never disputed. Sir John Kirwin saw him as “a born leader, whose word was law, respected almost worshipped by the diggers, fair in his decisions, an old Rugby boy and a marvellous raconteur”. True, his task was made easier than it might otherwise have been, by the fact that Western Australian mining legislation was adopted holus bolus from well-tested models current in the eastern colonies. Finnerty consolidated his position in the goldfields community by marrying, in December 1891, Bertha Mary, daughter of William Oats, then manager of Fraser’s mine and later first chairman of the Yilgarn Road Board, mayor of Southern Cross and member of the Legislative Assembly, 1897-1904, and member of the Legislative Council 1904-1910. Finnerty was directly connected with the two most historically famous goldfields characters, Bayley and Hannan, since he registered the reward claims for each, thereby opening up the riches of the interior which brought into being the legend of the Golden West. In 1894 he was appointed resident magistrate at Coolgardie, and chief warden for the whole of the Eastern Goldfields. As such he was largely responsible for the adoption of the dual title which settled one of the most contentious problems in the working of gold claims at the time. At Coolgardie, when some newcomers broke specimens from Bayley’s Reward, Finnerty ruled that a lease could be entered for alluvial gold, but not within fifteen metres of the reef or lode. In 1895 an amendment to the Goldfields Act established the legality of the dual title along the lines proposed by Finnerty. His house in Coolgardie has been restored as a National Trust property. Finnerty is remembered as “a big man with a little voice, with official sternness as an outer covering to an internal make-up of good judgment, sympathy and good fellowship”.

Never Enough Water

The viability of Southern Cross depended partly on the mines and partly on its ability to provide a life-line to the east, but these in turn depended on the availability of water, a commodity in some ways more sought after than gold itself. Well did the miners speak of “prospecting for water”. Albert Gaston, recalling his experiences in gold seeking in the nineties remarked:

No tongue can tell, nor pen ever write, the terrible privations our early pioneers went through in their great struggle for water. It is one of the epics of human fortitude ... you could borrow food and sometimes money, but never water.

Individual prospectors relied on gnammas holes, soaks and government wells, but these were quite inadequate for large settlements and towns or for large scale mining operations. The latter relied on water tapped off the mining leases but it was very saline. When used in boilers it quickly coated the insides with salt of up to ten centimetres thick and cleaning had to be done at fortnightly intervals. Engines operating mine cages and batteries were fitted with condensers to convert steam from the exhaust back to pure water for stock and human use. Most mines supplied their own employees with a small quantity of water for daily domestic use. The boiler problem was overcome by the installation of more condensers to produce a non-saline supply. At Southern Cross water was obtained mainly from Lake Polaris and distilled by private condensers. It was fortunate that, even when no water showed on the surface, it could be found by digging down a few feet on

salt pans. But throughout the Yilgarn there was never enough. Many a retreat from promising gold was made through lack of it.

Before the railway came through every teamster with horses or a camel wagon carried a tank, and with every string of camels there would be some beasts with camel tanks strapped to their sides. The prospector's most precious possession was his four-and-a-half-litre water bag. It is remarkable how long some men were able to survive and work in high summer on as little as two litres a day. In the early days warden Finnerty, in order to establish some control over the very limited water supplies along the tracks, ruled that teamsters and camel drivers should obtain a permit to travel and to draw water from soaks and water holes. In really critical times the warden posted a notice as to which dams could be drawn upon and placed men to see that orders were obeyed. Despite official efforts water was sometimes polluted by human and animal agency and became a cause of dysentery and typhoid.

Before long the Yilgarn weather pattern was well understood: infrequent and light winter rainfall; occasional heavy falls of cyclonic origin in summer which quickly evaporated in the high temperatures. There were few water courses, and catchment storage often presented difficulties through lack of clay to seal the surface. Attempts to find fresh artesian water by deep drilling were unsuccessful. The 1890s was a period of exceptionally low rainfall on the 'fields. Government records show that at Southern Cross the average rainfall over the four years 1899 to 1892 was 137mm, received on an average of 45 days per year. This indicates that the precipitation per day was very light indeed, suggesting that very little water could be entrapped by run-off and that evaporation would



*Plate 3: Turnbull's condenser near Southern Cross.
(Courtesy Battey Library, 4953B)*

be high and rapid. 1894 was another dry year, the annual fall being only 89mm. It was the time of the "Big Thirst", when the people of the Yilgarn were lucky if they got four-and-a-half litres of water per person per day, at a cost of up to 25 cents a time, when the average daily wage was less than one dollar. Indicative of the scarcity of water was a provision in the mining law giving exemption from the requirement to occupy and work a claim during time of drought. In the years of plenty later on, old-timers gave point to the days of shortage by declaring that if whisky and water were called for in a pub, the barman handed over the whisky bottle but dispensed the water himself.

Government action improved the situation to the extent that by 1895 tanks and dams scattered over the Eastern Goldfields had an aggregate capacity of 61,000 cubic metres. In June and July 1890 John Forrest, then commissioner of crown lands, had visited The Cross and Parker's Range. He recommended extension of the railway and the telegraph to the Yilgarn, and the provision of additional facilities for water conservation. Shortly afterwards Harry Woodward, government geologist, reporting on gold prospects emphasised the need for improvements in water supplies and transport. Both Forrest and Woodward had shown the close link between water and transport. If water could be conserved then it could be transported, at least to the populated centres of demand. The decision to extend the rail line from Northam, the terminus of the eastern railway, to Southern Cross, gave even greater urgency to the need to improve water supplies. Water was needed for the construction workers, and of course, ultimately for the locomotives. It was estimated that the daily requirement of water to supply the locomotives on the Yilgarn line and its Coolgardie extension, when built, would be over 900 cubic metres. C.Y. O'Connor, engineer-in-chief, was very conscious of this need and initiated the first systematic examination of the country east of Northam for permanent water. After a journey to The Cross in 1892 he reported there was need for at least five reservoirs. To construct these he set up a special section of the Public Works Department, called the Goldfields Water Supply, in charge of a resident engineer, Charles Jobson. A variety of methods were employed. Attention was given to every soak, gnamma hole and clay pan. Dams were built in gullies to collect run-off from higher ground, wells and catchments were constructed adjacent to granite outcrops, corrugated iron roofing was used to direct water into tanks.

The railway reached The Cross in June 1894 and brought immediate relief to the thirsty town. Water was brought in by rail, in specially constructed tanks, from Burlong Pool on the Avon River, two miles out of Northam, and sold at three cents per four-and-a-half litres: a very welcome reduction in price. The railway had its own source of supply. Storage tanks and water catchments had been built at more than a dozen places including Cunderdin, Kellerberrin, Merredin, Moorine Rock, Karalee and Parson's Gully at The Cross. The town's main supply came from New Zealand Gully dam, three kilometres past Fraser's mine, with a capacity of 6800 cubic metres. Water was carted daily to the townsite and sold at one dollar per cubic metre. It was, however, never a secure supply. In April 1901 the dam ran completely dry and the town had once again to be supplied by the railway department at \$2.80 per four-and-a-half cubic metres.

Though the coming of the railway had improved the water situation for Southern Cross, the extensive goldfields to the east, with their great potential for the state's economy, made the provision of a permanent and reliable water supply for the whole



Plate 4: Goldfields Water Scheme. Turning on the water in Southern Cross, 10th Nov, 1902. Mayor Montgomery turning the tap; to his right, Town Clerk, Peter Aisbett; centre, with hand in pocket, former mayor, H. Geston; to his right, Arthur Aisbett; behind, water contractor, T. Martin.

(Courtesy Yilgarn History Museum, Southern Cross)

region an urgent necessity. Throughout 1895 O'Connor worked on a bold and imaginative engineering scheme to pipe water from the coastal hills all the way to Kalgoorlie. On 3 September, 1896, after a long and difficult fight in parliament, Forrest succeeded in getting a bill passed for a goldfields water scheme. But it was two years before the passage of an enabling bill to authorise finance for the construction to begin. The weir at Mundaring was built, and the pipeline was laid between 1898 and 1903, following the route of the rail line and running over 560 kilometres, with eight pumping stations to lift the water along the western plateau a total height of 390 metres. At the time it was the world's longest water pipeline, capable of delivering an astonishing 27,000 cubic metres a day.

The water reached The Cross on 30 October, 1902. It was doubly welcome as the years 1900 and 1901 had been ones of low rainfall, making the town even more dependent on water brought in by rail. A water main was put along the main street at a cost to the Southern Cross council of \$2400. Metered water could be had at 50 cents for four-and-a-half cubic metres. What a change from the days when this price would have given a buyer precisely nine litres! Even in good times the price had usually been at least five cents per four-and-a-half litres. Over the next twelve months a reservoir was built on

Wimmera Hill to hold something over 1000 cubic metres, enabling water to be reticulated throughout the town. For the first time residents were able to plant gardens and to cultivate vegetables and fruit. The Goldfields Water Supply encouraged this by awarding prizes to the best gardens. In 1910-11 the main pipeline was extended northwards to Bullfinch, and in 1912 to Marvel Loch, to supply the populations of these newly opened mining centres.

Transport and Communications

Until the coming of the railway the journey from York or Northam to Southern Cross was rough, and slow. Swampers lucky enough to throw their swags on a bullock wagon took from ten to twelve days for the trip. The York road, the one most generally used, once travellers had passed the small section of cultivated land, was simply a dirt track leading off into the horizon. There were a few wayside inns of which the most well known was the "Doodlekine Hotel". By 1892 a lucrative freight transport business had developed with over 600 horse and bullock teams with carts and wagons carrying general goods, heavy mining machinery, water and feed for horses. Charges were \$32 and upwards per ton. In 1892 camels were used for the first time, in strings of up to 40 or 50, controlled by so-called Afghan drivers, most of whom came from around Karachi in present day Pakistan. Later came the camel wagon which was an Australian invention and almost invariably driven by white Australians.

On account of the shortage of water, freight cartage was subject to regulation. Only a certain number of teams were allowed to leave weekly and, as passes were given to priority of application, the rules were enforced by the mounted police. Some of this freight was off-loaded at The Cross to build up storekeepers' supplies, but most passed on to the Coolgardie and Kalgoorlie 'fields and beyond. Either way the trade contributed greatly to the development of business operations in The Cross.

Contemporary accounts written after the opening of the Coolgardie 'field make reference to the extraordinary amount of traffic on all roads east, and especially on "the Old Track", the Southern Cross to Coolgardie run. Estimates of the number of freight outfits operating on the latter track vary between 200 and 700, each equipped with seven or eight horses or bullocks. The number of animals involved must have run into thousands. This could help to explain the high cost of haulage: \$40 per ton in winter and \$60 and \$70 in summer when water and feed were scarce and costly. A Coolgardie publican paid \$70 a ton for his first instalment of beer and spirits brought by camel team, which took six days to traverse the road from The Cross.

It was important to mining interests that mail connections be sure and regular, and indeed also to lonely miners and prospectors who had a great need to communicate with families. The telegraph reached The Cross in February 1892 and Kalgoorlie in 1894. It was used extensively, as is shown by the 34,038 telegrams despatched by the Southern Cross post office in 1894, that being over 100 per day excluding Sundays. The post office let contracts for the delivery of outback mail by horseback, horse and cart, coach, and cyclist. W. T. Snell had the first contract to run the mail weekly between The Cross and

Coolgardie at \$600 per annum. Within two years Coolgardie had grown to the extent that a second contract was added, operated by I. J. K. Cohn, mayor of Southern Cross. Both contracts were terminated when the railway was completed in 1896. There was a daily mail service to Hope's Hill, and weekly runs to Parker's Range and Golden Valley, the latter being extended to Mt Jackson in 1896. Outward letters often had very minimal detail as to address since the sender knew only the general area in which the addressee lived. Many goldfields correspondents had no means of buying stamps, so letters came back with specks of gold attached to cover the cost. In 1910 the mail contractors to Parker's Range introduced "motor buggies" but they had to be abandoned due to the poor state of the roads. This innovation had to wait till both cars and roads were upgraded.

For local transport residents on the 'fields in the 1890s used bicycles, popularly called grids, on a scale not equalled elsewhere in Australia. Conditions on the 'fields favoured their use, partly from the relative flatness of the terrain, partly from the great number of camel pads which provided a hard and smooth surface. For official and commercial communication between major mining towns, and with far flung mining shows, bicycles were speedy and cheap since they required neither costly water nor food. With mining camps in remote areas springing up and dying away, flexible postal and telegraph services were provided by cyclists. Express messengers rode from The Cross to Coolgardie in about twelve hours. The Coolgardie Cycle Express Company was typical of a number of communications companies set up in the mid-nineties, employing regular riders. They were fit and hardy men who could earn as much as \$20 a week, about double the average wage. Cycle companies faded out when gold mining settled into patterns of permanent settlement to which regular postal and telegraph services could be extended by rail or road. However, the bike pads were still in use fifty years later, for example, from Marvel Loch to Howlett's battery and Burbidge, as smooth alternatives to the dusty, corrugated roads.

Passenger services started almost as soon as did freight transport. As early as 1889 coaches, drawn by four horses in a span of two leaders and two wheelers, began to be used on the run east out of York. In 1891 a weekly service left Perth and went by way of York to The Cross, covering the 350 kilometres in four to five days. Parts of the road were very heavy going and water for the horses often a problem. Snell's coach began its run from The Cross to Coolgardie in October 1892. Within two years daily coaches plied each way. An 1895 account by Julius Price, a visiting "artist and journalist", gives his experience of riding in "one of the ramshackle vehicles dignified with the name of 'coach' . . . built on old-fashioned American lines only more battered and ill-constructed". In the same year, Bishop Riley on his first pastoral visit to the 'fields, told how on his trip outward bound from The Cross "the road was so bad that it was often impossible to see the van wheels for dust and occasionally the travellers had to get out and walk". The comfort of passengers was improved and the transport costs of merchants reduced when the railway came through. It had the effect, also, of establishing confidence in the possibilities of the Yilgarn 'fields, resulting in increased inflow of capital and more extensive prospecting. It certainly solved the problem of speedy and efficient transport. Southern Cross was ready to develop a town life based on the modern amenities of the time.

Yilgarn Economic Life

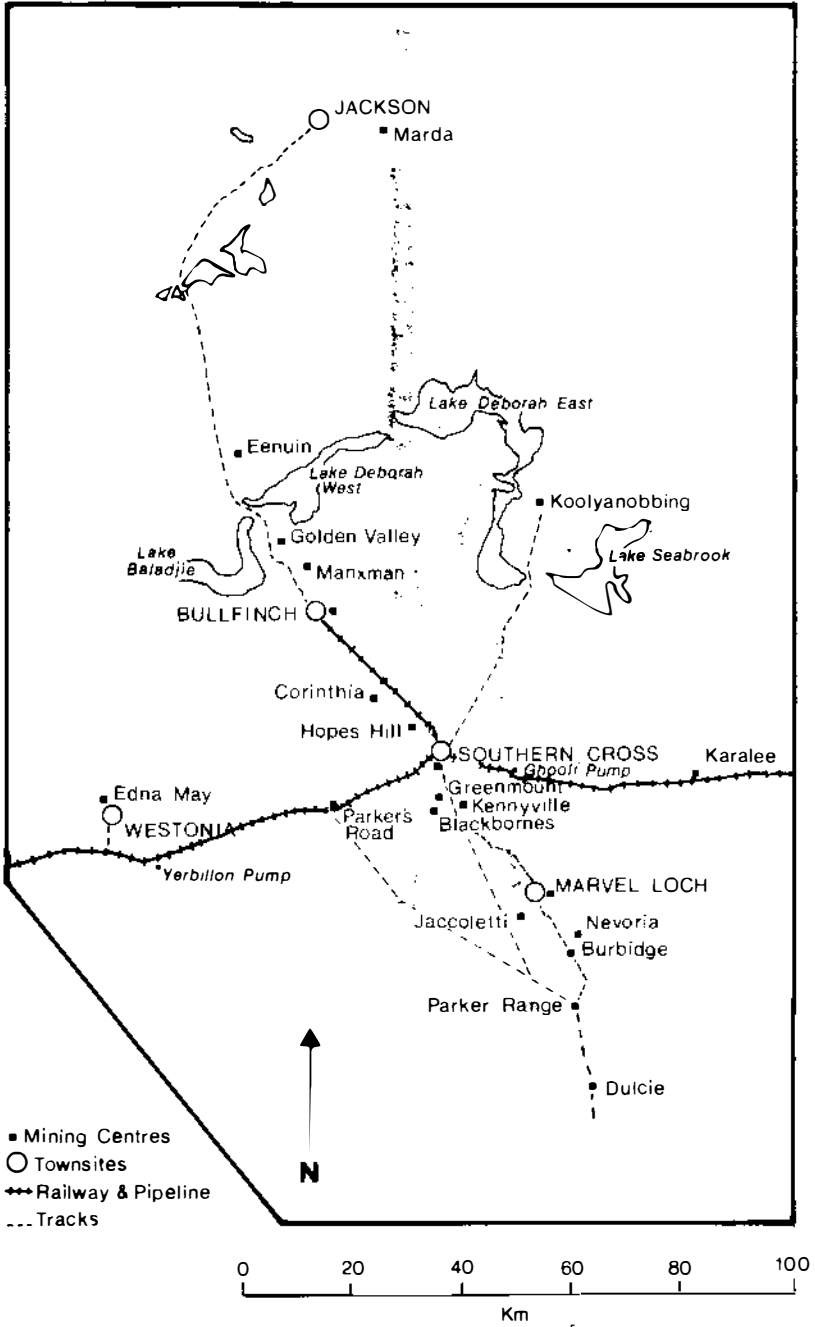
At first Southern Cross was the only residential locality in the Yilgarn that had the legal status of a town, having been declared a municipality on 16 February, 1892. Its population at the 1901 census was only 375, being 313 males and 62 females. Though a number of other townsites were gazetted they did not have sufficient population to warrant official recognition as towns. In 1894 when Southern Cross had a population of about 500, Golden Valley had 20, Parker's Range 25, Toomey Hills 20 and Hope's Hill 60.

Gold bearing reefs had been found over a distance of some 200 kilometres from Higgins Find, 60 kilometres north of Mt Jackson, through Southern Cross to the Dulcie group south of Parker's Range. The sprawling size of the 'field, with its half a hundred widely scattered mining shows of varying size under separate managements, and with only small patches of alluvium, did not make for sizeable centres of population outside The Cross. Fluctuating fortunes brought about a high mobility of population so that when mining localities looked like becoming places of permanent settlement with residential numbers comparable to the The Cross, as was the case with Marvel Loch and Bullfinch, they declined rapidly to become ghost towns. In the eastern colonies when gold began to fail in places like Ballarat and Bendigo, agriculture had sustained the local economy and developed the town. But in the Yilgarn farming was confined to a mere handful of holdings adjacent to Southern Cross, such as those run by Percy Forrester, Jim Nunn, Ted McInnes and Owen McMahon, producing fodder for horses and dairy produce for the town. Large scale farming did not develop till the soldier settlements of the 1920s.

Mt Jackson, where Fraser and Rogers had found gold in 1888, was declared a townsite in 1897. It grew to have a mechanic's institute in a granite building, a brick and stone hotel, several business premises and a population of about one hundred. At historic Golden Valley there was a small township known as Knutsford, based on the operation of the Kathleen mine with its ten head battery served by water pumped from a well at the bottom of the valley. In close proximity to each other were a number of small mines such as Blackburne's, Greenmount and Mt Rankin, employing workmen for whom the social centre was The Cross. Seven kilometres north-west was Hope's Hill operated by a company which ran a ten head battery whose production grew eventually to support a small town of a hundred families. Parker's Range, 64 kilometres to the south, attracted many prospectors over the years. Famous characters who tried their luck there included Paddy Hannan, Dick Greaves, "Kurnalpi Jack" Ready, Bob Menzies, Bill McIntosh and William Ford. At one stage 400 men were working in the area and a small town arose, but little gold was found at depth and by the early 1900s this number had shrunk to a mere handful. The small towns and hamlets which sprang up around the mines had very ephemeral lives. However, in turn each attracted business people: grocer, baker, butcher, publican, newsagent, boarding house keeper, individuals anxious to make a quid in an era in which mining companies provided no services or houses for their workers.

After good, and even exciting returns, output of gold in the Yilgarn dropped in 1898 to a low of 334 kilograms from 46 mining leases with 300 men employed. The field seemed to be set to repeat the history of the Kimberley. But the year 1900 saw a dramatic rise of 78 per cent in output to 825 kilograms, due partly to the introduction of the cyanide

YILGARN GOLDRUSH



process which made treatment of tailings worthwhile, and partly to a rich strike at Fraser's South Extended. From 1906 total production was further boosted by new finds at Koolyanobbing in the north, and Kennyville, Paynesville and Never Never (Nevororia) in the south. Promising finds in three successive years, 1908 to 1910, at Marvel Loch, Bullfinch and Weston's Reward (Westonia) sparked minor rushes with widespread pegging of claims. But most prospectors were disappointed and there was no prolonged boom in reef mining either, though the three mines last named gave good returns for some years. The history of gold in the Yilgarn perhaps more than that of any other 'field in W.A. is one of cycles of expectation, exploitation and disappointment, which might explain why the centre of all this activity was known to old-timers as the "Suffering Cross". Redundant miners and failed prospectors inevitably gravitated back to The Cross, the only place from which they could take transport either back to the capital, or onwards to chase the weight on other prospects in the eastern goldfields. A consequence is that the social history of the Yilgarn is substantially the history of Southern Cross.

A number of writers have left us accounts descriptive of Southern Cross in the mid-1890s. To visiting journalist Julius Price the town presented

A very bleak and uninviting appearance, being nothing more than a big conglomeration of corrugated iron huts clustered round the base of a rocky hill, on the top of which the bare timbers of a mine shaft were outlined clear and sharp against the pale blue of the morning sky. There were no signs of vegetation anywhere, the ground for miles around having been completely denuded of all timber for firewood and mining purposes ... [it was] impossible to imagine a more bleak and dreary scene.⁸

He dined at a small inn where he got "a rough-and-ready and not over clean sort of meal". Later when he had more time to scout around he found that there was a "really good hotel in the place".

Frank Gerald was one of the first entertainers to bring a theatrical show to The Cross. To him the town appeared "a collection of haphazard buildings and tents . . . miners had pitched their tents where fancy dictated". There was a bank, two hotels, two stores (Murphy's and Wisdom's), a post office, a warden's office, a school of art "which, containing the public hall, the school room and the library, was the centre of social life". He was impressed by the variety and abundance of goods held in the stores. "Everything that woman wears, from a hairpin to a shoelace, a wedding ring to a corn plaster, and sweets, toffees, chocs and Candy for the kids". Murphy's store was a rough wooden shed with no windows and a trestle for a counter. Stores either hung from the roof or lay on the earth floor in profusion and confusion. Gerald's account brightens when he mentions the two "pretty Snell girls" who acted as shop assistants, while Murphy sat in his wicker chair, took the money and doled out the change.⁹

Father Hampson recalling many years later what he saw in 1898 wrote:

Southern Cross looked a picture of desolation . . . Antares Street, the main business thoroughfare, was only partially lined with buildings . . . As to the others they were merely tracks formed by traffic and even in some cases had nothing to distinguish them from bush. Even in the well-used streets there were still stumps that had been left from a hasty clearing and as for the vacant

blocks it was dangerous to cross them in the dark for the stumps to be found there.¹⁰

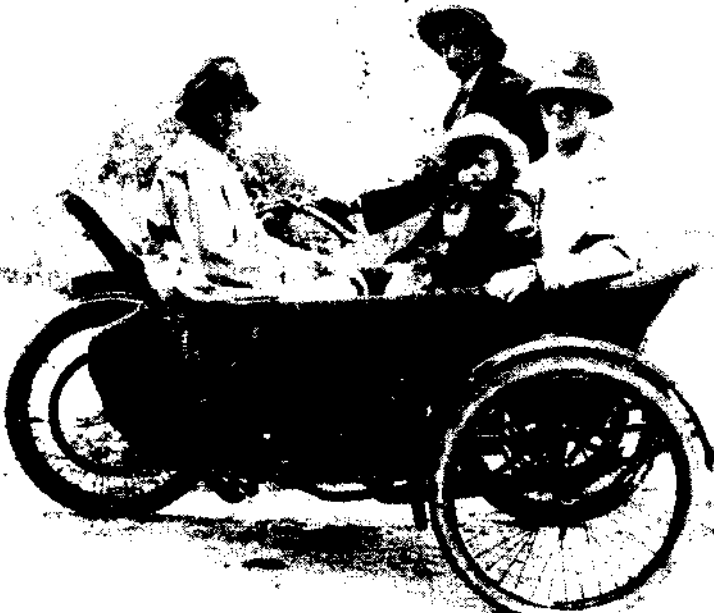
Despite the apparent desolation, Southern Cross at the turn of the century had a very lively working, business, social and civic life based on a permanent population of mine workers, tradesmen, professionals, railwaymen, pipeliners, merchants, publicans and even a few farmers. Family life was well established and social institutions of many kinds were active in fostering the welfare of the community. The backbone of the town's economy was Fraser's gold mine lease, the longest lived of all the Yilgarn mines. In October 1889 Hugh Fraser had handed over control to Fraser's Gold Mining Company, which next year became the first company on the Eastern Goldfields to declare a dividend (five cents per share). Fraser's provided the solid core of employment, backed from time to time by other mines clustered round about which were subject to fluctuating fortunes. The mines also provided steady employment for woodcutters who brought in the timber for the steam engines and for shoring up underground workings, as well as for use by the townsfolk. The depletion of timber around Southern Cross inevitably led to dust storms which penetrated every dwelling and reduced visibility.

Early in the town's history two major non-mining developments added to the work force and provided an extended market for the business and professional sector: the coming of the railway (June 1894) and the opening of the goldfields water scheme (October 1902). Of these two, the railway had the greater impact in terms of employment. By 1895 there was one train a day and before long two, an express and an ordinary passenger train. In the two years that Southern Cross was the end of the line, hotels, restaurants and shopkeepers benefitted greatly from a continuous influx of travellers passing through. They needed accommodation and food for a day or more while waiting to obtain coach or other transport on to Coolgardie and Kalgoorlie. More important was the workforce quartered in the 40 room railway barracks, situated near the railway station on the northern outskirts of the town near the end of Phoenix Street. There were 85 men in permanent employment: guards, enginemen, fettlers, and other maintenance men. Separate from the barracks were an inspector's cottage, two plate-layers cottages, and a station master's house. On the business side of the railway yards were a station staff office block, ticket office, signal box, a permanent-way inspector's office, refreshment rooms and toilets. The platform was 200 metres long, and there were goods and storage sheds, a coal storage ramp and a locomotive stage. Close to this complex grew up what came to be known as Railway Town. It was separated from the Old Town which had been laid out close to Fraser's mine further south. A degree of rivalry sprang up between the two, based it would seem on the fear of the Old Town that the new development, with its non-mining population, would take over as the commercial centre. Railway Town soon had its own business premises and sporting teams. Its social life centred on the Commercial Hotel and the Railway Hotel built opposite the station.

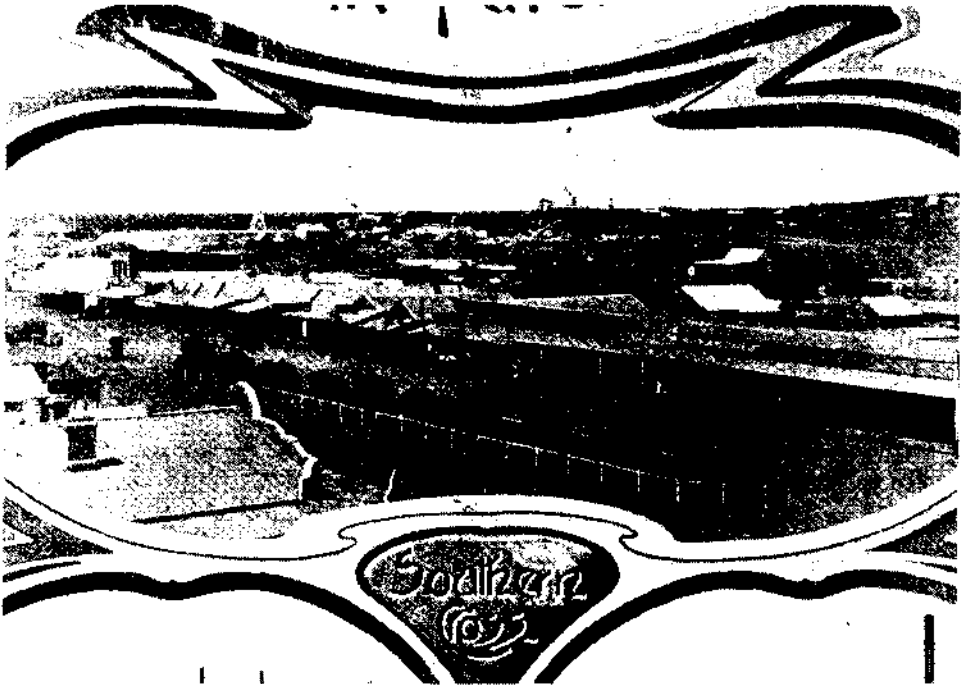
The arrival of the railway inspired Eugenio Vanzetti, head of the Golden Pig syndicate, to plan an innovative solution to the shortage of water for ore processing at Southern Cross. He would take the ore to an assured supply. In 1895 he erected an eighty head battery on the Mortlock River at Northam. A deal was made with the Forrest government for the railway to carry ore from the Golden Pig at a reduced rate in return for

which the syndicate would back load water to Southern Cross from Burlong Pool, near Northam. Operations began in May 1897 and proceeded successfully for over two years. However, a decline in gold returns, an improvement in Southern Cross water supplies and the introduction of the cyanide process which used less water made the transportation of ore both unnecessary and uneconomic. The battery at Northam closed in July 1899.

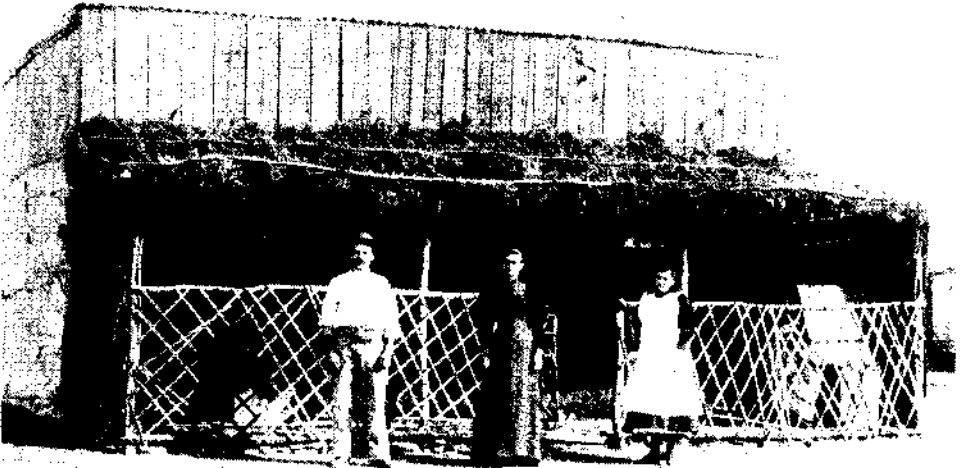
The arrival of the goldfields water scheme pipeline in October 1902 brought a new economic stimulus. The pumping stations in the Yilgarn, Number 5 at Yerbillon and Number 6 at Ghooli, each provided employment for five staff and a number of wood cutters. Each station had a chief engineer, a second engineer, a greaser and two firemen. At Yerbillon there were five houses and the community was large enough to entitle it to a provisional one-teacher school at which the minimum enrolment was eight children. The people here, living in the most isolated hamlet in the Yilgarn, had to make their own social life with parties, birthday celebrations, singing round the piano, listening to the phonograph, tennis and occasional visits to Westonia or Burracoppin for shopping. Ghooli, only ten kilometres from The Cross was near enough for the inhabitants to go to town for supplies or for entertainment. It too had a school and the ready availability of water quickly saw the creation of flourishing vegetable gardens and fruit trees close to the workers' homes. The coming of the water provided more employment and improved the health of the people and the quality of social life. A local plumber even advertised as a bathmaker! Then, in 1904, F. Hortle was given permission to erect a four roomed public bath house in Southern Cross.



*Plate 5: Family transport, Lenanton family, No 5 Pumping Station, c. 1915.
(Courtesy Mrs Edna Lorman)*



*Plate 6: Antares Street, Southern Cross, 1904, with Fraser's Mine in background.
(Southern Cross Times, Christmas 1904)*



*Plate 7: Henry, Grace and Mabel Davey, Southern Cross, 1897.
(Courtesy Yilgarn History Museum, Southern Cross)*

Life and Death in the Cross

In the beginning people lived in tents, brushwood or bough shelters, canvas huts or hessian and bag walled houses, roofed with corrugated iron or flattened kerosene tins. Valued possessions such as good clothing and private papers were kept in an iron box for protection against vermin and damp. Many mothers of families had to cook and wash out of doors. Somewhat more substantial houses were built later with iron-roofs and iron-walls, lined inside with white washed hessian. They were equipped with wood-burning stoves and open fireplaces. At first everyone washed their bodies and clothes in iron tubs, or tin dishes, using dam water of doubtful quality. Condensed water was for some time scarce and dear and was reserved for drinking and cooking.

Such housing conditions did not make it easy to cope with the continental climate of the Westralian interior. Those with iron houses were secure from rain and damp but it was a building material which intensified both the heat and the cold. Those with less eligible housing would have been happy to put up with this for the sake of freedom from penetrating rain and prevailing damp. All were subject to swarms of flies when fly-wiring was unavailable, and with ants attacking food, often kept in meat safes made from kerosene tins. The Coolgardie safe, working on the principle that evaporation causes cooling, was a useful invention that enabled perishable foods to be preserved for a few days against the worst ravages of heat. They were kept ant-free by having the legs placed in empty cans filled with water. Those living in tents and bough humpies used a bush safe, a bag containing a plank, hung from a tree to catch the wind, if there was any. In the town the wide ungraded streets were dusty in summer and boggy in winter when it rained. There were frequent dust storms, against which even the best houses could not be insulated. There were many whose bed at night might be a shakedown on the floor, or a mattress laid on a couple of packing cases. Those living in tents and bush shacks as likely as not would lie on a bush bunk consisting of a length of hessian suspended on two sapling poles held off the floor by forked sticks driven into the ground. Covering might be a wagga, a rough blanket made of two hessian bags roughly sewn together to give adequate length. Accommodation in boarding houses was not cheap. In 1900 such places charged as much as \$2 per week, at a time when a miner's wage was from \$1.20 to \$1.40 a day. A dish of water in which to wash could be had for a charge of three cents a time.

It was a tough life for the labourer, tolerable for the successful prospector, a comfortable one for the business man seen by some as reaping a harvest from the diggers' struggles. Daily living greatly improved when the railway brought regular food, clothing and household supplies up from the capital, and when the water scheme brought clean water in quantity.

At the time the Yilgarn field was opened up, the popular means of lighting in country areas was by candle and kerosene lamp. Hurricane lamps were used in tents and houses. Those who could afford it had kerosene lamps with glass or porcelain stands and shades of various ornamental designs. Andre's South Yilgarn Hotel sported a pressurized petrol lighting system in which fuel flowed through pipes to lamps in each room. Small carbide lamps were used by miners, on bicycles and in some houses. Some business premises had carbide lighting plants which reticulated gas to a number of rooms. The great disadvan-

tage was the smell and unreliability due to the difficulty of regulating the quantity of water to produce the gas.

The municipality erected street lamps at the main corners and a contractor was responsible for keeping them in order, using "only the best brand of kerosene". In 1899 William Turner took this job "to light lamps and water trees for the sum of £9 per calendar month". The following year the council became interested in establishing electric lighting throughout the town. A sub-committee found that a Kalgoorlie plant was available for \$5000, a sum quite beyond the resources of the municipality of Southern Cross. Fraser's mine buildings had been ablaze with light from its own plant from some time. In 1905 the council reached an agreement with the British and Foreign Development Company which ran the mine to supply electric power to the town at five cents per amp, which the council retailed to householders and business premises for six cents a unit. The arrangement was not a happy one. Disagreements arose over conditions of supply, especially over the syndicate's right to raise the price at will. The only answer was for the council to acquire its own generating plant. One was available from the Perth firm of Saunders and Stuart for \$1750. After prolonged negotiations, the W.A. Government gave permission for the council to float a loan of \$4000. The plant was finally installed alongside the fire station and in February 1907 the town was lit with publicly owned power. The original plant did not operate satisfactorily and was upgraded with a producer gas engine using Collie coal. Southern Cross was the first municipality to use this type of plant in Western Australia at a time when electric power was hailed as evidence of progress in civilised living for those who could afford to have it connected, to the envy of their neighbours. At first most people installed an electric bulb only in the main rooms of their homes. Much later it became commonplace to install lights in all rooms and electric fans were acquired by the rich.

Southern Cross had its full share of health problems. In the early days dusty conditions were believed to cause the many cases of sandy blight (trachoma). The popular remedy for all eye infections was Golden Eye Ointment, packaged in small porcelain jars which are now collector's items. Barcoo rot was common as was scurvy caused by living on preserved meat with no vegetables. Disorders of the stomach, lung infections and fevers were endemic. A high infant death rate stemmed from dehydration, convulsions and intestinal infections. Of a total of 249 burials in the "Old Cemetery" in Southern Cross between the years 1891 and 1898, 77 or nearly one third were children under two years of age. Calling a doctor was a last resort. By and large people treated their own disorders, relying on patent medicines. Everyone carried Holloway's or Cockle's Pills, a bottle of "painkiller", a bottle of chlorodyne to purify water, quinine for "the fevers" and a small bottle labelled "Pink pills for Pale People" in the hope of counteracting Barcoo rot. Open sores were sterilised by washing in a solution of Condy's crystals, and smeared with ointments such as Zambuk or Bate's Salve. Cure-alls were common, such as Chamberlain's Colic, Cholera and Diarrhoea Remedy.

Control of public health was in the hands of the local government authority. The municipal council wore two hats, one when it acted as the council, the other when it was the board of health. In the second capacity it was responsible for sanitation and regulations

governing rubbish removal. Sanitary arrangements were at first let out to contract, as was rubbish removal from domestic yards and business premises. Neither seems to have been done very effectively. In February 1901 the council decided to invest in a wagon capable of holding fifty night-soil pans and to buy also that number of sealed pans. In May it was decided that the council would take direct control of sanitation. The new system began to operate from July 1902. The W.A. Year Book of 1902-04 reports enigmatically that Southern Cross "as regards health will compare favourably with any other mining town". But a report by Mr Stevens, travelling sanitary inspector of the central board of health, published in the *Southern Cross Times* of 1 August 1903, was critical of the administration of the Health Act by the municipality. The backyards of over 40 business and other premises were found to be in an unsanitary state owing to accumulation of refuse. The Southern Cross Hotel's stables and urinals were condemned, the Club Hotel's yard was found to be very dirty, its stables filthy, and the sanitary conveniences "a dangerous nuisance . . . (as) the earthen floor was saturated with urine and the place stank . . .". The report ended with a sweeping condemnation of sanitation generally. "It would be a difficult matter to find a properly constructed privy in the town . . . there is a universal notion that privies should be dirty places". There is evidence that, following this report, a real effort was made by the board of health to have the town cleaned up and in 1905 some buildings were condemned outright and demolished or reconstructed. However, it was with difficulty that the board kept the town reasonably clean, and tempered the unhygienic habits of some of the inhabitants. Part of the problem arose from the number of animals, donkeys, dogs and, particularly, goats that roamed the town. Southern Cross housewives knew that clothes props had to be extra long to guard against the ravages of marauding goats. Among stories told about the nuisance of animals is one concerning Barry's Donkey, which was encouraged by some local pranksters to indulge in daily drinking at the Club Hotel. His appetite so increased that he was given a "pot from upstairs" filled to the brim with beer. His antics after this indulgence, cheered on by the other drinkers, became such a scandal that orders were given to banish the beast to a nearby paddock.

There were other nuisances equally as offensive as Barry's Donkey. Now and then a property had to be compulsorily cleaned up, as happened in April 1900, when a correspondent wrote to the *Southern Cross Miner* actually naming a house from which "a noisome smell exuded", demanding that the council take action. At this time there was a sense of urgency about public health, for Australia was in the grip of a bubonic plague scare. There had been deaths in Sydney and one at Fremantle. The centre of Perth was reported to be over-run with rats. So the board of health at The Cross ordered a thorough clean-up of the town. But the job had to be done again and again as some householders and business owners slumped back into bad old ways. As late as July 1908 the *Southern Cross Times* ran a slashing leading article on the unhygienic conditions and the "apathy of the board of health" and, in December 1910 stern warnings were issued to hotels, boarding houses and eating establishments to provide sanitary conveniences or be delicensed.

From time to time there were outbreaks of the feared typhoid for which the blame was laid on contaminated water and the difficulty of enforcing proper hygiene. Anyone who looked ill was challenged with the question, "How is your tongue?" If it were dark

brown it was an infallible sign. This disease was too deadly to be left to self-treatment. Fear of contagion required victims to be isolated in the two private hospitals set up in houses. The great typhoid epidemic of 1895-6 inspired a demand that the government shoulder the responsibility of providing a hospital some distance from town. As a consequence, in 1895 a government hospital was erected on the east side of Lake Polaris where it stands to this day. The burial place, now called the "Old Cemetery" lay, conveniently, on the other side of the road.

During the epidemic a rumour spread that two or three deaths a day were occurring in the hospital. This was not so, but the number of deaths was alarming. In the year 1895, 56 per cent of the deaths in Southern Cross were from typhoid, 53 out of a total of 94. If to this be added those for whom a cause of death was given as "fever", often a pseudonym for typhoid, then the death rate rises to 60 per cent. In 1896 with the epidemic still raging the death rate was 52 per cent, though the actual numbers were less being 29 out of 55. In later years Archbishop Riley remembering his first visit to the goldfields remarked that "one of my saddest recollections of the goldfields is that of a visit to a cemetery where nearly all the graves were those of young men, who had died of fever". It is true that

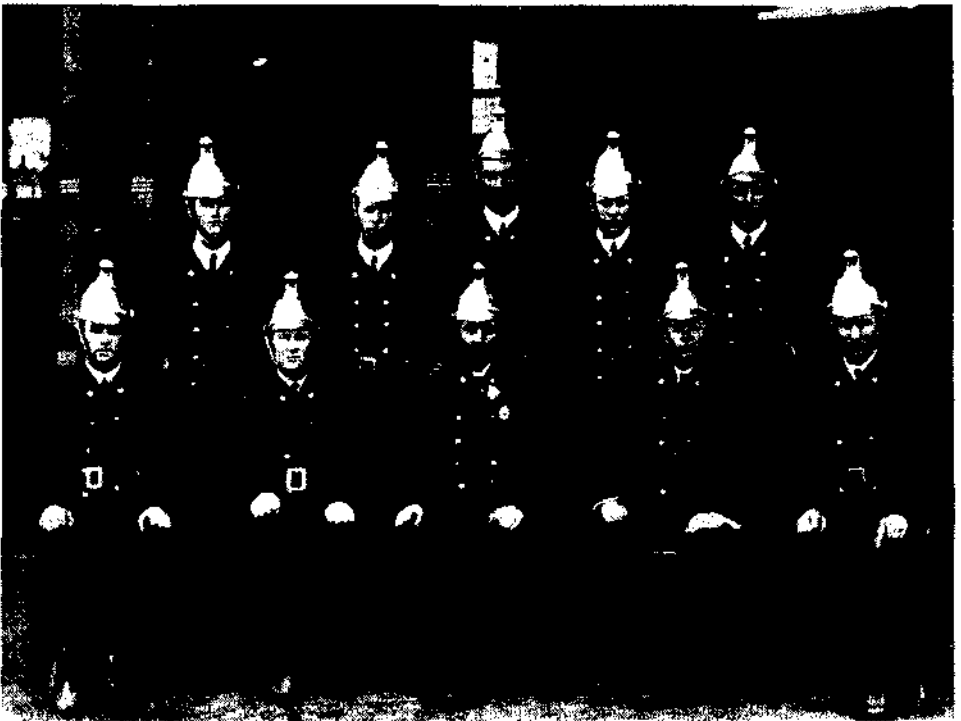


Plate 8: Southern Cross Fire Brigade, 1912. Back Row: J. Delaney, L. Carlson, G. Henderson, L. Richards, J. Pennefather. Front: J. Maiklem, P. T. McMahon, Cartright, S. Birt, T. Sullivan.

(P. T. McMahon Collection, Courtesy Patricia Lawton)

young men were particularly vulnerable. In Southern Cross in 1895 more than one-third of the deaths from typhoid were of men in their twenties and thirties. Such high losses were a serious blow to the economic and social life of the community. However, from 1897 the number of deaths from this cause dropped to between one and five per year.

Southern Cross had its quota of accidental deaths and loss of property typical of goldfields towns. Fires arose from the use of wood stoves for warmth and cooking, in houses made of flammable material, though there was nothing comparable with the great fire that all but destroyed Coolgardie in 1895. In the summer of 1899-1900 there were four fires in The Cross, one of which destroyed a house occupied by a miner's widow and her nine children. In May 1901 Mayor Montgomery's house in Altair street, an iron and wood structure lined throughout with hessian and canvas, was burned to the ground. In December of the same year in a fire at the camp of John Roberts in Spica Street, his wife died in an effort to save possessions. A month later a house of the same type as Montgomery's, belonging to Charles Wright, was destroyed by fire. A few sticks of furniture and the all-important piano were saved. In a fire at Greenmount in July 1906 a man was burned to death.

A volunteer fire brigade existed but its fire-fighting equipment was primitive being six 4500 litre tanks of salt water with buckets spread at intervals about the streets. In 1901 the municipality established a fire station in Achernar Street near the council chambers which were on the corner of Antares and Achernar streets. A fire board was elected to handle finances and to buy equipment. In a few months it took delivery of a new fire engine with an eight man water pump. It was put on display and was a nine days' wonder in the town; but without a continuous water supply its effectiveness was limited. In March 1902, for example, during a fire at Railway Town in which Chris Thompson's house was burnt down, the fire brigade ran by foot with the new engine but arrived too late. Fire-fighting improved when the water pipeline came through and water was reticulated throughout the town, though it was some time before it was extended to Railway Town. Hydrants were established at selected points so that the 450 metre of hose could reach most of the town. Even so, disastrous fires still occurred, which was inevitable while hessian walled houses remained. In 1909 Arthur Gaston's house was burnt down in a few minutes, even before the brigade bell had rung the alarm. In 1910 the government set up the W.A. Fire Brigade which took over all stations and brigades including that at Southern Cross which then became eligible for annual subsidies.

The very nature of the gold mining industry caused a continual run of accidents due to rock falls, careless use of explosives, asphyxiation by noxious gases, and collapse of mine timbering. Injuries were frequent and almost every year there was a death. In March 1902 two miners were killed by cyanide fumes at Jacoletti. A miner was buried by ore at Hope's Hill in January 1903. A man was fatally injured by a fall onto timber at the Great Leviathan mine at Kennyville in October 1905 and the following year at the same mine a miner fell into loose earth and was smothered. In all such cases, if the victims were married men, benefit concerts or similar functions were held to raise funds for widows, and people gave generously. Southern Cross was also a railway town and there were deaths of railway employees in accidents connected with their work and teamsters were occasionally killed when loads were dislodged on rough roads or wagons capsized.

Social Life in Southern Cross

Within ten years of the first discovery of gold Southern Cross had a vigorous social life. Before radio and television, people were thrown very much on each other's company for leisure activities. Many could play a musical instrument and people took pleasure in performing and in singing on social occasions. In Southern Cross the population was young and had been drawn from all over Australia. People of talent emerged and were to the fore in the concerts, dances, picnics, sports, bazaars, exhibitions, carnivals, theatricals, recitations and celebrations that were spread throughout the year. Hardly a week went by without some such social event.

The Southern Cross brass band gave regular Saturday night performances, some of them outside by moonlight on summer nights, and played on most official occasions. They were essential to the success of patriotic fund-raising concerts during the Boer war of 1899-1902 which had aroused strong sentiment in support of the mother country even in this isolated part of the empire. When in May 1900 news came through from South Africa of the relief of Mafeking, the band played patriotic music in Antares Street for two hours. They were called upon during regular celebrations such as royal birthdays and empire day and on special occasions such as the coronation of Edward VII. On 1 January, 1901, Commonwealth celebrations were held to mark the federation of the Australian states with a sports programme and a procession up and down Antares Street consisting of children, town dignitaries and members of friendly societies, headed by the band. Girls wore sashes with the blue and white colours of the Southern Cross while boys wore blue and white rosettes.

The Southern Cross social club organised dances and the occasional plain and fancy dress ball. The quadrille assembly dances were popular with everyone and the annual mayoral ball drew in the business people. There were annual school concerts from both state and church schools, and church fund-raising concerts. The level of public participation was remarkably high, as illustrated by the Methodist Church production of a cantata "Under the Palms" with a chorus of 70 voices. The venue for events of this kind was the Mechanics Institute in Antares Street. In 1897 a citizens' committee had organised the building of a public reading room and library under one roof, and a separate "large and lofty" fifteen metre by nine metre hall. The library was stocked with reference books, 1000 novels and all current newspapers. The hall had a large stage and two dressing rooms at the rear which made it suitable for visiting artists and theatrical companies.

Perhaps the most remarkable local organisation was the Southern Cross orchestral society which gave concerts at the Mechanics Institute from time to time: On 7th December, 1910, it played selections from Gounod's "Faust". The programme included male and female vocalists and a pianoforte duet. The concert wound up with "God Save the King" and then members of the orchestra provided music for dancing till one o'clock. The *Southern Cross Times* reported that "the hall was completely filled".

For those not inclined towards high-brow entertainment there were other diversions. A billiard saloon in Antares Street was a rendezvous for sporting men. The proprietors, Butterick and Henderson, also advertised themselves as tobacconists and turf commission

agents. There were occasional billiard tournaments, stretching over several days. On one notable occasion the "world-famed Roberts" staged an exhibition at a special table in the Mechanics Institute, thoroughly trouncing the local champion.

Picnics were very popular, providing opportunities for outdoor activities for non-sporting types and giving a temporary escape from the dust, flies, and smells of the town. They were held at prominent natural features, such as lakes or granite outcrops. Halfway Rocks on the Bullfinch Road, Cockatoo Rocks and Parker's Range to the south were favourite spots. A great annual event was the railway picnic, sometimes held at Burracoppin but more often at Yellowdine on the grounds adjacent to Reen's Soak hotel. In 1901 no less than 500 people travelled by train to attend this event.

Fund-raising functions were frequent, particularly church bazaars for building funds and benefit concerts for widows of men killed in accidents. There was even a fancy dress football match in aid of the hospital fund, "admission by silver coin". On 5 October, 1904, the first of a number of flower shows was held "to show what could be grown at Southern Cross". There was boating on Lake Pólaris when the water level permitted, and moonlight water picnic parties for the young people. Individual contests of skill connected with local trades were held annually. The log-chopping contest, always held at the Club Hotel, attracted a score or more entrants. Also popular was the hammer and drill contest. It was an appropriate custom for a gold mining town that for many years the first prize for a variety of competitions was always a gold medal, with money for second and third places.

In such a small town it was inevitable that great public interest was taken in weddings. In October 1894 no fewer than seven weddings were celebrated. The son of goldfield's poet "Bluebush", Jim Bourke, was heard to remark, "It would pay better to be a parson than a publican". Frontier towns beget strange customs. Goats were frequently given as practical if not elegant wedding presents which upset local dairy farmer Percy Forrester who complained that it caused a fall in the sale of milk.

In the years before the Great War sport took a high place in the social life of The Cross, as indeed it did in all goldfields towns. The life style with so many men engaged in hard physical labour made for interest and skill in outdoor games. The traditional football and cricket were played with regularity and enjoyed enthusiastic support. The local press gave each match a detailed and lengthy write-up. There were three football teams playing British Association rules: Rovers, Railway and Diggers. For a brief period when the goldfields water scheme workers were operating nearby, a fourth team, Pipeliners, took on one or other of the local teams. Occasionally a couple of teams would add to their numbers, change their names, and play Australian rules. But BA football was the favourite game, perhaps because of the difficulty of making up numbers. New players were from time to time recruited from the junior football club. Games were played on the diggers' ground opposite the Exchange Hotel or on the railway recreation reserve. For several years on playing days, Henry Chester drove his horse and cart around the outskirts of the town to pick up players, and for this service he was ultimately rewarded with the gift of a "football cup". It was common practice in those early days for country teams to visit Perth to play against city teams. In September 1900 a Southern Cross football team played the Fremantle Wanderers at Fremantle under BA rules, and lost nine goals to two.

Occasionally a Southern Cross team travelled to Coolgardie to play. City teams sometimes went to the country as in June 1901 when a Perth schoolboys' team went to The Cross to play against the Yilgarn boys.

The pros and cons of BA versus "Aussie Rules" were discussed throughout the Yilgarn. There were inter-club arguments about "rough-ups", the practice of bringing in players from outside a club's boundaries. Abuse of, and even assaults on umpires were not uncommon. In 1904 a Southern Cross football association was formed to control the sport under "Victorian Rules", thus bringing the main Yilgarn teams into line with the coast. Association football continued to be played in localities outside The Cross, when mines such as Greenmount, Leviathan, and Transvaal could field enough interested men. When the gold towns of Marvel Loch and Bullfinch developed, football clubs were established and matches were played with teams from Southern Cross. Melmer "Doughy" Harper, later the Moorine Rock baker, Hong remembered the dreary wagon ride from Marvel Loch to Southern Cross for football with, of course, a stop at the Nine Mile sly-grog shop for refreshments. Cricket also had three regular teams — Town, Railway and Mines. Scratch teams were got up for occasional contests as when Town played the ANA at the race course in January 1910 or when Pipe Track was able to muster enough men. Outlying places, such as Yerbillion and Bodallin, fielded teams to play each other. In cricket as in football partisan spirits ran high. In 1902 complaints were made at a municipal council meeting of offensive behaviour at cricket matches, involving "barracking of an abusive nature". The matter was referred to the sergeant of police, but the outcome is unknown.

The sport of kings was strongly supported by the business community when the Southern Cross racing club was formed in 1892. Many merchants and professionals used horses in the conduct of their business affairs. Few were "race horses", but old hacks were cheerfully entered to provide a contest. Most events had up to a dozen starters. The first race course was situated on a clay pan south of the town near New Zealand Gully and the Maori Lass Mine, on the South Yilgarn Road. It was found to be inadequate and in 1904 a new course was established north of the railway about a kilometre from the Forrester homestead of Minburra. A grandstand was built with tiered seating and dressing rooms underneath together with a judge's stand and stalls of bush timber covered with tarpaulins for the dispensing of refreshments. Three regular meetings were held every year, the Easter, the Winter and the Annual in December when the main event was the Southern Cross cup. An account of a meeting held in October 1900 indicates the extent of organised activity in a town barely twelve years old. There was a totalisator, two licensed bookmakers and a schedule of six events. An attempt by some bright sparks to take money away from the official programme by running a gaming table was quickly suppressed by the committee. Other lovers of horse flesh had formed the Southern Cross and Golden Valley hunt club which enjoyed a brief existence hunting kangaroos.

A number of other sports were well supported by the community. A rifle club was organised early in 1900 under the leadership of Major Campbell. Cordial factory owner Richard Roberts took the lead in getting a suitable range established. Boxing events took place from time to time. Club contests produced a local champion, Tom Hogan, who at one time fought the Kalgoorlie champion. In September 1900 the feather-weight championship of W.A. was staged at The Cross when Hogan lost to Lee the reigning



Plate 9: Southern Cross Tennis Team, 1912.

(P. T. McMahon Collection, Courtesy Patricia Lawton)

champion. Tennis was well patronised by the ladies. The game was played on gravel and ant-hill courts laid down south of the town near Fraser's mine, and tournaments were held from time to time. Nearby, croquet was also played. The Southern Cross cycling and touring club held regular summer and winter meetings on the railway oval, in which the main event was the two mile race. The most outstanding rider of the time was J. Priestley who won the event at both meetings in 1904 and was awarded the W. H. Snook Cup. There does not appear to have been a regular athletic club but events were held at odd times. The exception was New Year's Day when a programme of foot running and allied events was held on the diggers' football ground.

The people of Southern Cross were not entirely dependent on themselves for entertainment. In those days of slow sea and land travel, it is remarkable how far afield famous artists went to find audiences. Fremantle being the first port of call on the Australian shipping run, W.A. had first taste of their talents. Many played not only in Perth but also in country towns, and the Eastern Goldfields were nearly always included. Local entrepreneurs knew how the miners' experience of fortunes made and lost in quick succession generated an easy-come easy-go mentality leading to free spending on the pleasures of the hour. Travelling shows on the way to Kalgoorlie had to pass through The Cross and, there being no land link with Adelaide, had to return the same way. Popular artists were encouraged to give a repeat performance on the way back so that the people of The Cross often enjoyed better entertainment than the towns of the Golden Mile. This was good not only for the artists but for local business. The Criterion Restaurant recognised this when it advertised "Excellent accommodation for travelling companies ... in the main street, clean beds, good food, the best attention".

A random selection of local newspaper advertisements and reviews in the decade 1900 to 1910 gives an indication of the number and variety of artists who visited The Cross. Early in 1900 Worth's Circus came to town, providing the first such show to be seen by the children of the goldfields. In June came Nellie Marshall's Globetrotters and the Salvation Army Minstrels "straight from the east". The "popular and versatile Alfred Dampier" appeared as Captain Starlight in "Robbery under Arms" and the Henry Comedy and Dramatic Company produced "Charley's Aunt". The Taylor Carrington Company staged "Disowned or The Anarchist's Revenge". *The Southern Cross Miner* commented that "the explosion scene in the last act was a real treat, and the limelight picture of the burning ruins was most effective". The Woods-Williamson Dramatic Company presented "A Woman's Sin", considered by the *Miner* to have been "the finest company that has visited The Cross". There were visits from The American Entertainers, the Delevalles (trick cyclists) and Alf Barrett, English comedian and dancer. George Marlow's Dramatic Company appeared in "the latest London and New York craze", "Nick Carter the Detective". It was "a complete metropolitan company of English and Australian artists". The Ferriby Comedy Company put on the play "O'Callaghan", "a tour da force of fun and merriment". All these shows were produced on the boards of the Mechanic's Institute, starting at the customary Australian time of 8.00pm signalled by a blast from the whistle of Fraser's mine. Among celebrities who visited The Cross was the world renowned Harry Lauder, ostensibly to see a nephew, Jack Mavis. Whether he gave a public performance is not known. In August 1904 the "well-known labour leader and disciple of socialism", Tom Mann, addressed a small audience in the Mechanic's Institute. There was an impressive two column report in the *Southern Cross Times* which had the effect of attracting a much larger audience when Mann spoke on his return from Kalgoorlie.

The newest form of popular entertainment then beginning to spread throughout the world, was moving pictures. In June 1900 "Professor" Payne brought a company to The Cross which included among its acts bell-ringing, a mandolin trio, comic songs, Punch and Judy, limelight and cinematograph. It was only five years since the first clear moving pictures had been thrown on to a screen in London in February 1895. In September 1900 "Professor" Seguy came with the Royal Biograph Company, but it was a big disappointment owing to mechanical break-down. Tickets were returned with a promise that they could be used during a return visit. In 1907 a visiting company used the latest projection machine, "The Royal Chrono, King of Bioscopes", claimed to be "the finest animated picture machine in the world", to screen "The Great Domestic Drama," "The Fatal Wedding". Within a few years the bioscope had attained greater reliability, and feature films were being shown. By the end of the decade twice a week pictures, popularly known as "the flicks" because of the flickering images which were a feature of early silent films, were being run by Hugh Murray as agent for the Australia-wide King's Pictures Company.

The Christian churches were active in Southern Cross from the earliest years. In terms of community effort the Wesleyans were prominent with the Methodist Ladies' Guild one of the most active of the women's groups. It was a Wesleyan, R. W. Carmichael, who in 1891 opened the first school in The Cross. Soon afterwards Mrs Clarke set up a private school for mine manager's children and others able to pay. The Salvation Army made its entry in 1893 when two of its officers, Bensley and Lonnie

walked the 150 kilometres from the railhead and held a street meeting the very next day! Their energy and skill in organisation paid off when a group of miners donated seventy litres of water for a coffee supper to be provided at 25 cents per head. The Army was responsible for bringing one of the first visiting groups of entertainers from overseas, the eleven "Boys from India", who recounted their famine experiences, sang action songs, and put on a stick and rope dancing act to raise funds for famine relief. The Rev F. C. Gillett of the Church of England came in the early 1890s and Anglican Bishop C. O. L. Riley visited The Cross in 1895 only two months after his arrival in Western Australia from England. A church building was erected in Antares Street in 1907. The first Roman Catholic priest, Father Wilfred Hampson, assisted the settling in of six Presentation Sisters who arrived from Hay, NSW, in February 1900 to set up a school for Catholic children. The Right Rev Bishop Gibney visited in April 1900. He was appalled by the inadequacies of the church building and the spartan conditions in which the sisters had to work. Accordingly he launched a campaign to raise funds to erect a building to serve as church, hall and school. Sisters of St Joseph under Sister Julia arrived in Southern Cross in 1906, replacing the Presentation nuns and commencing a long association with the district. The first government school, opened in May 1891, was a one-teacher provisional school. Parents were required to provide the building and to contribute to the teacher's salary. The enrolment of twenty children was taught in a one room structure of bush timber set up in Altair street near Fraser's mine. However, the rapid growth of the town and of its child population saw the establishment of a regular classified school for which a fine stone building was erected in 1895. It still stands. One of the notable features of the school was that it had the largest cadet corps in the state in relation to the numerical strength of the school, which might help to explain the high rate of enlistment from the Yilgarn in the first AIF.

A number of friendly societies made their appearance: the Druids, the Star of the East Loyal Orange Lodge, and the Masonic Lodge. The latter built its own premises, the Masonic Temple, in 1898, an edifice of considerable architectural interest, which still stands. The Scots organised a Caledonian Society, and for them the highlight of the year was their social on 25 January, the birthday of Robert Burns. The Australian-born set up a branch of the Australian Natives' Association. There was a Southern Cross branch of the Reform League the objective of which was the federation of the six Australian states and, if necessary, the separation of the goldfields from the rest of Western Australia in order to join the eastern states in the establishment of an Australian nation.

The workers of The Cross had their own organisations for social activities, welfare and the defence of living standards. Trade unionism on the goldfields grew up quite independently of the movement on the coast. The miners' union was set up in the Yilgarn in 1889. The railwaymen, belonging to an industry that was statewide, were members of the WAGR Association. Its objectives were "to improve the conditions of railwaymen and to obtain and maintain reasonable hours and rates of pay". There were a number of short-lived strikes in some of the mines, but more significant were the railway strikes of January and July 1901. For some time there had been a movement by the Engine Drivers, Firemen and Cleaners Association for an increase in pay and a reduction of hours from nine to eight per day. The pay rates for fettlers and labourers in the Yilgarn were the lowest on the 'fields. On 8 January, 1900, the locomotive men and all other railway

employees stopped work on instructions from the head office in Perth. The immediate cause of the strike was the general manager's action in demanding the resignation of Campbell, head of the locomotive division of the railways, who had been supporting the demands of the men. There was considerable concern in the town which had come to rely on the railway both for the supply of goods and for passengers who spent money in shops, hotels and eating houses. The strike ended when Campbell was re-instated, but the basic causes of industrial strife remained. The general manager further troubled the waters by refusing to recognise the union "as a medium of dealing between the employees and the department". On 6 July a new state-wide strike was called. Among other things the union demanded a 25 per cent extra payment for overtime. The permanent way men in Southern Cross claimed a 10 cent a day rise as the cost of living was dearer than at Coolgardie. Once again there was grave apprehension among the business community. *The Southern Cross Times* declared that a continuation of the strike "would be alarming in the extreme to thousands of people on the goldfields". The strikers at The Cross took steps to defuse the hostility of the townsfolk by calling a public meeting to explain their case. They were successful to the extent that the meeting took a decision to circulate a petition supporting the men's claims; and the *Southern Cross Times* declared that "the behaviour of the men on strike has been exemplary". The strike ended after one week. Both sides agreed that the union's claim be referred to an arbitration board, a device which was deemed to have saved face on both sides. The Southern Cross men were granted their 10 cent rise, and all workers got an eight hour day and time-and-a-quarter for overtime.

The Press

Important in the cultural and business life of Southern Cross were the locally published newspapers. In the 1890s Australians were among the most literate people in the world. Compulsory schooling had existed for twenty years in all colonies. Migrants who came from Europe and elsewhere to the goldfields came voluntarily and unassisted. They were by and large people not from the lowest socio-economic level, and most were at least moderately literate and numerate. Goldfields towns very soon had their own local papers which were viable because of this ready readership. In Southern Cross there was a succession of papers, *The Southern Cross Herald* which had two years of publication from July 1894, the *Southern Cross Miner and Yilgarn Workers' Advocate*, which ran intermittently from 1899 to 1902, a short-lived *Southern Cross*, and a long lived *Southern Cross Times*. Most were weekly, though some tried for a time to bring out a mid-week edition also. The first edition of the *Southern Cross Times*, published in October 1900, was printed on linen, the prevailing custom. It proclaimed that the district would have "a prophet to speak for it . . . we may be spoken of as 'Progressive Liberal'." It would be a "thoroughly reliable and up-to-date paper". Ten years on, the paper acquired linotype machines and a new job-printing plant driven by electricity, and was linked to a special London cable service. From November 1910 it became bi-weekly, appearing on Wednesdays and for the first time publishing photographs on Saturdays.

The papers gave liberal space to local affairs such as municipal council meetings, social and sporting events, local police court cases, mining operations, as well as some



Plate 10: A. M. "Bull-ant" McIntyre, Editor, "Southern Cross Times".

Bull-Ant-Mac

"I've known a lot of paper blokes, an' some was bad and some was good, An' some could write a bit," said Joe, "an' others only thought they could. But spare me days! I'll never see another chap to gore and toss His enemies like Bull-ant Mac, who ran the 'Meataxe' at the Cross.

"He never wrapped his meaning up in milk-and-water words," said Joe; "If chaps were what he reckoned crooks or lying hounds he told them so. The bigger the antagonist, the more ferocious the attack. An' all the coves that he disliked were curs or crooks to Bull-ant Mac.

"He never walked *with* kings — perhaps that's why he kept the common touch— But he was always wading *into* those who counted themselves such. A Premier was no more to him than any jumped-up union boss, And many a Warden's name was mud who narked the 'Meataxe' at the Cross.

"Each Saturday his adjectives fell on the field like bursting shell; He loved to give officious mine inspectors, undiluted hell. Labor and Capital in turn to leg with viciousness he'd smack, And erring mayors had need of prayers to dodge the wrath of Bull-ant Mac.

"At each successive Government he'd lurid objurgations fling For giving sturdy miners nix and whining cockies everything. None wrote the gold into the ground or put a glamour and a gloss Upon a boom like Bull-ant Mac, who ran the 'Meataxe' at the Cross.

"Another chap would have been cast in thumping damages," said Joe, "For saying half the things that from his vitriolic pen would flow. But somehow no one threatened law, and round the pubs and on the track They brightened up the dull weekends, those weekly strafes from Bull-ant Mac.

"No milk of human kindness there," said Joe, "You're liable you think. You're wrong. I never saw the bloke for whom he wouldn't shout a drink. And when he'd penned his final par., few didn't feel a sense of loss For fulminating Bull-ant Mac, who ran the 'Meataxe' at the Cross."

coverage of major overseas events. Almost half the space was taken up by advertising ranging from the Club Hotel tempting custom with "Hot and cold plunge and shower baths, electric light and good stabling", to Percy Forrester, proprietor of the Minburra dairy asking, "Is your goat milking? if not get cow's milk from the local dairy, 4d. pint". There were occasional literary articles, correspondence from readers, and verse from would-be poets. Editorials were written in the elegant and wordy style thought proper in the Victorian age.

Under its editor, A. M. McIntyre, the *Southern Cross Times* was often outspoken and vituperative both in its periodic crusades and its vigorous promotion of the mining industry. Archibald McPherson, born at Haddon, Victoria in 1871, was very much a goldfields man. He had worked in Coolgardie as assistant to a chemist and had been an orderly at the hospital. It was here that he met nurse Harriet Fisher who became his wife and the mother of his eight children. He came to The Cross in the late 1890s, and with the knowledge he had gained at Coolgardie, opened a chemist's shop, receiving his certificate as a duly qualified pharmaceutical chemist on 13 December 1899. He got into journalism by acquiring the *Southern Cross Times*. As chemist he occupied a shop fronting the main street with the print shop behind it. He is remembered as "a wiry little man with thin limbs and small face, wrinkled and studded with two black beady eyes . . . morally and physically game". The uncompromising manner in which he used his paper to attack those whom he saw as acting contrary to the public interest, or merely to work off his personal spleen against those he disliked, earned him the sobriquet "Bull-ant".

The paper became known as "The Thunderer" or "The Meat Axe". His pet hates were the reigning mayor, rival editors, non-paying readers, organised labour "the spirit of independence crushed under the iron heel of Unionism", and mining ministers who refused to give Yilgarn prospectors a state battery. When F.H. Snook became mayor in 1906, he labelled him "His unwashedness the Mayor, Mr Snivelling Sleek". In a par on the swearing-in ceremony, he described Snook as wearing "a chronic snivelling grin" and reported that he "looked more like a passport to an imbecile home than anything else". Later when Snook as justice of the peace handed out fines for drunkenness in public, McIntyre commented: "He is a keeper of a house of questionable repute", a reference to the Southern Cross Hotel, "who sells liquor, which creates drunks, all day Sunday, thereby breaking the licensing law".¹¹

McIntyre delighted in showing people the walls of his office plastered with libel writs. As might be expected he was often in court. On one occasion he was convicted of "using abusive language" against the then mayor, W. Montgomery and was fined \$1.50, with similar costs. His leading articles were couched in a style very much his own and were eagerly looked forward to each Saturday morning. People queued up to see who would be victim of his pen this time. Though this conduct made him enemies, it also won him friends and a position on the municipal council. He was even mayor himself in two brief terms, 1910-11 and 1912-13 — a role befitting one of the town's leading citizens: steward of the racing club, marshal of the Orange Lodge, president of the Australian Natives' Association, an active member of the Reform League, a director of the Day Dawn Gold Mining Company and lessee of the Golden Pig mine. Wider political ambitions were thwarted when the Labor candidate, C. Hudson, defeated him in the Legislative Assembly election of 1914. McIntyre won the Southern Cross booth 215 to

189 but failed in the key mining centres of Bullfinch, Marvel Loch and Ravensthorpe. He tried again in the controversial 1917 general election but fared badly as a Nationalist candidate against C. Hudson and A. McCullum who as National Labor and Official Labor candidates together outpolled him even in Southern Cross.

Two stories of "Bull-ant's" exploits, are characteristic. Once he knocked down a burly inebriated reader whose subscription to the paper was five years overdue. He then dragged him into his chemist's shop, plastered his wounds and charged him \$4.50 for the dressing, equivalent to five year's subscription at 75 cents a year, plus a 75 cent chemist's fee. The other story concerns the editor of the *Yilgarn Advocate*, a paper which "Bull-ant" maintained "nobody reads - not even the proof reader". This man also preached at Salvation Army street meetings. In the midst of one of his pontifications a billy goat, one of a number which roamed the streets, suddenly lowered its horns, charged, caught the preacher on the backside, sent him sprawling and broke up the meeting with much admired disorder. In the next issue of his paper McIntyre described the "personal quarrels of two Billy Goats, the bi-pedalled Billy, and the back-sliding Billy", and advised the Army against singing in future the hymn "Get ready for He's coming back again!"¹²

On McIntyre's death in 1920 at the age of 49 years there were panegyrics in the *Daily News* and other papers. The *Kalgoorlie Miner* declared, "Journalism has lost its least conventional and most original pen". The *Primary Producer* saw him as not only "the most picturesque journalist in Australia . . . but perhaps the best mining writer, certainly the most interesting the state has ever had".¹³ His hearse was followed by a procession three kilometres long. He lies buried in an unmarked grave in the Southern Cross cemetery.

Apart from journalists the Yilgarn gold rush produced few writers except for anonymous rhymsters, who knocked out rough-cut verses much loved by goldfielders because they were, in "Dryblower" Murphy's words, "the rhymes that our hearts can read". They were published in the local press under pseudonyms: "Crosscut", "The Exile", "Veritas", "Cynicus", "Cookaburra". A certain J. Moore Robinson published a book of verse, claimed as "an entirely local production", consisting mostly of ballads about West Australian life. How it was received by the public is not known.

Crime at the Cross

The goldfields were divided into police districts each with a sergeant or senior constable in charge. Generally they got on well with the populace, recognising the kind of rough and tumble society with which they had to deal. Sergeant R. A. Goodridge who represented the law in the Yilgarn for several years was well enough liked to be presented with a gold medal on the eve of his transfer to Menzies.

Although miners on a spree could be rowdy, drunken and disorderly, goldfields people generally were law abiding and the cases which came before the justices of the peace were mostly petty offences. The famous "Moondyne Joe" appeared in court on two occasions on charges of unlawful possession, but both cases were dismissed for lack of evidence. Percy Forrester was fined for not having the wheel of his milk cart chained. A hotel proprietor was charged with supplying liquor on a Sunday to other than bona fide travellers or boarders, and licensed dealer V. Rankin was fined for supplying liquor to a

sly-grog shop. In common with most goldfields the Yilgarn had its share of sly-grog shanties, often combined with brothels. They were situated at sites or roads along which miners and teamsters passed on their way to and from The Cross. The most notorious was at Nine-Mile hill on the road to Marvel Loch. Another was to be found at Half-way Rocks on the road to Bullfinch during the boom days of 1910. There was for a time a brothel in Altair street in The Cross, but it was run discreetly. An attempt to operate in the main street was brought to the notice of the police and it was quickly suppressed.

The Southern Cross court heard repeated cycles of offences: petty debt, damaging public property, drunkenness, trespass, disorderly conduct, riding on a railway train without a ticket, cutting firewood without a licence, ill-treating a horse, claims for unpaid wages, burglaries of stores and houses, unlawful possession and supplying a native with beer. There was an exceptional number of cases of abusive and obscene language. Rather more serious were occasional crimes of violence: assaulting a policeman, indecent dealing, "kicking an Italian", assault and robbery, ill-treating a native woman. A rare but serious crime was theft of gold. In March 1903, \$1600 worth disappeared from the mine at Hope's Hill. Two detectives were brought up from Perth. The prime suspect was a David Hatt who had the contract for treating the tailings. He was tried before magistrate Finnerty but acquitted. Hatt acquired a reputation for appearing before the courts, both as litigant and as accused. In June 1903 he was charged with illegally occupying the Golden Pig lease just west of the town. Finnerty had awarded the lease to "Bull-ant" McIntyre who found Hatt and his men removing property from the lease and destroying parts of the mine workings. After an altercation with Hatt, McIntyre went below to inspect for damage and was almost struck by large pieces of timber hurtling down the shaft. Hatt was charged with wilful destruction of property and it appeared that it was only through lack of witnesses that he did not face something more serious. The case was fully proven, but as it was the first of the kind under the Act, the court imposed a nominal penalty on Hatt of \$4 with costs.¹⁴

In 1909 Hatt was again in trouble when he was suspected of withholding a portion of a clients' gold crushings put through his mill at the Never Never mine. Allegations were sufficiently serious to warrant mines inspector, Crabbe, holding an enquiry, and for the *Southern Cross Times* to openly accuse him of failing to keep proper accounts and of abusive behaviour towards his clients. By now Hatt was in financial difficulties. On 14 April, 1910, he carried out an inspection of his mining operations and then went back to his house and committed suicide by taking cyanide.

Another gold theft, "the most impudently daring and downright of its kind ever perpetrated in the State", took place at the Bullfinch mine in May 1913 when gold to the value of \$6000 was taken at gun point by two masked men. No trace of the robbers was ever found.

Death through crimes of violence was rare in the goldrush. An exception involved one of the earliest recorded incidents of racial conflict in the Eastern Goldfields, a forerunner of the much more dramatic and notorious Kalgoorlie riots of 1934. Italians were recognised to be competent and reliable workers, but in times of economic downturn in the mining industry were accused of holding jobs which should go to British workers, as the term then had it. Mining inspectors, for safety reasons, permitted only those Italians who could speak some English to work in mines. The rest were employed as wood cutters.

Of course, if hostility against Italians became strong, the rule could be used to exclude them altogether from the mines. In 1900, an incident occurred at Hope's Hill during a Saturday night drinking spree when a fight developed between Italians and "Englishmen", as a result of which Jack Pozzi was taken unconscious to hospital with a serious wound over the left eye and a suspected fracture of the skull. He died on the Tuesday morning. Charles Condon and John McCarthy alias MacNamara were arrested and charged with unlawfully assaulting Pozzi, and were remanded for eight days. At a coronial enquiry evidence was given by a number of participants and observers of the brawl. Italian witnesses seemed reluctant to identify the assailant, possibly for fear of reprisals. Louis Pozzi, a relative of the deceased, declared that "The English and Italians were good friends before they had the beer". The sergeant of police told the court that all the information "had to be dragged from the Hope's Hill people". The jury found that Pozzi came by his death by being hit with a stone. There was no evidence to show who caused the injuries. And so the matter ended.¹⁵

The second case, which occurred at Mt Jackson in 1906, also concerned an Italian, but the assailant was a fellow countryman. The two men were timber cutters who had an argument about their work. Batista Gregorini died of terrible wounds before medical help could be obtained. Antonio Sala disappeared, but was subsequently arrested and charged. He was committed for trial in Perth where a jury brought in a verdict of wilful murder. He was sentenced to death and hanged.

The most notorious criminal to live in Southern Cross was Frederick Bayley Deeming, the infamous "cement artist". For criminals, debtors and other wanted persons, the goldfields were known to be good places in which to disappear. In such cases a change of name was obligatory. It was said that on all the fields there was a prevalence of Smiths! Some who were not recorded on pay-rolls but who lived solely by the independent trade of prospecting, were known only by sobriquets, such as Happy Jack, Sorrowful Sam, German Fred and Jack the Native. Deeming had good reason to be known in Southern Cross and to appear on the payroll of Fraser's mine under the alias Baron Swanson. He was a maintenance mechanic for the batteries and underground pumps, and was good at the job. By all accounts he had a magnetic personality, which made him popular and he seemed to be especially attractive to women. He was indeed a well respected citizen of the town described as:

a little man, slight, with a whitish yellow moustache, square shoulders, with a slight suspicion of a stoop, very neat and natty — in fact dapper — a very nice man to speak to, pleasant and chatty, conceited and generally nice-looking . . .¹⁶

When he was arrested on 11 March, 1892, for the murder of his wife Emily Williams in Melbourne, there were some who felt it to be a case of mistaken identity, the more so as he took it very calmly. Deeming, alias Swanson, was in fact hiding from retribution for a series of horrendous crimes. He had murdered his first wife and four children at Rainhill in England and cemented their bodies under the kitchen floor. After migrating to Australia in 1881 he had murdered a second wife in Melbourne and hid her body under a hearthstone. After his arrest he was taken to Melbourne for trial and though Alfred Deakin, later prime minister of Australia, argued his lack of responsibility, he was convicted and hanged on 23 May, 1892.

Business in the Cross

Many of those who developed successful business ventures in Southern Cross were men who had had experience in a variety of other occupations, and some of them had operated in other goldfields. Many combined several lines of activity, including agencies which brought money in on the side, or staked prospectors in the hope of a quick return. Some invested directly in mines. The 1897-8 electoral roll reveals 73 business premises in Southern Cross. A surprising number of people earned a living supplying food and services in a town with a population of not much over 500, when the total population of the district at the 1901 census was 1544 — 959 males and 585 females. Serving this number were four chemists, eight grocers and storekeepers, two butchers, three bakers, three drapers, five hotel keepers, one tobacconist, two hair dressers, one blacksmith, seven restaurateurs including the lessee of the railway refreshment rooms, two confectioners, one cordial factory operator, two forwarding agents, two fruiterers and greengrocers, one livery stable owner, three merchant ironmongers, one saddler and one mining agent. With all these services, Southern Cross lacked little of what was currently available for daily living in the capital city itself.

The versatility of Southern Cross businessmen is illustrated by examples of their activities: "Doc" Denny, one of the earliest residents of The Cross, was a mason by trade who prospected in his spare time. He also had a small farm on the Hope's Hill Road, known as "The Henery", where he raised 600 head of poultry, thereby contributing substantially to the food supply of the town.

Charles August Saw, JP, was manager of the first bank on the Eastern Goldfields, the Commercial Bank at Southern Cross. Until a town developed at Coolgardie, alluvial diggers from there brought their gold back to The Cross and lodged it with this bank. He became the largest shareholder in the coaching business that linked Coolgardie with The Cross.

John Howard Taylor walked from Northam to The Cross in January 1891 to set up the first stock and share broking business on the Eastern Goldfields. In 1906 he was elected to the Legislative Council. A. R. McKenzie, P. J. Sullivan and G. G. McInnes contributed to the carrying trade. They each built up a substantial service in the transport of water, wood, general merchandise and mining equipment. They owned large teams of horses and between them employed a sizeable labour force. Thomas Le Breton, a general merchant, specialised in imports from the UK, such as biscuits and confectionery. He had a number of agencies: Phoenix explosives widely used in mining operations, Beales Australian Pianos, garden powders, Golden Leaf teas and Swan Brewery beer. One of his claims to fame is that in one December in the run-up to Christmas and the New Year, he sold 10,000 bottles of beer. Perhaps it was this success that inspired him to partner Sam West in building the Marvel Loch Hotel. He had mining investments and prospected for gold at Koolyanobbing. Le Breton enlisted as an over-age recruit in the first AIF. When repatriated in 1917 he became the first Yilgarn soldier to return with tales of the dreadful slaughter of Australians in northern France. Herbert Gaston had trained as a mining engineer in South Australia, so it was natural that he should be attracted to the eastern goldfields of W.A. in the 1890s. He was mine manager for a number of ventures

including Mt Jackson where he made an input to the civic life of the town, taking a leading part in setting up the miners' institute. He was elected to the Yilgarn Road Board, and later to the Municipality of Southern Cross. In 1902 he established a book arcade in The Cross and obtained agencies for cycle and insurance companies. "Dorrie" Doolette, a representative figure of the mining entrepreneurial class, was a South Australian who had come to the west in the early nineties. He joined the fruitless Siberian and Kurnalpi rushes and later pegged rich claims at Kalgoorlie and Boulder for an Adelaide syndicate. His restless search for success took him to the Northern Territory, back to the eastern goldfields, where he became a field examiner at Kalgoorlie, and then to Southern Cross as manager of the Never Never mine. Though he later left to become manager at Mt Magnet he maintained his interests in the Yilgarn by financing prospectors, including Lenneberg and Charles Jones, in various parts of the field. Doolette's income as the main shareholder of the Bullfinch mine, and his gain when he finally sold out to a London company, made him rich. He bought racehorses and became an important figure in the business and social scene of the Yilgarn. He was also something of a bush balladist, being published in the Bulletin and the Kalgoorlie Sun under the pen name "The Prodigal". His best known poem, loved by the old prospectors, was "The Old Coolgardie Road". On his death in 1925 the *Melbourne Argus* claimed that "he formed more prospecting syndicates than any other man in the history of W.A."

Percy Forrester, along with Owen McMahan and Jim Nunn, was among the early farmers of the Yilgarn who proved that it was possible to grow food in what is still regarded as marginal land for farming purposes. He arrived from South Australia in 1903, introduced dairy cattle and, for a time, was the only supplier of milk and butter to Southern Cross. More importantly he proved that it was possible to grow wheat. In about 1904 he broke up three acres of land with a primitive wooden implement of his own manufacture, planted seed and in due course reaped a small harvest with the scythe. The following year he bought a single furrow plough and tripled his crop. His farm, Minburra, was visited frequently, not only because of this farming success, but also because he had erected a substantial pise house. In so doing he developed a method to overcome a serious technical problem which plagued those who had tried to build in pise. Plaster would not stick to the wall frame because salt in the sand caused fretting. His answer was to stretch wire netting on the wall supports both inside and outside before applying the plaster. Forrester and Nunn were for many years rivals in supplying fodder and dairy produce to The Cross. James Nunn with his wife Edith arrived in Southern Cross in 1897. From 1903 he worked on the railway and combined this with a milk round from a property east of the town. There was much price cutting with Percy Forrester. Quitting the railway, Nunn developed his Bellevue farm for wheat as well as dairy produce. It is said that he brought the first stripper to the Yilgarn in 1915 and that Forrester bought one the next week. He prospered in the agricultural expansion of the 1920s. Both men served on the road board : Forrester from 1922 to 1927 and Nunn from 1919 to 1941 including six terms as chairman.

Food and accommodation were provided partly by hotels, but non-licensed premises were equally, if not more important. Mrs McGrath kept the largest boarding house in The Cross, the Commonwealth Dining Rooms. The Railway Coffee Palace, close to the railway station, run by Mr and Mrs W. Chadwick, provided accommodation for weekly

boarders and short-time visitors. In the centre of the main street stood Mrs Green's Criterion Restaurant which advertised its "superior food and accommodation" for visiting artists.

Of course, business in The Cross had its ups and downs corresponding to the fortunes of the gold industry. There were bankruptcies and substantial bad debts, as well as good profits. By 1905 the productivity of existing mines was falling off and the future of business looked bleak. There had been a 25 per cent fall over the previous year in the output of fine gold. Among superstitious people there was talk of "Deeming's Curse" which he was said to have pronounced at the time of his arrest, that the town would never prosper. But a revival was at hand with the impending development of the two longest lived gold centres outside The Cross, Marvel Loch and Bullfinch.

The Last Rush

In 1905 three prospectors, Jack Lenneberg, Harry Williamson and Marksman, backed by mining entrepreneur "Dorrie" Doolette, found some rich floaters and a quartz reef on a new line 35 kilometres south of Southern Cross and some two kilometres east of the Jacoletti mine. Doolette apparently was not impressed and sold out to a small syndicate. Further investigation revealed that the area had great promise and in January 1907 a company was floated with a capital of \$200,000. Four mines developed: Exhibition, Firelight, Scorpia and Marvel Loch, the latter taking its name from the horse which won the Caulfield Cup in 1908. A townsite was gazetted in 1909 and took the name Marvel Loch. Lenneberg was commemorated by having the main street named after him. The town for a time rivalled Southern Cross for size and social amenities, but unlike The Cross had nothing to sustain it once the gold began to fade. At its peak it had a population of perhaps 1000 with about 500 more scattered around in mining shows of varying size. Some of these, like Dovovan's Find, were short-lived, but others attained significant size. The Nevoria and Mountain Queen mines each for a time employed 100 men.

To serve this busy area there arose an agglomeration of business houses supplemented by the normal governmental services of police, post and telegraph office, school and hospital. The first school ran in a tent but the next year the education department erected a standard timber and iron building. The Marvel Loch Hotel, a wood and galvanised iron structure, was built by Alf Goodin for two Southern Cross business men Le Breton and West. When the town declined it was dismantled and moved to Burbidge by Jack Tuckey. The basic structure was taken to Moorine Rock in 1931 by Andy Linberg. This practice of moving buildings from place to place was a feature of goldrush life. The other hotel, the South Yilgarn, owned by Christian Henri Andre opened for Christmas 1910. Despite the existence of the two pubs several sly-grog shops flourished, the beer being brought in clandestinely from Yellowdine. They were boarding houses, but also brothels. Often on the goldfields these three lines of business ran together. Perhaps it was with this in mind that it was said of Marvel Loch that "Gold is its chief claim, and sin its main feature".

For entertainment there was Bill Dunn's three table billiard saloon, while George Leach ran a weekly picture show in a hall which also served as a skating rink and a dance floor. For reading, people relied on the Southern Cross papers and the *Kalgoorlie Miner*.

Business was sustained by a well paid work force. Award rates of pay for members of the A. W. U. mining division working for the Marvel Loch Gold Mining Company ranged from \$6.60 per week for truckers and mullockers, the lowest paid, up to \$8.10 for the highest paid, the rock drill men. Bracemen, platmen, timbermen, surface labourers and tool sharpeners received wages in between these two figures.¹⁷ All miners were required to subscribe to a medical fund, the married men paying 15 cents per week, and the single men 10 cents, the amount being taken from their wages.

There was a resident doctor and a one-way casualty hospital. Most hospital cases came from mining accidents. Old timers believe that all those buried in the Marvel Loch cemetery died unnatural deaths. Apart from the mines the other main possible cause of accidental injury or death came from the carbide gas lighting plants which operated in some business premises. A correct pressure had to be maintained or there was danger of the whole thing blowing up. One such accident killed George Harper, the local baker, in 1917.

Marvel Loch, like Southern Cross in its early days, suffered from water shortage, but was luckier in that the goldfields pipeline lay only 23 kilometres away. At first water was carried by camels from The Cross at a cost of \$1.25 per 450 litres, or drawn from granite catchment north-east of the town. It took the combined efforts of the South Yilgarn prospectors' association, the progress association and the miners' union to persuade the government to connect Marvel Loch with the goldfields water scheme. The townspeople had to meet part of the cost and the pipeline reached The Loch in July 1912.

Meanwhile, in November 1909, Charles Edwin Jones had made rich strikes at Bullfinch, 35 kilometres north of Southern Cross. They have been described as "the only



*Plate 11: Palace Hotel, Southern Cross.
(P. T. McMahon Collection, Courtesy Patricia Lawton)*



*Plate 12: Sale of Bullfinch town blocks outside Southern Cross Warden's Court, 1911.
(P. T. McMahon Collection, Courtesy Patricia Lawton)*

major gold deposits found during the first two decades of the twentieth century" in Western Australia. Jones was prospecting for a syndicate headed by Dorham L. "Dorrie" Doolette, who hurried back to The Cross from Mt Magnet when he heard the news and with Vincent Shallcross pegged leases on the new find. Jones held a one-eighth share in the syndicate with the other two partners sharing the remainder, until Doolette acquired most of Shallcross's interest. Soon reports began to circulate of values of up to 280 grams to the tonne. The news produced a rush reminiscent of Coolgardie in '92: the last of the gold-rushes.

Southern Cross bubbled with life in 1910 as hundreds poured in on their way to the new find. A smart new hotel, the Palace, was built by Frank Snook. Nearly 900 new miner's rights were issued and 370 leases were registered by optimists who pegged a long line north and south of the strike. It was like old times come again. Veteran prospectors were soon on the track for the new Eldorado, including the legendary Paddy Hannan, who came from Melbourne at the age of 70 years. The bush track from The Cross was crowded with buggies, carts, wagons, drays and a new sight in the gold-rushes, motor cars. A car could be hired for \$20 a day. Most, of course, as in the old days, humped their blueys. At the site of the find a town of tents, hessian huts, bark and bough humpies, and galvanised iron houses arose. Fifty-six kilometres of leases were pegged north and south of the Doolette Syndicate's No.1 lease. Reflecting the boom the 1911 census revealed a district population of 3950, up from 1544 in 1901. Of these 2968 were male and 982 female. This is the highest population of any census of the Yilgarn.

There were wild hopes that the new find might rival the Golden Mile. The enormous excitement engendered was reflected in the extravagant nomenclature of many leases. There were blue, yellow, grey, green and black finches, a madam finch, a rowan finch, a

Victorian chaffinch. The 'field was known for a time as "The Aviary". The euphoria of this period is also well illustrated by the rush to buy town lots. Fifty-three lots were sold by auction for a total of \$50,280. One purchaser paid \$680 for a back-street block. The place grew quickly into a real town with all the current civilised amenities. A post and telegraph office, a police station, two hotels, two banks, shops, lodging houses and mining offices, were built in quick succession till the main street was nearly a kilometre in length. By March 1911 a provisional school had been opened in the Methodist hall, and a government standard school was built by July 1912. But the town had to wait till January 1915 for a small three bed hospital. As in Southern Cross the Methodists were the first religious group to establish a presence. When Anglican Bishop Riley first visited he had to preach standing on gin and whisky cases, in the open air. A church was built some time later.

In keeping with the general euphoria was the flourish with which a weekly paper, the *Bullfinch Miner and Yilgarn Advocate* was launched. The first edition, dated 12 November, 1910, declared its aim to place before the townsmen the local items of interest "free from the mists of prejudice and the paralysis of cant, stripped of all humbug and varnish". The paper promised to publish verse "redolent of life on the 'fields, the fight for Finches, and within hearing of the battery stamps". However, despite this first fine careless rapture, the paper had a short life. It was printed in Perth and had to compete with Perth papers, with the Kalgoorlie Miner, and with papers from The Cross, which the improved transportation facilities of the time brought along almost within a day of publication. Nevertheless, for twelve months it did play some part in the fight for the two most important essentials of a reasonable life, reticulated water and the railway.

Newspapers of the day had plenty of sensational news to feed on. Out of the Bullfinch 'field came the opportunity to report what must have been the earliest law case of its kind in Western Australia's mining history, the Chaffinch conspiracy case. In March 1911, E. C. Dyson, E. W. Benwick and H. Greenway were charged at the Perth Police Court with attempting "to effect (sic) by deceit the market price of shares in the Great Chaffinch Gold Mining Company". The circumstances were very complex, but included accusations of salting the mine and despatching false telegraphic information. After a ten day trial the case was discharged, through lack of sufficient evidence.¹⁸

The Bullfinch mine at its height employed 160 men. Four hundred other miners worked on nearby leases, the total population being well over 1000. Water for all these people, as well as for mining operations, had to be carried from The Cross, at a cost of three cents per 4.5 litres. A progress association, formed at a public meeting in October 1910, took as its first objective the provision of a permanent water supply. The townspeople were using nearly 23,000 litres a day and the horses of the teamsters another 9000. With the goldfields water pipeline so close it was not likely that so promising a 'field would long be deprived of this essential facility. By June 1911 the town was connected to the scheme. The railway had been pushed up two months earlier, providing a tri-weekly service. Faith in the future of the 'field was indicated by the presence of Governor Sir Gerald Strickland, and Premier Frank Wilson, at the official opening of the Southern Cross-Bullfinch Railway on 8 March, 1911.

The Finch seemed set for a great future when Bullfinch (WA) Proprietary was floated with a capital of \$1,008,000. But, as so often in the history of the Yilgarn, it was another

case of expectation and disappointment. By mid-1911 it was becoming clear that payable gold was confined to the area of the original strike. The optimists who had pegged the surrounding country got nothing. On 20 May, 1911, the *Southern Cross Times* published twelve columns of the names of 800 leases liable to forfeiture if rents and fines were not paid by 10 June. Most of them were in the north country round Bullfinch. Movement of men and capital out of the area was so marked as to be popularly called "the flight of the finches". From that time on anyone prospecting in an unpromising area were said to have "gone bullfinching".

Yet Bullfinch was rich while it lasted and made an important contribution to the dramatic rise in Yilgarn goldfield production from 557.48 kilograms in 1911 to 2578.66 kilograms in 1913. Doolette and his partners actually refused an offer of one million dollars for the mine. Though ore was at first carted to Southern Cross, very soon a 20 head battery was set up and the mine established a plant for the generation of electric power. In the year 1910 the mine yielded 393 kilograms of fine gold. Gold at shallow depth was quickly worked out and the company spent \$1600 putting down a shaft. But there were labour disputes to hamper production, and some ore was pyritic and had to be sent to Kalgoorlie for treatment. The outbreak of the Great War in 1914 exacerbated the mine's problems. Production was affected by rising costs, a falling grade of ore, a static gold price, and a shortage of skilled labour brought about by enlistments in the Australian Imperial Force. From a total Yilgarn district adult male population of 1424, some 323 are recorded as having enlisted, including 107 from Bullfinch. When allowance is made for the old and infirm, and for the fact that the only industrial occupation engaged in was mining, it is apparent that there was a significant reduction of the potential work force.

It had become a well established practice in Western Australian gold mines to let out



*Plate 13: Bullfinch Mine, 1910. Bagged ore being sent to Coolgardie.
(P. T. McMahon Collection, Courtesy Patricia Lawton)*

parts of workings to tributers, who paid a royalty for the right to work on the lease. This arrangement was now applied at Bullfinch. Nevertheless, the town slowly declined as gold production fell from 1048 kilograms in 1913 to 440 kilograms in 1918. Bullfinch Proprietary finally closed in 1921. The town was, however, saved from becoming another in the long list of ghost towns, by the opening of the surrounding land for wheat farming. Mining revived for a time in the 1950s when Great Western Consolidated reopened the Copperhead mine but there was no boom comparable to 1910. Nevertheless, Bullfinch remains by far the largest gold producer in the Yilgarn. In two periods, 1911-1921 and 1952-63, it produced 20,522 kilograms of gold from 3,935,524 tonnes of ore at an average grade of 5.2 grams to the tonne.

Marvel Loch too declined in importance with the Great War. Its principal mine had closed in 1913 only to be worked by tributers. The Mountain Queen also closed in October 1914. The tributers on the Marvel Loch mine were involved in a dramatic incident on 11 November, 1914. "Disaster at Marvel Loch" was the headline as the *West Australian* informed its readers of yet another tragedy associated with the getting of gold. Three tributers were working on the Boulder lode in the mine in bad holding country, mainly kaolin, when flood waters from a violent thunderstorm weakened a stope which collapsed trapping the men below. A few weeks earlier the *West Australian's* front page had trumpeted in gigantic headings "EUROPEAN WAR DECLARED". This on-going major catastrophe overshadowed the news from a small mining town. Seven years earlier, at Bonnievale north of Coolgardie, a similar accident had electrified first the whole of Western Australia, then Australia. It even got coverage overseas.

At Marvel Loch the whole population was alerted to bear a hand in a rescue attempt. Up to fifty volunteers turned up and successive parties of eight men worked in four hour shifts to dig a drive around the fall. Inspector Josiah Crabbe, who had directed the Bonnievale rescue in 1907, was sent from Westonia to take charge of operations. He reckoned it the toughest job he had ever had to do. At first no hopes were held for the trapped men. Late in the evening of the second day a tapping sound on the underground rails could be heard. The rescuers redoubled their efforts and the next day heard voices. A fifty millimetre pipe was worked through the fall and small bottles of hot soup and candles lowered. At 10.00pm on the fourth day two men were found and hauled to the surface. Minutes later the whole rescue drive collapsed with a roar. The rescued men told their story. When the fall occurred James Gorey was killed instantly. Michael O'Brien was half buried and begged Frank Mazza to get away to safety while he could. Mazza refused and worked frantically to free his mate and dragged him clear minutes before a fresh fall of earth and rock would have killed them both.¹⁹ They huddled in darkness for three days until rescued, fearful all the while of a further cave in. For O'Brien it was a short lived reprieve. He was killed in action in France in 1918.

Despite the declining yields at Marvel Loch, the Yilgarn experienced a boom in the early years of the Great War. More ore was milled in May 1914 than in the whole of 1911. In 1914 new ten head batteries were erected at Westonia and Nevoria and five head mills at Butcher Bird and Spring Hill. A cyanide plant was commissioned at Burbidge. Boosted by production from the Edna May mine at Westonia, Yilgarn goldfield production peaked in 1915 when 2829 kilograms were produced. It then declined to 2197 kilograms in 1918 under the impact of the labour shortage and the depletion of higher grade deposits.

From the first discoveries until the Great War everyone in the Yilgarn earned a living from gold — those who worked directly in the industry, those who sold goods and services to the workers in the industry, and those who provided the infrastructure for the organisation of economic and community life. Everyone was affected by the fluctuating fortunes of the mines. This common dependence on a single industry made for a community of interest where every happening, whether a mining accident, a fund-raising function, a legal battle between local citizens, or the outcome of a sporting event, was the property of all. In this period Southern Cross was firmly established as the administrative and distributive centre for the region. The gold mining industry had shown resilience although production had fluctuated, rising with new discoveries and declining as shallow zones of secondary enrichment were exhausted. It seemed that the future would depend on new finds or on the rise of agriculture. Few, however, would have predicted the dramatic growth of the wheat industry in the 1920s from the humble 160 acre plots of the pioneer farmers on the outskirts of Southern Cross.

John McKenzie

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Chapter 7

Miners and Farmers 1915-1950

News of the armistice ending the Great War reached Southern Cross at ten in the evening of 11 November, 1918. Word spread quickly as bells rang out and bands of people paraded in Antares Street all night. Next day the town celebrated with a public holiday: Children's sports were followed by a dance in the Mechanics' Institute. War had been a traumatic experience — socially, economically and politically disruptive. The future seemed far from clear. If people longed for a return to the past it was not to be, for the age of the gold-rushes had ended. The next three decades would see rapid economic and technological change, depression and war. Few would have predicted that within a decade, wheat farming would dominate Yilgarn life. This economic revolution resulted from a clamour for land by settlers and was facilitated by generous government assistance.

In the event, few of the original settlers benefitted from their work in establishing farms. Hit by low wheat prices and saddled with debt, most were compelled to walk off their farms during the Depression. The district was saved by the gold mining revival. Once again the bush became alive with prospectors. Several old mines were reopened and a new find at Mt Palmer provided many jobs. Nevertheless, unemployment and under-employment remained high in the two decades between the wars and many people lived at subsistence level. Men in this situation welcomed the opportunity to enlist in the second AIF in 1940. However, despite the proximity of the fighting to Australia in 1942-3, the World War was socially less disruptive than its predecessor, although ethnic tension increased and Italians suffered. As the war ended the district faced a most uncertain future and living standards were still low.

The Great War: Volunteers and Dissenters.

War had come slowly to the Yilgarn in 1914 as the boom brought about by the mines of Bullfinch and Westonia continued through 1915. Billy Kitson was farewelled as the first man to enlist at Southern Cross and women commenced knitting drives for patriotic funds, but the impact was small. Early recruiting stressed fitness and selectivity rather than numbers. In one instance, in February 1916, nearly one third of 37 volunteers were rejected as unfit, mostly because of dental problems.

The growing casualty lists of Gallipoli and, later, France produced two reactions. On the one hand rising patriotism and emotional farewells were typified by the departure of Alan Muir from Southern Cross station when "all the barmaids of the parish were hard by

as [he] . . . was lifted shoulder high and carried through the crowd . . .". On the other, an alienation from the war and resistance to recruitment were apparent. A war census in 1916 revealed 190 men unwilling to enlist, whereas 170 gave a "conditional yes" response. The *Southern Cross Times* criticised the lack of patriotism, but its efforts to highlight advantages of military service: privates earned sixty cents per day, widows received a pension, were counterproductive. Individuals were sent the coward's white feather. One caused anger by publicly lamenting his inability to join his friends going overseas to "join the fun". The weekly casualty lists from France told a different story.

The Yilgarn missed little of the divisiveness of the conscription referenda of 1916-17 and the split in the Labor Party. The district supported conscription decisively in 1916 but only narrowly by 511 votes to 488 votes in December 1917 after a bitter campaign which had continued unabated from the September 1917 State election. At that time Southern Cross supported Official Labor against National Labor by more than two to one, only to see Charles Hudson, the National Labor, pro-conscription candidate, elected on Ravensthorpe support and newspaper editor, "Bull-fant" McIntyre's Nationalist preferences.

Gold production from small mines decreased late in the war as military recruitment drew off labour. However, ore production from the major centres, Bullfinch and Westonia, was maintained, despite the labour shortage, through the use of tributers (who paid a fee to remove ore) and by the induction into the mines of Italian and Yugoslav citizens and Australian nationals with poor English. In this period Westonia came to dominate the local industry, producing over 60% of the field's gold in 1917 and 1918. Mines Department figures reveal that the total number of men working in the mines of the Yilgarn Goldfield decreased little due to the war, from a peak of 940 in 1915 to 808 in 1917. The number utilized underground actually increased to a maximum of 526 in 1917, revealing the extent to which the mines were able to draw in men to replace those entering the army. The use of foreign labour for this purpose fanned ethnic dissension and complaints of "shirking Italians". A meeting of 200 people in Southern Cross early in 1916 condemned the employment of these foreigners "while Britishers go to war" and called on aliens of allied countries to be enlisted in their own armies. Newspapers pointed to the danger of mining accidents if men with poor English were employed underground. At the same time there was grudging acknowledgement that Slavs and Italians were "harder workers". Possibly, inexperience did contribute to accidents: Jim De Paoli was badly burned by petrol in the Bronco shaft in 1920 but lived; and the popular August Godici was killed at the Greenmount mine in the same year when he entered a stope after firing and was killed in an explosion.

The Yilgarn produced its own war hero in Percy Black, a Mount Jackson miner who enlisted in September 1914 as a private in the 16 Battalion. He served as a machine gunner at Gallipoli where he was wounded twice and commissioned in the field, second lieutenant, after being awarded the DCM. His outstanding service continued in France where he seemed fearless of death and survived a third wounding. By then a major, Black was awarded the Distinguished Service Order and French Croix de Guerre for action at Pozieres and Mouquet Farm. He was killed in action at Bullecourt on 11 April, 1917, being one of 640 casualties suffered by his battalion on that day. His body was never recovered. A memorial tablet was erected in St George's Cathedral, Perth. Although quiet and unassuming in manner, Black's courage was a byword. C. E. W. Bean, Australia's

official war historian, described him as “the greatest fighting soldier in the A.I.F.” Newspaper lists record that some 323 Yilgarn men served in the Great War: 174 from Southern Cross, 42 from Marvel Loch and 107 from Bullfinch. Of these, 61 were reported killed. The actual numbers would have been higher as many Yilgarn men enlisted in Perth. A memorial commemorating the dead was unveiled by the State governor in Southern Cross on 10 February, 1924.

Prospectors in Retreat

By the end of the war the Yilgarn was in decline. The Southern Cross Municipality had been absorbed by the Yilgarn Road Board in 1918, as the population no longer warranted the existence of what had been the smallest municipality in the state. Next year brought an outbreak of Spanish influenza. This hit Southern Cross in the winter of 1919 and persisted until October, causing the number of deaths to double — rising to 16 for the year. The disease appeared to hit elderly men particularly severely, probably because of the ravages of silicosis. Meanwhile, it had become clear that discharged soldiers were not being attracted back to the district. The excitement and romanticism of the gold-rushes had given way to hard-nosed realism. Prospecting at Parker’s Range or Bullfinch now held few attractions for the price of gold had remained relatively static so that the inflation of wages and mining costs had eroded the potential profitability of small mines. Moreover, jobs for newcomers were hard to find in the few mines struggling against declining yields. As a result, by 1921, the population of the Yilgarn Road Board district had declined to only 1210, being 724 males and 486 females. Mining was the predominant industry, employing 232 men as against 12 in pastoralism and only 11 in agriculture. The continuing important role of the district in helping to service the Eastern Goldfields was reflected in employment. Sixty three men worked on the railway, 34 for the Goldfields Water Supply and 19 in forestry, mainly as timber cutters feeding the boilers of the pumping stations. As the decline continued, gold production fell to 597 kilograms in 1921, when the Bullfinch and Trálfalgar mines closed, then to 260 kilograms in 1923, when the Edna May at Westonia closed under the impact of declining values and a fall in the price of gold.

Each mine closure swelled unemployment in Southern Cross. A local repatriation committee distributed aid to returned soldiers, but others were forced to make do or to rely on charity as there was no government provision for unemployment. J. Monaghan and W. McDonald led a deputation of destitute men, seeking help from the road board in 1921. Little could be done by the board as its income was declining. One hundred and fifty rate assessments had to be written off in 1919-20. The reasons told the story of the recession: land of no value (25 cases); house pulled down (25 cases); gold lease forfeited (47 cases). In that year rate assessments totalled \$1726 but the arrears of \$1232 reflected the depth of the local depression. Indeed, for the interwar period the assessed rates of the road board bore little relationship to its actual income as arrears frequently exceeded the estimated income.

As the contraction continued, S. Yoŕall closed his cordial works, and Alice Kennedy’s Southern Cross Hotel and M. Murphy’s Commercial Hotel were compulsorily delicensed in 1924. The Castlemaine Brewery had paid \$8000 for the latter during the Bullfinch boom 13 years before and the \$310 compensation for the closure represented a

massive loss. In the same year the government hospital also closed, to be run by Matron McLaren as a subsidised private hospital. A local medical fund was established and for the next 12 years it provided medicines and access to a doctor for a subscription of \$6.50 per year; but serious medical cases had to be taken either to Northam or Kalgoorlie. Southern Cross survived only as a run down administrative centre. As the *Times* put it: "apart from business people, a few farmers and prospectors, town consists of government employees".

The problem was that capital was no longer being attracted into gold mining in Western Australia. The Yilgarn gold-rushes in particular had depended on the influx of capital to develop reef mines which employed wage labour. Little alluvial gold was unearthed and prospectors always found it hard to make a living. The company mines had been fueled by speculation. None was tested at depth before being floated. As it turned out, the principal discoveries: Fraser's, Marvel Loch and Bullfinch, gave high yields and high hopes as oxidized, surface zones were mined, but declined quickly in values and prospects with depth. Few mines paid dividends. Fewer still repaid their capital. Those who benefitted were the promoters like Dorrie Doolette, some speculators, miners who earned wages when jobs were hard to come by, and those storekeepers, publicans, cartage contractors and the like who profitted by providing services to the community. Shareholders largely missed out. The best hope for the prospector was to make a find and to sell it. But few made the elusive strike.

The romantic image of prospecting is typified by John Mitchell at the age of 72 setting out in 1921 from Southern Cross with his wheelbarrow and tools to strike it rich. Harsh reality found him dead beside the Koolyanobbing track, 43 kilometres out. A similar fate befell John Bell found dead 24 kilometres east of Mount Jackson in 1923. For every prospector who succeeded many failed and drifted back to their places of origin. Bayley died young and rich but Hannan eked out life on a State pension. A few like Joe Creed at Marvel Loch and Henry Stevens at Southern Cross lived out their lives with dignity and independence in camps on the fringes of towns as remnants of the rushes. By contrast, Mick Toomey, who was Risely's mate in the original Southern Cross strike, committed suicide. So too did Jack Lenneberg, discoverer of Marvel Loch, who died a pauper in November 1923. Joe Hollow, described as "Yilgarn's most reliable and best known prospector", died in 1928 after 25 years work in the Yilgarn and Phillips River districts. He left little despite having discovered the Banker mine, the Glenelg Hills find with Alf Heaton (called Hollow's Find in 1924 and then Holleton) and Forrestania. Holleton aroused considerable prospecting interest, but development was hampered by water shortage and the lack of capital, so that crushing facilities were not available until 1930 when Gordon Dunleavy erected a battery. The field did not live up to its promise.

Some successful pioneers like Charlie Burbidge and his brother George (died 1915), who prospected the Burbidge field in 1905 and also held the Nevoria leases, made the mistake of not selling when the price was right. In 1913 the Burbidge leases were inspected by both Bewick Moreing and the Great Boulder Company but the brothers refused an offer of \$80,000. Yields declined with depth and in 1923 Charlie accepted a lesser offer from the Great Victoria Gold Mining Co. which, in turn, abandoned the mine

in 1927. He then compounded the error by reopening the mine in 1930 with his partner Jim De Paoli. It barely earned enough to pay the miners' wages and drained Charlie's savings until he was forced to close. He died in March 1933. The mine with its extensive lateritic ore bodies was to defy another Burbidge Gold Mines after the World War. Not until the new technologies and high gold price of the 1980s was it to yield its treasures and then largely because large earth moving equipment made possible a through-put of over 300,000 tonnes per year, whereas barely 1000 tonnes per month could be mined in the 1920s.

Despite the failure of many mining companies, the Yilgarn often rewarded the small mine owner. A particularly encouraging zone ran 50 kilometres southwards from the May Queen through Marvel Loch, Nevorla and Burbidge to Parker's Range and the Dulcie Group. Here the quartz reefs were generally too small for companies but often rich in gold and close enough to the surface to be accessible to systematic prospecting or luck. Frequently the reefs failed at depth but their exploitation was within the capabilities of a syndicate of two or three with perseverance and enough savings to ride out the lean periods. George Howlett's public battery at Donovan's Find, Marvel Loch, was a boon to these prospectors. He had arrived in the Yilgarn in 1897 and opened his battery in 1912. It operated intermittently even in the depressed 1920s. Howlett was an active prospector with interests in gold-rush history and local government. He served on the road board in 1910-1918. After his death the mill was run by his son, Tommy Howlett, until it became a State battery in 1950. Further south at the Dulcie, Sam and Alex Polson proved the viability of small scale operations by mining a series of reefs during the 20s and 30s. They crushed at their own five head battery on the Scots Greys lease, which also served local prospectors.

Luck sometimes smiled on prospectors who went back to ground worked in the 1890s. The Fraser's lease at Southern Cross, in particular, hid rich shoots. Fred Wilkinson, J. Monaghan and W. Taylor found one such patch in Orion Street, Southern Cross in 1921. A decade later E. J. T. Pearce struck it rich only 100 metres south of the Palace Hotel and sold for \$2000. The specimen stone was described as some of the richest found in the Yilgarn and comparable with that from Nichol's lease, south of Greenmount. Four decades later, after Fraser's had once again seemingly been exhausted by Western Mining Corporation in the 1950s, Eric Carnicelli struck rich ore in the lower levels of the mine and won 18 kilograms of gold although hampered by both the depth of the ore and the excessive water in the mine.

By far the richest small mines in the Yilgarn occurred in the Manxman group eight kilometres north of Bullfinch. There, Alick Barr and J. W. Clement erected a five head battery on the Radio mine in 1923. It had been a consistent producer since the Great War and now yielded rich ore. Crushings in 1923-24 returned 121.5 kilograms from 1008 tonnes. In the 1930s it was still returning about 100 grams per tonne and to the end of 1931 produced two and a half tonnes of gold. It was then the richest privately owned mine in Western Australia. Alongside it, S. Lang and R. B. Andrews mined the Radio Deeps. It produced a half tonne of gold to 1931. Yet, despite these phenomenal yields, gold production in the Yilgarn Goldfield continued to decline so that in 1929 only 145.91

kilograms were produced from 3032 tonnes. One third of that was from Westonia and it was estimated that as few as 70 men were engaged in mining in the Yilgarn road board district.

As mining collapsed, the many little towns that had mushroomed in the goldrush — places like Nevoria, Parker's Range and Mt Jackson — just as quickly disappeared. Marvel Loch was something of an exception. Having boomed in 1910-12, its population declined rapidly after the war. The school closed in 1924. By 1929 there were but three inhabitants: two old-timers in Jim Black and Charlie Jenkins and the publican, former chemist Christian Andre. Yet the town somehow survived. It had the advantage of nearby Howlett's battery; and it remained connected to the goldfields pipeline. The two old prospectors were past moving on but the key to the town's survival was the stubbornness of Andre who stayed put hoping for a new boom. Despite the absence of population he regularly hung out a hurricane lamp to attract custom and survived on the occasional traveller. He took delight in the flexibility of being able to serve either a hair-of-the-dog or a potion from his back-room pharmacy.

Christian Henry Andre, born in London on 29 July, 1866, had been chief inspector of explosives during the blasting of Fremantle Harbour. After prospecting at Bremer Range and Hatter's Hill, he opened the Terminus Hotel at Parker's Range in 1901. When he married Jessie Jane Gordon in 1903 he continued prospecting to supplement his income. Three leases, Constance Una, Dulcie Jean and Gordon Highlander, were named after his children. He transferred the hotel licence and erected the South Yilgarn Hotel at Marvel Loch in 1910. It still stands. With pretensions to being superior premises, it was constructed not of bush timber but from a precut design supplied by Millars timber company. A feature was the Aerogen lighting system operated by low pressure benzol gas piped to lamps in each room.

Andre was a keen gardener and musician. His Marvel Loch Merry Makers were local favourites; and he dabbled in politics, serving on the road board in 1911-12 and 1916-18, and standing unsuccessfully for the Legislative Assembly as a Country Party candidate in 1924. After many lean years, fortune improved for Andre in the 1930s. After divorcing his first wife, who lived overseas from 1912, he married Nancy Hennesy and then sold the South Yilgarn Hotel to Perth hotelier Paddy Connelly for \$20,000 in September 1935, as the long awaited mining revival reached Marvel Loch; but his last days in The Loch were soured by a three month boycott of his hotel by miners demanding cheaper beer.

The goldmining depression did not end all speculation in the Yilgarn. There was the occasional rogue prepared to fake a strike to earn a quick quid. If gold held no attraction then oil would do. So it was that Robert Rothkel was able to announce an oil find 56 kilometres from Southern Cross in October 1923. A well near Lake Eva north of Yellowdine was reported as flowing oil from a depth of 12 metres. Investors P. Judge, H. W. Hensman and C. Hunter visited from Perth and were duly impressed. A company was floated to raise capital to exploit the deposit. The road board planned an access road. What looked like developing into a boom was quickly deflated when the Mines Department investigated and published an analysis of the "oil" revealing a mixture of kerosene, vaseline and soap. This quick action prevented fraud and protected innocent investors.



Plate 1: Christian Henry Andre, Oct, 1932, long serving publican at Parker's Range and Marvel Loch.

(Courtesy Dulcie Hemsley, Maddington)

Farmers to the Fore: Extending the Wheat Boundary to Ghooli.

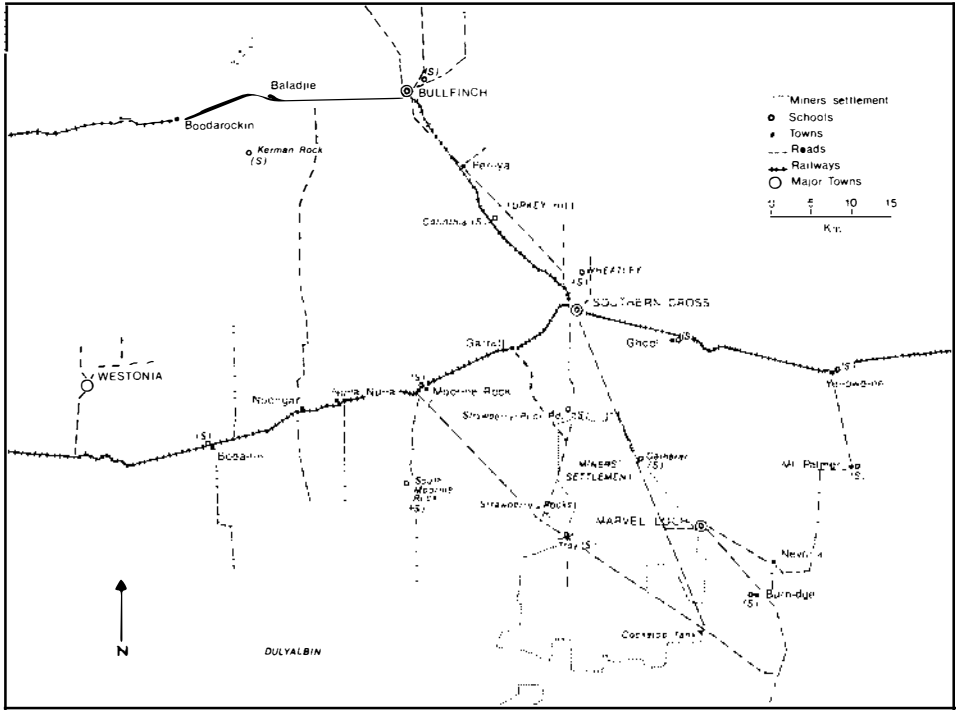
Fortunately for the district, as mining declined wheat cultivation spread into the Yilgarn and soon dominated the economy. The area cropped increased from about 730 hectares in 1921, when 11 men described their occupation as farmer, to some 80,864 hectares in 1930-31, when over 800 people were directly involved in farming. This rapid growth was fuelled by the unbridled optimism of James Mitchell, premier of Western Australia 1919-1924, and of successive Labor ministers for agriculture, Troy and Millington, in 1924-30. There was virtually no experimentation or testing of the lands prior to settlement; no plan of action other than to survey and allocate blocks to the flood of applicants; no philosophy of development other than a firm faith that the rains would follow the plough; no realistic appraisal of long term market prospects for wheat. The relatively high grain prices of the post war period, reaching 72 cents per bushel as a consequence of the war's disruption of European farming, were interpreted as favouring long term prospects. The assumption may be understandable in the political climate of the day, but it was to have tragic consequences for the unwitting players in the game of farm development.

Since the gold-rush, large areas of the Yilgarn had been held by pastoralists. Most had limited success because of the shortage of fresh water for stock. In the 1920s leases in the western portion of the district, close to the railway, were progressively reallocated from pastoral to agricultural use. By 1929 the pastoral industry was pretty well confined to northern parts of the district and agriculture dominated the western portion.

Prior to the Great War, Percy Forrester had been virtually the only full time farmer in the central Yilgarn. He concentrated on dairying and hay production in competition with Owen McMahon and farmer railwayman, James Nunn. Other individuals like Charlie Burbidge and W. A. Patterson in the south Yilgarn also grew plots of hay with results that encouraged speculation that the Yilgarn might one day grow wheat. However, in 1920, government policy still formally excluded the district from the wheatbelt so that the Agricultural Bank was not permitted to advance money to farmers. Having slept through most of a tour of the district early in 1920, Premier Mitchell heralded a change. "Why not move the boundary to Ghooli?", he asked. It was then 80 kilometres to the west near Burracoppin. He had long believed that "the Eastern Wheatbelt will prove to be one of the richest possessions of the State" and needed no detailed examination of the country to sustain his vision. In vain, Dr G. L. Sutton, director of agriculture, warned of the uncertain rainfall. The Yilgarn was destined to be part of the agricultural expansion. It did offer several advantages, including large areas of unoccupied crown land, when there was a shortage of suitable land in the old wheatbelt, and existing railways, which would reduce the capital needed to market wheat.

Within the government, this expansion was seen as solving immediate problems: recognizing the claims of war veterans; removing the unemployed from Perth's streets by turning them into farmers; and transferring from Kalgoorlie and other declining gold towns the miners of the gold-rush now too ill with lung diseases to continue in the mines. The motivations of the politicians were partly capitalistic (they saw the chance to utilize a

CENTRAL YILGARN — (Between the wars)



vacant resource) and partly altruistic. Some of them were genuinely concerned with improving the prospects of the labouring class.

In the broader context, the Yilgarn was to be a small cog in a British plan to settle the heroes of the Great War, now swelling the unemployed masses in British cities, on the vacant lands of the empire. A series of agreements in 1922 and 1925 between the United Kingdom, Australian and Western Australian governments linked migration and British loans to land settlement. It has been argued that capitalist economies require the periodic inflow of substantial investment capital to maintain momentum. If so, the relative prosperity of the 1920s resulted from the injection of loan funds into land settlement. Even though this boom still left 6% of the State's trade unionists unemployed, the Yilgarn benefitted in developmental terms as the State's public debt rose from \$94m to \$138m in the decade after 1919. Furthermore, significant numbers of British migrants were settled in the district, particularly at Wheatley, where Frederick Turner was the first farmer in 1923.

Direct government participation, agrarian socialism, was to be the key to the exploitation of the Yilgarn's wheat lands. The agencies were all in place following similar schemes of land settlement prior to the Great War: the Lands Department to survey land and to allocate blocks; the Agricultural Bank to facilitate credit; and the Agriculture Department to provide advice. In addition, the Goldfields Water Supply and the government railways stood ready to extend services to farmers. There were even promises

of government support for the construction of rural roads although, in the main, these remained the responsibility of local government. Settlers strongly supported this policy which gave the state primary responsibility for the institutional and service structures necessary for agriculture. Successive generations of farmers continued to support rural socialism so that it was always the first plank in the platform of any politician with hopes of representing the district.

The first post war release of Yilgarn land occurred in 1921 when seven ex-servicemen: G. Mann, W. Glen, P. T. McMahon, A. Smith, J. Colhoun, S. Hammer and E. Richards, secured blocks a few kilometres north east of Southern Cross. In the same year, 200 blocks were surveyed at Westonia, which had been constituted a separate road board in 1916. In 1922 there were 153 applications for 45 blocks at Doongin, soon to be renamed Garratt. Next year 15 blocks were allocated at Ghooli adding to the 5260 hectares already occupied at Bullfinch and the 70 blocks being cleared at Bodallin. Surveys were completed in 1925 to permit the release of another 8900 hectares at Bullfinch. By this time the rush for land was in full swing and surveyors were hard pressed to keep ahead of the flood of applicants for blocks north and south of the eastern goldfields railway and along the Bullfinch spur.

In applying government policy the Agriculture Bank reflected the caution of the Agriculture Department and only reluctantly agreed to lend to Yilgarn settlers on the same basis as to those in wetter areas. The first scheme, announced in 1922, imposed special restrictions so that the maximum advance for farm development was not to exceed 50% of the value of improvements, to a maximum of \$1250. Holdings were to be not less than 404.7 hectares including 259 hectares of heavy soil, termed "first class land". East of Nulla Nulla there were further restrictions to discourage settlement. Advice to farmers, many of whom were straight off city streets, was provided by the Department of Agriculture. Its officers conducted field trials of wheat varieties on E. H. Richard's farm at Wheatley, six kilometres north-east of Southern Cross, in 1924-27. Dr Sutton visited the Yilgarn on several occasions and lectured on farming practice, using lantern slides to illustrate his points. He had the whole State to cover, however, and could not visit all centres. Nor could farmers travel far to hear his talks because of lack of transport. In practice, too little information filtered through to individual farmers. They relied on hearsay advice from fellow settlers and on information gleaned from the columns of the *Western Mail*. Some information came from Agricultural Bank inspectors Adam Gatherer at Southern Cross, Curtis at Bodallin and Dick Withall, who serviced the south-west Yilgarn from Bruce Rock. Their main function was to check the clearing and improvements completed by farmers so as to approve credit. The one piece of practical farming advice that the bank was able to enforce, by restricting the release of credit for seed wheat, ensured that land was left fallow for one year before cropping. Symptomatic of the political expediency that pushed settlement ahead of planning and experimentation was the belated establishment of the Agricultural Department's Ghooli research station. Land clearing did not commence until 1927. The first open day was held in October 1928 but significant field results, confirming the superiority of Noongaar and Early Gluyas wheat in the district, became available only in 1929. By then some hundreds of settlers were already on their blocks and the first phase of land settlement in the Yilgarn was drawing to a close.

The railways were of critical importance in the opening up of Yilgarn land. At the time, bank loans were available only to farmers within 20 kilometres of a railway. This was considered the maximum distance a farmer could transport wheat economically to a siding. Because of this, railways largely dictated the pattern of development. Land was taken up along the existing railways to Kalgoorlie and Bullfinch. Soon, there was agitation for the construction of a new line from Bullfinch to Lake Brown to serve northern settlers. This was eventually opened in 1929, thereby completing the Wyalkatchem-Bencubbin-Southern Cross loop.

When attention shifted to farming possibilities in the south Yilgarn there was immediate agitation for a railway. The idea meshed with grandiose government plans to open up a great arc of country south-east of the existing wheat belt. Here 3500 farms were to be serviced by a railway linking Southern Cross, through Forrestania to Salmon Gums. The line was surveyed in 1928 to run south from The Cross, passing west of Parker Range, thence slightly east of south to Forrestania. L. S. Avery, British secretary of state for dominion affairs, finalized plans with Premier Collier, for the expenditure of loan funds to settle migrants in the area. The estimated cost of the scheme — including surveying and classifying the land, clearing nearly 10,000 kilometres of rural roads and constructing 1045 kilometres of railway — was a massive \$8,450,000. Arrangements went ahead with haste. Minister for Lands, Troy, was able to announce in late 1927 that 2,428,200 hectares had been classified so that 1500 blocks would be ready for settlers by June 1928. The busiest scene in Antares Street since the gold-rush saw 15 trucks and cars laden with workers and equipment despatched on 29 July, 1928, for Forrestania, where 400 men were to construct roads, water supplies and railways. Not to be outdone by government plans, Jimmy Mitchell, then in opposition, announced plans for a northern agricultural railway to Mt Jackson. Southern Cross had visions of becoming a major railway junction. It was pie in the sky. The 3500 farm scheme collapsed after adverse soil reports and a realization that its implementation was beyond the resources of the State. Afterwards, there were modified plans to construct a spur railway for 50 kilometres south west of Southern Cross to service existing farms at the Miners' Settlement, Dulyalbin and Mt Hampton. A meeting of 60 farmers in April 1932 protested at delays in the construction of this line and sent a deputation led by Louis Anderson and Irwin Graves to Perth to seek the premier's support. The line was subsequently surveyed and enabling legislation was passed, but it was never built.

Farmers pressured the government because they relied on the railways not only for the cartage of wheat, superphosphate and farming supplies but also for food and mail. In addition, trains were used for personal and business travel both for long journeys to Perth or Kalgoorlie and for travel within the district. There were protests to the minister for railways in 1920 when morning trains to and from Southern Cross were cancelled as it affected the delivery of food to distant residents and kept children from school. However, the continued use of trains is illustrated by Alan Cameron's account of journeying regularly from Noongaar to Southern Cross in 1926 to play football. This necessitated a 7.30am departure and return by the 11.00pm express from The Cross. Such dependence on trains for travel declined only slowly until the end of war time petrol rationing in 1950 and the rapid increase in private motor car ownership in the following decade.

To facilitate the use of the railways by farmers, small sidings were constructed at

intervals of 15 to 25 kilometres where wagons could be shunted for loading and unloading. As land was taken up, each siding was soon busy with the reception of horses and farming equipment. Here the farmers met on Saturdays to compare experiences, to receive mail and to buy groceries, bread and meat. Food could also be purchased from provision trains along the eastern railway on Tuesdays and Fridays — the guard would even leave orders in the bread box at each siding. However, shops quickly arose at the principal sidings. These combined banking and postal facilities with a fuel depot and grocery section, and a range of agricultural agencies. In this way the settlements of Bodallin, Moorine Rock (formerly Parker's Road) and Noongaar came into being. There were sidings also at Nulla Nulla, Corinthia and Perilya.

The Bodallin district was one of the first occupied as settlement spread eastwards from Merredin. A townsite was gazetted in 1923 and the school opened in 1924 under Vivian Sherlock, a pioneer settler. Bodallin was relatively remote from Southern Cross — the express train took 90 minutes for the journey. As a consequence, local residents often used Merredin services rather than those in Southern Cross, especially as the train connection was more convenient. Bodallin settlers felt their isolation from the Yilgarn's administrative centre and in 1924 petitioned to be transferred to the Westonia Road Board, the offices of which were only 20 kilometres away. This and similar moves over the years were vigorously opposed by the Yilgarn Road Board. The town remained small, with just two stores and a row of houses belonging to railway fettlers and pipeline runners. No hotel was built despite there being 61 farmers in the immediate district by 1929. The post office cum general store had been opened by R. J. Beswick. Another popular shop offering local



*Plate 2: Water carting with Ford truck, Moorine Rock, 1927. Left to right: C. Greenall, Jock Tamiri, Bill Reid and son.
(Courtesy P. Kenny and Battye Library 66553)*

produce was run by Angelina Biggins, mother of Eric, Jack and Wally Ivey, who were to be prominent Bodallin farmers. She baked and sold bread from her sapling and hessian home, kept turkeys and goats, and incubated chickens for sale.

The Noongaar settlement remained very small with little more than the railway siding and a store run by Edna and Clyde Elston. Moorine Rock, under the impetus of the Miners' Settlement to the south, did better. In 1930 it boasted eight houses, a hall, several shops, a hotel, two garages, a school and a bakery to serve the needs of 67 local farmers and the 90 or so on the Miners' Settlement. Melmer "Doughy" Harper had established his bakery in 1929 commencing a long association with the district. He had learnt his trade in pre-war Marvel Loch where he greased tins for his baker father from the age of seven years. In Moorine Rock, "Doughy" built himself a home from bush timber and corrugated iron, with walls of white washed flour bags. Soon he was baking regularly 3000 loaves per week. In addition, he served as agent for Cresco superphosphate and as buyer for Bunge and Co., which had a large wheat handling business in the district. His wife, Alice, and he raised 12 children in the town. Forced to give up baking because his lungs were affected by flour, "Doughy" conducted a general store in Moorine Rock from 1946 to 1961. Over this period he saw agriculture pass from pioneering, through depression into consolidation and post World War prosperity.

There exists a clear picture of pioneering farm life in the Yilgarn in the 1920s for it produced a relatively rich literature in comparison with other wheat belt districts. H. V. "Sticky" Courtaigne, editor of the *Southern Cross Times* in 1923-1947, regularly published local verse. Some of this was little more than parody but there was also much biting comment on the vicissitudes of farming by men who saw themselves as the hapless victims of government policy. In the early days of land settlement, in 1924, "E. B." wrote:

The government's not really sure crops will grow.
This is only an experiment.
Of course, it's your sweat and toil they will use,
and reward you with fifty per cent.

The best of the Yilgarn poets, Cyril Goode, published *The Grower of Golden Grain and other Ballads* at about the time he walked off his Turkey Hill farm in 1931 after eight years' work. His semi-autobiographical short stories, *Yarns of the Yilgarn* (1950), are revealing of life on the frontier of settlement in the '20s.

More recently, three personal accounts of pioneering have appeared. Alan Cameron's *Yilgarn Venture* (1986) and Vera Shipley's *Hark Hark My Soul* (1981) tell of families that walked off their properties — in the Camerons' case after 16 years' hard work at Nulla Nulla in 1923-1939. By contrast, Henry Sherar's *South of Nulla Nulla* (1983) recounts the life of a successful pioneer who farmed first at Noongaar in 1928 and then at Dulyalbin in 1929-1972. Unlike the majority of settlers, Sherar survived the lean years by expanding his property in the 1930s and introducing sheep so as to benefit from the prosperity of the 1950s.

Vera Shipley's book is particularly interesting. Romantic in tone, it gives a young girl's recollection of the family life of Rosalie and Joseph Budge and their eight children. While Budge was Anglican minister in Southern Cross in 1922-1935, the family

simultaneously pioneered a block at Nulla Nulla. Perhaps Joseph had visions of becoming a full time farmer. Certainly he found it difficult to support his family on his ministerial stipend of \$37.50 per month and sought a surer income from the land. His parish, covering virtually the whole of the Yilgarn Goldfield east of Burracoppin, necessitated his absence from the farm most weekends. But it was poverty rather than the demands of two jobs that forced him from his farm in 1935. He left with great sadness.

All accounts tell similar stories of high hopes of a secure life on the land; of loneliness and isolation; of back-breaking labour clearing blocks by hand and planting the first crops; and of considerable hardship experienced in primitive living conditions.

Despite the difficulties experienced by individuals, the rapid development in all areas was symbolized by the departure of the first wheat train from Bullfinch and Corinthia on 30 January, 1926. It carried 957 bags. The principal consignees were H. Garbutt 350 bags, S. Hockley 100 bags and Davies Brothers 406 bags. Painted on the railway trucks were large signs indicating the concerns of farmers:

Faith → Bullfinch

Hope → Settlers and Jimmy Mitchell

Charity → Half loans and boiled wheat.

Here I am from the dry area, Bullfinch.

God bless Jimmy Mitchell.

When are you going to give the boiled wheat eating cockies a fair go, Collier?!

The signs highlighted the pride of the farmers in conquering an area which had been called "too dry". However, there were ominous warnings in poverty stricken farmers being forced to eat gristed wheat which, although wholesome, was perceived as the food of serfs. The price of wheat had remained relatively high at over 60 cents per bushel in the successive seasons 1924-25 and 1925-26. Despite this, the loans available to settlers east of Nulla Nulla were proving inadequate. In 1927 the Agriculture Bank recognized this by increasing loans — giving farmers a 100% advance on the value of improvements, including clearing, to a maximum of \$2600. Even this served merely to draw the farmers deeper into debt for the seasons proved capricious, despite the excellent results achieved in 1926-27, and the price of wheat fell steadily as demand declined.

Blisters on our Hands: The Miners' Settlement

The results achieved in terms of acres cleared and crops harvested encouraged the Labor Government, which had been elected in 1924, to release more Yilgarn land and to settle on it miners from the depressed goldfields towns. The Miners' Settlement became something of a show piece for the government and the largest identifiable settlement in the district. It had unique features but the lives of its families typify the experiences of all pioneer Yilgarn farmers between the wars and will be considered in some detail.

The Miners' Settlement had its origins in the epidemic of silicosis amongst goldfields' men who had been exposed to mining dust for extended periods. Under the Miners' Phthisis Act, 1114 men were notified that they had silicosis and that further employment in the mines would be detrimental to their health. Some of them subsequently became tubercular and were prohibited from employment; some took up other occupations; a few, with minor symptoms, continued in mining; others took up the government's

offer of a farming block in the Yilgarn. There was talk of the advantages of a healthy outdoor life for the men. However, the realists knew that most of the miners were too weakened to be able to engage in vigorous work, and so it was decided to give priority in allocating blocks to men who had sons who would work their farms. Families were well aware of the problems faced. As Olive Last recalled: "We knew what was going on, we kids . . . we knew Dad was sick and couldn't work, and that was it".

The scheme was organised in great haste in 1927, being approved by Minster for Lands, Troy on 3 November. At the eleventh hour it was realized that the Land Act did not permit the disposal of land to preselected groups but only through general selection after advertisement. So it was that approval was given on 23 December, 1927, for releases under the Group Settlement Act, 1925.³ In a technical sense the Miners' Settlement was the last of the group settlements, although it did not function as such.

The region selected for settlement, part of the Jilbadji district, extended from near Southern Cross southwards for some 50 kilometres. It was uninhabited. Nomadic Aborigines no longer visited; and previous attempts to graze stock had failed. Generally well wooded but with some sandplain, it constituted the northern segment of the proposed 3500 farm scheme discussed earlier. As in other parts of the Yilgarn, surveys were conducted so as to provide approximately 1000 acres of "cultivable land" to each settler. In practice, most blocks ranged in size from 1000 to 1300 acres, with the largest reaching 2300 acres. The northern-most blocks had ready access to the eastern railway at Southern Cross or Garratt. Further south, settlers could reach Moorine Rock via the old gold-rush, Parker's Range road. But the southern-most blocks were remote from the existing railway



*Plate 3: Kate and Harry Barger arriving from Kalgoorlie for a new life on the Miners' Settlement, 1928. Their home was transported by camel wagon.
(Courtesy Marjorie Basell, South Perth)*

and their successful development would be contingent on the construction of a new line into the district. Settlers were promised this railway along with roads, schools and the reticulation of water from the goldfields pipeline.

There is some doubt as to the number of blocks in the Miners' Settlement. Blocks surveyed totalled 122, but these included townsite and railway blocks, some 17 blocks later deemed unsuitable for settlement, and remote blocks that were not viable. There is a degree of consensus that the scheme effectively encompassed 91 blocks. These were allocated progressively in December 1927 and early 1928, after C. J. Moran, trustee of the Agricultural Bank, had interviewed miners throughout the goldfields. The men selected were drawn from virtually every run-down mining town in the Southern Cross-Norseman-Gwalia triangle, with the greatest number from Kalgoorlie-Boulder. Most had worked in mines since coming to the West from the Eastern Colonies in the gold-rush. One old adventurer, Auguste "Gus" Luck had been in the French Foreign Legion and had accompanied Carnegie in his exploration of the outback in 1894-5. The men were mainly labourers. A few, such as H. V. Rowe, manager of the Sons of Gwalia, Charles Hunt, underground foreman, South Kalgurli mine and Dave Leahy, workmen's inspector of mines and later member of parliament, were from the managerial class. Significantly, none of these men moved to Jilbadji but worked their blocks through their sons or, in Rowe's case, through contractors. The settlers were predominantly Anglo-Celtic in origin but included some twelve Yugoslav and Italian families: I. Unkovich, J. Tomich, G. Bugovich, M. Turich, G. Turich and M. Derich; and L. Reghenzani, I. Botica, P. Regolini, A. Capelli, P. Zappa and J. Guidice. Few had any experience of farming. In a number of cases, however, sons on turning fourteen had been sent to work as farm labourers in the wheatbelt. They brought this experience with them to the Yilgarn.

The transformation of mine worker into farmer was sudden — occasioned by a typical miner and his sons being dropped at the survey peg marking their block by Wally Leggett, the cartage contractor for the scheme. With them came a tent, a few personal belongings, axes, a camp oven and a tank of water. Immediately they began to fell trees. This operation took precedence even over the provision of shelter other than, perhaps, a bough shed, for chopping and burning were rewarded with a three dollar per acre advance from the bank, which was necessary for sustenance. In addition, it sped the day when the first crop could be planted. Chopping was hard work particularly for young men barely out of school as participants recalled:

Doug Davey: "I was fourteen, three days before we left for Southern Cross . . . I was given a four pound plumb axe . . . and spent two years wearing it out".

Jack Hunt: "It was pretty hard work, specially as we were only kids".
(He was fifteen at the time).

Ken Lehman: "Blisters on our hands, plenty of them".

It could also be dangerous work for inexperienced men. Axe cuts were common and there were many head and spinal injuries from falling timber so that there were complaints that the Miners' Settlement served to fill the Southern Cross hospital with accident victims and TB cases. Some settlers, too ill to work, engaged Slav or Italian contractors to clear their blocks at \$2.50 per acre. One such contractor, Pietro Sozoni, aged 34, was killed by

a falling tree on the Zappa farm in 1930. Yet development was rapid. Peter Simpson on Block 425 cleared 120 acres of scrub and open woodland between March and August 1928. Sometimes men worked in teams to clear adjoining blocks, chopping and heaping the timber first on one block and then the other. Very often burning was coordinated, firstly, so as to prevent the uncontrolled spread of fire and, secondly, to maximize the heat generated so as to achieve a clean burn, which would leave minimal litter to impede cultivation.

Irwin Graves (Jnr) left a record of his experiences when clearing his father's block:

Block 439

We're chopping down, out at Troy Town,
Clearing the land for a crust.
Chopping down scrub, just for our grub.
We're fed up but stick it we must.

We're swinging a beautiful Kelly,
It cost eleven and nine.
We're working to fill up our bellies,
Over on Block 439.

Every morn we rise at dawn,
And swing the old billy for tea.
Then we go to work, for you cannot shirk
When you're swinging a great big Kelly.

We keep on working till mid-day
And then we stop for a snack.
When the evening stars are shining,
We stagger back to our shack.

And tho' we are tired, we light the fire,
And swing the old billy again.
Some nights there's frost, and some nights there's not,
And some nights it's pouring with rain.

After we finish our tucker
We say we're feeling fine,
We're only a couple of clearers,
Over on Block 439.

In this phase of the settlement little food was obtained from the land, save perhaps an occasional rabbit. Rather, food was brought in and, in keeping with the traditions of a century of Westralian land settlement, was "durable, transportable and cheap" with the emphasis on canned meat, bread, tea and sugar. Scurvy was not uncommon as may be seen in the accounts in Sherar's, *South of Nulla Nulla*.

Periodically the clearers would report progress to Adam Gatherer, at the Agricultural

Bank in Southern Cross and be credited with a loan. Probably undeservedly, he developed a reputation for stinginess and a wag penned verse to describe the process:

Go in to old Gatherer
 Go down on your knees
 And beg for a fiver
 For chopping down trees.

The money was important, for most men brought little capital into the scheme. Life savings were soon spent and the settlers became completely dependent on the bank. The system of payment for clearing encouraged farmers to cut from boundary to boundary to maximize their credit. Few thought in terms of leaving belts of timber as wind breaks but, to give them credit, most left relatively large uncleared areas in the section selected for a home. In many cases these could still be identified 60 years later left by farmers in modern times as shelter for sheep.

To gain access to their blocks, farmers used the old gold-rush roads from Southern Cross to Cockatoo Tank and from Moorine Rock to Parker's Range. These were cleared, natural earth tracks passable in all seasons on sandplain but boggy in heavy country after rain. A farmer was judged fortunate indeed to be allocated a block on one of these roads for the interconnecting links were often barely discernable sandalwood cutters' tracks. Sometimes a settler had no access to his block for the "road" was merely a line on a map identifiable by survey pegs. The road board had minimal funds for clearing such roads. In 1928, the chairman, James Nunn, lamented that while 400 kilometres of new roads were needed in the Yilgarn to service farms, the board had "not one penny" available for



*Plate 4: Irwin Graves (Jnr) washing clothes, Charlie Dunn making damper, First Camp, Block 439, Miners' Settlement, June, 1928.
 (Courtesy Irwin Graves, Safety Bay)*

construction. Most of them were cleared and the worst of the bogs filled by the settlers themselves. By agreement of the board, a farmer could pay off his rates by clearing roads adjacent to his property and receiving credit at the rate of 50 cents for each chain (20.1 metres). Such work was common until after the depression in a community in which the bartering of labour for goods and services often supplemented the money economy.

Securing adequate farm transport was important to the success of a settler both for communication with Southern Cross and for the cartage of superphosphate and bagged wheat. A truck was ideal. Yet many survived for years without a motor vehicle and relied on horses and wagons. There are many stories of settlers walking up to 30 kilometres to order water and supplies. However, such farmers were usually able to obtain lifts with neighbours for there was a high level of co-operation between men previously unknown to each other who came together on neighbouring blocks. Those without vehicles could also rely on the mail contractor Wally Leggett, not only for the delivery of mail and supplies, for which there was a fixed fee of 50 cents weekly, but also for the cartage of bagged wheat to a siding.

In addition to loans for farming improvements, the miners' scheme allowed \$500 for the erection of a house. Perhaps this was a recognition of the poor health of the men. During the time they lived in tents or bag humpies, ranging from six to eighteen months, most settlers arranged for a weatherboard and iron goldfield's house to be dismantled, transported by rail or camel wagon and re-erected on the settlement. As a consequence the standard of housing in the area was higher than in nearby farming districts and, except for the unavailability of water and electricity, fully up to working class, urban standards.

Families moved in, as houses became available and schools were erected to serve the children. Florence Brown opened the Strawberry Rock (Troy) school in 1929 and then transferred to the new, Strawberry Rock Road school, closer to Southern Cross, the following year. She was replaced at Troy by Katherine Curtis. Norman Withers opened Gatherer school in 1929. His weekly wage was \$9. He was succeeded by Leonard Warne in 1930-32. Despite the opening of remote schools, some children had to walk long distances to receive an education. Tommy Unkovich, later a prominent jockey, regularly walked 13 kilometres to Troy school. Edna and Bill Johns, Dina and Tony Bugovich and Eric Carnicelli faced even longer journeys. Their round trips of up to 35 kilometres took fully six hours and must have left them with little energy for study.

The biggest problem faced by farmers after clearing their blocks, was in securing water. Household supplies could be obtained by the collection of run-off from roofs. However, most miner settlers used horses for farm tasks — cartage, cultivation, ploughing and harvesting, and these required large quantities of water daily. Alf Bennett's mules were no less demanding. The government had promised adequate water but only one pipeline was built — an extension from the Marvel Loch line constructed in 1928 at a cost of \$12,000. This did not service the whole district and, in any case, the supply was unreliable due to the small, 7.6cm bore of the extension from the main pipe at Ghooli. Not infrequently settlers had to wait until after midnight before a trickle of water flowed from the standpipe at the limit of the branch at O'Neill's corner (Block 404). Supplementary supplies could be sought from the old gold-rush catchments at Cockatoo Tank, Strawberry Rock, the Nine Mile dam on the Marvel Loch road and the Five Mile dam on the road to Strawberry Rock. In addition, a well was reconditioned by Albert Hunt and Bill Stockton



Plate 5: Troy School, Strawberry Rock, Miners' Settlement, 1929.

Teacher: Florence Brown. Back: Jim Pugh, Ernie Zappa, Frank Turich, Dick O'Neill, Louis Zappa, Mat Turich, Alex Derich. Centre: Charlie Zappa, Vera Derich, Kitty Turich, Essie Hunt, Molly Crowley, Monica McIntyre, Ella Derich, Nellie O'Neill. Front: David Pugh, Ronnie Ace, Barbara Ace, Evan Pugh, Doreen Derich.

(Courtesy Mrs E. Ovens, York)

adjacent to Frog Rock. But all supplies were limited and carting a time consuming chore. As Doug Davey recalled:

You'd no sooner get home with 200 gallons, the horses would promptly drink it and you'd turn around and go back for another load. A couple of dry summers I did nothing else but cart water . . .

The various standpipes on the settlement became meeting places essential to the bush telegraph that facilitated community links, but as water supplies they were inadequate. So, too, were the farm dams that settlers dug, and the shortage of water remained a constant worry.

The Miners' Settlement developed a lively community spirit. This sprang from common origins and aspirations, and shared experiences. Neighbourliness grew from shared work in clearing and dam sinking. Transport and machinery were often shared. And while the old men were inhibited by ill health, the young men and women led active social lives on weekends. Parties were common but entertainment simple: Peter Simpson might recite an Australian poem; and Lena Guidice, Reg Hill and "Dusty" Brown all sang. Favourites songs included Johnny Graves' rendition of "Paddy McGinty's Goat" and community singing of verse to the tune of "The Mountains of Mourne"

The Cockies are working all day in the heat,
 They're out in their paddocks stripping their wheat,
 Some crops are good and some crops are bad,
 Some Cockies are cheerful and some have gone mad,
 The choke cutter's broken, the blast it won't blow,
 The Cockies are wishing to hell they'd all go,
 And if you werē to ask them they'd sing this refrain,
 Oh, I wish I was back in Kalgoorlie again.

Dances were held regularly in the local schools with Syd Crowley as master of ceremonies. Mort Howes provided accordion music. Here necessity was a great trainer — Irwin Graves (Jnr) developed the facility to dance and play the mouth organ at the same time. If a piano were available, Kate Barger played a barn dance. And while author, Cyril Goode reported the excessive drinking of some men isolated on the frontiers of settlement, there would seem to have been little of this on the Miners' Settlement and certainly not associated with mixed sex social life. Men enjoyed meeting for a beer on visits to Southern Cross, but no evidence has been found of the fermentation of alcohol on farms as happened elsewhere in the wheatbelt.

Picnics at popular spots such as Strawberry Rock and Mount Hampton were a popular diversion. These usually involved a range of sporting contests, particularly running. It seems that there was no organized sport for women and few facilities other



Plate 6: Miner's Settlement picnic at Mt Hampton, spring, 1933.

Left to right: George Luck (obscured), McLaren, Dorothy Hunt (with baby), Jack Hunt, Marjorie Barger, Albert Trembath (obscured), Jim Trembath, Thelma Graves (obscured), Kate Barger, Richards, Maida Trembath, Mrs Casey, Mollie Crowley, Mrs Trembath (obscured), Essie Hunt, Albert Hunt, Alice Hunt, Ruby Hunt.

(Owner unknown)

than private tennis courts. By contrast, male sport was active. Bike racing was popular with the young men in winter: Races were held while the older men held their union meetings at O'Neill's standpipe. A claypan on Block 440 was developed as a sports ground with a matting, cricket wicket, a cycle track and a bough shed for spectators. A football team was formed. It used Marvel Loch oval as its home ground, which meant that members could not meet for training between weekly matches. However, the team included experienced footballers and, led by captain-coach Teddy Webb, it quickly developed winning form and a reputation for rough play. This was condemned in the local press as behaviour associated with Kalgoorlie and Boulder and "not hitherto practised on the Southern Cross playing fields". Despite the criticism, Miners' Settlement in its blue and white guernseys had the distinction of winning the 1930 premiership from fourth place — there were only four teams, having failed to win a single game in the home and away series. It went on to play in six successive grand finals for three wins.

Despite the convivial social life there, were tensions on the frontier of settlement which occasionally surfaced in violence. In one such incident Mrs Alice Johns of Block 421, was shot by her husband, William, on 2 January, 1930, and died the next day. It seems she had challenged him over a spree at the Marvel Loch Hotel, but the circumstances were unclear and he was acquitted of manslaughter. Altogether, seven violent deaths were reported in the *Southern Cross Times* in 1928-1931 at a time when farmers were coming under increasing financial pressure. There were numerous other incidents ranging from frequent hotel brawls to the street violence in which Rosi Rifici fired shots from his revolver in Antares Street, Southern Cross, wounding Christopher Coleman. A sensational case involved a 20 year old English migrant, Frederick Raveney, who was hunted down and shot by Bullfinch farmers in September 1928.³ It seems that Raveney had objected when his employer refused to pay for clearing, but the situation was complicated by Raveney's infatuation for the farmer's daughter. He menaced the family and shots were exchanged for over three hours until he was killed by an armed group. No charges were made nor blame laid but the incident suggests that normal processes of law and order were under severe strain in a situation created by over-optimistic politicians putting men on the land with inadequate support.

Despite such incidents, violence was comparatively rare in the Yilgarn. The first instinct of distressed farmers was to work through political processes, although political affiliations varied. The miner-settlers identified strongly with the Labor Party because of their origins in the union orientated goldfields and in recognition of the role of the Labor government in establishing the settlement. In contrast, other Yilgarn farming districts favoured the Country Party. The difference was illustrated in polling in the general election of 1930 when the Miners' Settlement booths showed overwhelming support for Labor by 51 votes to 6. In contrast, adjacent farming districts favoured the Country Party by more than two to one.

These political differences came to the fore in mounting criticism of the relatively generous loans and services made available to the Miners' Settlement. One "Cockie" complained to the *Southern Cross Times* in September 1929:

The government is able to finance any sort of request from the Miners' Settlement — water, roads, schools, but 10 miles away, well, they are all PPA (Primary Producers' Association) in politics "nuff said".

It may be true that some aspects of the miners' scheme were generous but the services critical to its success — transport and water, were not provided by the government on the scale promised. Consequently, the settlers saw themselves as disadvantaged rather than favoured and agitated for improved services. However, rather than working through the PPA, which had links with the Country Party, the miner settlers relied on direct approaches to Labor politicians and ministers. After the defeat of Labor in April 1930 they were active in the formation of the Wheatgrowers' Union.

The criticism of the miners arose because they were a cohesive and politically active group that appeared to be favoured. However, their advantages were more apparent than real; and obvious simply because the miners, being the last group to take up land, were receiving loans when others had long ceased to be eligible. They seemed to be prospering while others were battling to survive in 1929-30. In addition to the Miners' Settlement, there had been considerable expansion in the Yilgarn after the excellent crops of 1926-27. However, the wheat yield for the district in 1929-30 was only four bushels to the acre. Hence, although the wheat price obtained was relatively good at 45.5 cents per bushel, many farmers outside the Miners' Settlement faced ruin. They could not pay the interest on their loans. The banks foreclosed causing the local press to criticise the rapacious demands of creditors and the "gangs fattening on bankrupt farmers". Many had no option but to walk off. Others hung on in abject, cashless poverty. "Boomerang" put his position in verse published by the *Southern Cross Times* on 25 January 1930:

Oh Yilgarn! . . .
 There's humpies, huts and tin can houses
 There'll soon be Cockies minus trousers.
 Parched up paddocks, scanty rains,
 Hell fire dust storms, scrubby plains . . .
 I'm leaving here before I'm starving,
 Gone's the home I thought of carving; . . .
 And bid thee now a last farewell,
 Thou scorching, sunburn land of hell.

In contrast to other districts in the Yilgarn, 1930 was a year of optimism in the Miners' Settlement, despite the fact that the debt on each location was approaching \$4000. Close to 90 blocks were occupied and 10,219 hectares had been cleared and fallowed ready for cropping. Most farms were well equipped with ploughs, harrows, seeders and harvesters all bought on credit. Additional loans were available for seed and superphosphate. There was every reason for confidence.

In the event, the confidence was rewarded. The season was exceptional. Southern Cross received 382.5mm of rain, when the average was 270mm. On the Miners' Settlement individual crops were outstanding. Syd Crowley and Lou Anderson boasted that some paddocks yielded 12 bags to the acre. The official average was 18 bushels (6 bags) to the acre. (A bushel has no exact metric weight equivalent. It equalled 36.37 litres). Some 180,000 bags were delivered to the railway from the Settlement. Wheat receipts at Southern Cross totalled 150,000 bags, while Moorine Rock exceeded that with 220,000 bags. Overall, the Yilgarn produced 3,108,971 bushels from 80,859.92 hectares out of a total state yield of 52,891,492 bushels. The district had exceeded all

expectations and averaged 15.6 bushels per acre. The problem was that the bottom had dropped out of the wheat market so that the average price obtained was only 23.5 cent per bushel. This was far below the cost of production and spelt disaster. It marked the end of a decade of agricultural expansion in the Yilgarn.

Land settlement in the Yilgarn in the 1920s had illustrated the remarkable continuity of the pioneering lifestyle in Western Australia in the century after first settlement in 1829. The basic elements remained consistent. Firstly, land was cheap and highly desired, on the assumption that the path to upward socio-economic mobility lay through the land. Secondly, settlers were dependent on government services. Thirdly, all farming families faced isolation and loneliness on the frontiers of settlement. Fourthly, hand labour predominated: the expectation was that a man needed only an axe and his labour to conquer the bush. Fifthly, housing remained rough and uncomfortable through its several stages — tent, bag and iron humpy, and first permanent home. Sixthly, there was a stability in foodways. The emphasis during pioneering was on cheap, simply prepared food bought from stores. Finally, despite the high hopes of pioneering, low living standards prevailed on the frontier of settlement.

Adjusting to Change

Of all these elements, isolation was perhaps the first to be modified as motor vehicles brought great changes to rural life between the wars. Early in the period travel was slow away from the railways partly due to the widespread reliance on horses and because trucks were unreliable and roads rough. The problem of distance is illustrated by the time it took an injured Forrestania prospector to reach Southern Cross hospital in 1920. John Briggs had four of his fingers blown off in an explosion one Saturday morning. Being without a mate, he walked five kilometres into Forrestania for help. As there was no horse available a number of men then pulled him in a spring cart 14 kilometres to where an animal was borrowed. After periodic delays while the horse was rested, they reached Polson's battery, south of Parker's Range, on the Sunday night. Here motor transport was available. The injured man finally reached the care of Dr Winifred Windmill in Southern Cross on the Monday afternoon having taken over two days to travel 160 kilometres.

At the time of the Great War motor vehicles were still objects of awe in Southern Cross. Most people walked about the town on social or business errands. Many rode bicycles and it was common for working men to ride considerable distances to work using bike pads as alternatives to roads. The affluent could afford a horse and sulky and all shops had a hitching rail on the street. Attitudes changed in the 1920s as motor vehicles increased in number, particularly in the farming and business communities. Yet there was a transition period. It was still the done thing to walk to the station of an evening to place urgent letters in the special mail bag on the express to Perth; and when the Education Department in 1924 reduced the horse feed allowance for children travelling to school there were strong protests. As late as 1935 a horse was the official transport of police constable Joe Farrell, newly appointed to Marvel Loch. However, in 1927, the road board had felt compelled to reserve the centre of Antares Street, near the shops, for car and truck parking. Horse drawn vehicles were relegated to Achernar Street where the chaff and manure would be less offensive. The move was symptomatic of the changing pattern of

transport which was to see vehicle numbers increase to 775 in 1935 when the population of the district was over 3500 (1933 census: 3513). By that time most farmers and small mine owners had trucks. However, in the towns vehicles were less common as they were beyond the means of workers on wages. This was less of a disadvantage than it might otherwise have been because all trades people — grocer, butcher, baker, iceman, greengrocer and milko — delivered to the door. The lack of cars was a greater disadvantage for workers in towns like Marvel Loch and, later, Mount Palmer which were some distance from the railway. If they wished to travel these people had either to ride with the mail contractor, which meant long waiting periods on railway stations, or to pay to hire a private vehicle.

Unmade roads were a major hazard facing drivers between the wars. In the 1920s even the main east-west roads, the York Road to Merredin and the Coolgardie Road, were merely natural earth tracks so narrow that on sand-plain country the scrub slapped the sides of vehicles on both sides. Not until 1933 did the Yilgarn Road Board decide to clear the final section of the Southern Cross-Bodallin road. Members were so pleased with the result that next year they supported the adoption of the title Great Eastern Highway for the road bisecting the district. This was so rough, however, that in 1936 the *Southern Cross News* called it "the worst in the Commonwealth". As late as the eve of the World War it was common for drivers travelling to Kalgoorlie to use the pipeline runners' track in preference to the rougher and more dangerous main road.

Deep corrugations, which reduced drivers' control, thick dust thrown up by vehicles in dry weather, and boggy ground after rain all contributed to road accidents, despite the comparatively small number of vehicles on the roads. A traffic count in Moorine Rock on 14 June, 1940, between 10.15am and 4.40pm recorded 19 vehicles, nine of which had Yilgarn licences. Yet accidents on the Great Eastern Highway were comparatively frequent. On minor roads the pattern of accidents changed gradually from those involving horses to those involving trucks. For instance, P. McDonald was killed on the Southern Cross-Marvel Loch road in 1921 when his cart overturned. Fourteen years later Mary Simpson and Harry Barger were killed on the same road in a head-on collision between trucks. Nor were the towns immune from accidents. A Miss Denny was hit by a car in Southern Cross in 1929, and vehicles driven by B. Panizza and Mrs Devine collided at an intersection in 1932 despite regulations requiring all vehicles to sound a horn at every intersection and before turning. A contributing factor to accidents was the divided control of traffic. The police controlled drivers' licences and traffic whereas the road board licensed vehicles. Testing was taken lightly by the police and most farm youths drove before they were eligible to be licensed. Nor did the police supervise traffic in any concerted way. Even drunken driving was ignored except in extreme cases or where accidents eventuated. The road board was also unsystematic. It had no facilities for the testing of vehicles and regarded licences more as a means of collecting revenue than as a method of regulation. This was just as well for over the years the board came to rely on motor vehicle licences as its principal source of revenue and collections greatly exceeded the \$79,240 which the board spent on roads in the period July 1927 to June 1939.

As the chief administrative and supply centre of the Yilgarn, Southern Cross was changed irrevocably by the rise of agriculture in the 1920s and by simultaneous technological developments, particularly those affecting communications. The influx of

farmers benefitted local business so that whereas in 1921 the Yilgarn and District Co-operative store had failed, by the middle of the decade its competitors were prospering, noticeably H. J. Styles, a draper in Southern Cross since 1897, W. P. Dunstan, grocer and ironmonger, M. T. Murphy, clothier, and Walter Metzke, hardware merchant and saddler. Many businesses were quick to adjust to changing circumstances. There was, for example, a rush to install petrol bowsers at kerbside as International, Fargo and Chev' trucks joined the ubiquitous Ford Ts in ever increasing number. Edwin McInnes typified the way in which businessmen were able to redirect their activities. He had come to the Yilgarn in the 1890s as a carrier and contractor to the mining industry in which he invested without much luck. In the 1920s he diversified to cater for agriculture and even invested in a small farm. After his death in 1927 his son, Stanley, benefitted from the new directions so that in 1932 he was able to advertise agencies for Skipper Bailey vehicles, Cresco fertilizer and John Darling wheat buyers, alongside his principal functions as carrier, mail contractor and fuel agent.

In 1923 a new syndicate purchased the *Southern Cross Times*. Its membership reflected the spectrum of local business interests, although Tommy McMahon was a notable absentee, and included: R. Andrews, A. Barr, R. Braysher, J. Clements, H. V. Courtayne, W. Dunstan, P. E. Forrester, E. Harris, G. Hunt, J. Hourigan, G. Howlett, publicans Alice Kennedy and J. Madigan, W. Landon, J. Nunn, H. Robinson, G. Sprunt, J. Stubbs, C. Styles and W. Tasker. Under the editorship of "Sticky" Courtayne in 1923-1947, the Times promoted both agriculture and mining and maintained a consistent conservative political stance reflecting the business interest rather than the dominant Labor interest of Southern Cross workers.

Reflecting the prosperity, Southern Cross experienced something of a building and technological boom in the late 20s. A ten room bungalow was added to the Club Hotel in 1928. In the same year Arthur Goodin's theatre, with seating for 500, was opened. Here, something of a local sensation was caused when the first talking motion picture was screened on 17 March, 1931. The innovation put Olive James out of work — as pianist she had accompanied the silent films. Arthur Goodin (1873-1945) was a prominent Southern Cross identity between the wars, running the newsagency as well as the pictures. It was a period of great interest in technology. A large crowd had watched with excitement as Lieutenant Briggs landed the first aircraft at Southern Cross on 2 December, 1920, while flying from Melbourne to Perth with C. J. De Garis as passenger. Over the next decade interest in aviation was fanned by carnivals, such as Captain Norman Brearley's flying circus in September 1927, when 50 people were taken for flights from the landing field in Forrester's paddock. Only three years later commercial aviation was commonplace for the well-to-do as Hercules aircraft refuelled regularly en route to Melbourne. Passenger movements were still sufficiently noteworthy, however, for the press to note the arrival of a Miss Bryant and the departure of Mrs Campbell for Melbourne on 26 July, 1930, as Southern Cross found itself, albeit briefly, on the main trunk route to the eastern states.

Further technological wizardry came to Southern Cross when wireless "listening in" was demonstrated at the Palace Hotel on 30 August, 1924. There was only one station — Wesfarmers in Perth, and reception was poor. Nevertheless, the service improved so that E. J. Pearce was able to install a wireless under the verandah of the Palace in 1931 to

attract custom. Despite the high cost of a receiver — a good quality AWA Radiola cost \$70 or seven weeks' wages in 1936 — the expense of wet and dry cells and the annual licence fee, wireless became a popular entertainment in the 1930s. Reception was poor during the day but improved after sunset so that listeners were not only able to enjoy Western Australian transmissions but to enter competitions to test the reception of remote short-wave radio stations.

The 1920s boom was short lived and largely artificial in nature. It stemmed not so much from rural production or technological change as from capital inflow into the Yilgarn caused by the expenditure by farmers of loan monies advanced by the Agricultural Bank. Yet the outlook for Southern Cross seemed bouyant and attracted rural investors. Percival Forrester, the pioneering farmer, took the opportunity to diversify his interests by investing \$2620 of farm profits in buying 14 Southern Cross lots in 1925-1932.⁴ He was the exception to the rule of farming unprofitably as he was long established and largely free of debt. His town buildings, coupled with his farming freehold of 1377 hectares, made him perhaps the district's largest landowner. His principal rival was Edward Clarkson who through Clarkson Brothers Ltd and the Lake Barlee Pastoral Company came to control 525,000 hectares of leasehold in the north Yilgarn. In the mid-20s, Clarkson sold his interests in the Murchison and, with his brother Samuel, transferred to Mount Jackson. From that base he integrated his pastoral holdings and a wheatbelt farm with wholesale and retail butchering in Merredin and Perth. His Merredin Meat Company in 1930 marketed 7640 sheep, 431 cattle and 220 pigs. In 1926 Clarkson proposed to buy the whole of the Southern Cross business centre, including two hotels, for \$34,000 but his brother demurred. Nevertheless, his acquisition of the Palace Hotel and six other business lots in Antares Street made him a major property owner.⁵ After Edward's death in 1929 aged 57 years, Samuel continued the family business but struck hard times in the depression.

An important consequence of the influx of farmers was that it changed the balance of economic and political interests in the Yilgarn. This had relatively little consequence for Federal and State representation which continued to be dominated by Labor. Rather, the battle was fought for control of local government, which had been reorganised when the municipality was abolished in 1918. Up to that time, urban interests had dominated the municipal council. After 1918, Southern Cross townspeople had to compete for representation on the enlarged Yilgarn Road Board. They feared that their needs would be ignored.

Community tensions brought about by the economic and political changes came to the fore in a row in 1924 over the operation of the road board's Southern Cross electricity generation and distribution system.⁶ This had been acquired by the board as part of its absorption of the Southern Cross municipality, together with a \$4400 debt on the scheme. The annual interest on this debt could not be met from sales. Consequently the service had to be subsidized from general revenue. This in turn made it difficult for the board to maintain its other services: rubbish disposal, nightsoil collection and, particularly, road maintenance and construction which were severely restricted.

Southern Cross residents benefitted from the subsidization of electricity and pressed for an upgrading of the service which was restricted to six hours per day and plagued by breakdowns. Farmers and remote miners, on the other hand, being denied most services

available to townfolk, wanted economies in the electricity service and more money spent on rural roads.

Until 1918, board members had been drawn principally from the two dominant interests: the town interest (other than Southern Cross) represented mainly by businessmen: contractors, publicans, storekeepers and other self-employed people; and the mining interest represented by leaseholders, managers and engineers. From 1918, Southern Cross residents were present as a minority interest on the road board. In addition, farmers began to be represented. James Nunn was elected to the first of his six terms as chairman in 1922, although the farming interest was then in a minority. At the time of the electricity imbroglio in 1924 the board comprised: 2 farmers (Forrester, Nunn); 3 miners (Doust, Brown, Patterson); 1 town worker/farmer (Hammer); and 3 with urban interests (Chairman McInnes, Evans, Simcock). The attitudes of the members were complicated by conflicting interests. Hammer, for example, although a railway employee, also occupied a soldier settled block; while McInnes, although "urban", was interested in improved roads for his carrying business.

In April 1924, when McInnes became board chairman, decisions were taken to increase expenditure on Southern Cross streets. Then, in July, the board decided to improve the town's electricity service by appointing a new electrical engineer. Eight applications were received for the position, including one from the incumbent J. B. Stacey, who had started with the board as a street lamp lighter and worked his way up. On 18 August, after an exhaustive ballot, the board appointed F. C. Bowyer to the position after Doust, Forrester and Nunn had strongly defended Stacey. Remarkably, a majority of the board, Doust, Forrester, Evans, Nunn and Brown, then resigned leaving no quorum which necessitated new elections and the appointment of a Public Works commissioner to administer the board.

The commissioner gave a strong hint that the road board should spend rates to benefit the whole district and inferred that money should not be diverted to a utility serving only a small proportion of ratepayers. However, at this stage events were forced by ratepayers calling a special meeting on 2 September, which protested vigorously against Stacey's dismissal. As a consequence he was reinstated and the hapless Bowyer sent on his way with \$40 compensation.

New elections in October 1924 for a smaller board of seven members returned: 2 farmers (Forrester, Nunn); 1 miner (Hunt); 1 worker/farmer (Hammer); and 3 with town interests (McInnes, Tuckey, McMahan). As a result, the mining interest was greatly reduced while the farming interest increased proportionately, particularly as McMahan, a former butcher, held a soldier settler block in addition to the mail contract for Marvel Loch and Parker's Range.

McInnes claimed that his "party" would control a board majority but in the event he was defeated for the chairmanship by Nunn, probably because McMahan switched his vote. Then on 10 November, the new board voted to force economies in the electricity service by sacking Len Carlson, the long serving maintenance man. This led to a sensational strike cum boycott. The engineer, Stacey, was unable to start the power station engines on his own and board secretary, Coleman, was unable to induce a volunteer to assist. Southern Cross was in darkness for two nights, 25-26 November. Those whom the secretary asked to assist were sooled off with cries of "scab" from a



Plate 7: Yilgarn Road Board, 1926-27. Left to right: (Back) H. V. Courtayne, W. Johnson, Robinson, S. Coleman (secretary), B. Pearson, J. F. Worthing. (Front) E. G. McInnes, J. Nunn (chairman), P. T. McMahon.

(P. T. McMahon collection: Courtesy Patricia Lawton)

crowd. The dispute went to another ratepayers' meeting on 3 December which insisted that both Carlson and Stacey be retained.

On the face of it the bitter dispute had achieved nothing as the original conditions pertained. The events had shown the power of Southern Cross ratepayers — virtually the only ones able to attend special meetings — to dictate specific policy to the road board. The decisions of the ratepayers had been influenced by sentiment: They had come to the assistance of old town identities in Stacey and Carlson. But there was no possibility that public meetings would determine the on-going policies of the board which came to be dominated by the farming interest, leading the *Southern Cross Times* to complain in 1928 at the over concentration of power in the hands of farmers at the expense of town representatives. Meanwhile, the woes of the road board continued as its secretary, S. Coleman, had to be dismissed in 1927 after an audit revealed a deficiency of \$238; and the unreliable electricity service continued to bring complaints until new machinery was installed enabling an all night service to be offered from 22 December, 1928.

By 1930 farming representation on the road board had increased to four — a majority. There were then three members with town interests (Rowe, Kelly and McMahon) while the mining interest had disappeared, reflecting the recession in mining. Two factors contributed to the changes. The first was the board's decision in 1925 to change its meeting time from evening to afternoon, which had the effect of excluding from membership all save farmers and the self-employed. The second was the decision of farmers to contest and win town ward seats on the basis of property ownership. As a consequence town and mining people were for the next 60 years notably under-

represented on the board. Nor was there a female member until the election of Nola Gobetti in 1987. Farming and grazing interests always had a clear majority, never falling below five out of nine members in a survey of the composition of the road board at five yearly intervals from 1930 to 1985. In recent decades the proportion of farmers on the shire council, the successor to the road board, has increased, reaching seven out of nine in 1965; eight out of ten in 1970; and 100% in 1980. Over the 57 years, 1930-1986, 41 farmers served on the board-council, 5 mine owners and managers and 21 persons with various urban interests. Despite the dual rural and farm interests of many farmers, it is safe to conclude that electoral arrangements for local government have consistently under-represented urban and mining interests and have largely excluded women and the working class. This is not to say that there has been significant dissatisfaction expressed by groups with little voice in shire affairs. It seems, rather, that in more affluent times than those experienced in the 1920s and 1930s, local government in the Yilgarn was able to meet the expectations of both townspeople for urban services and farmers for roads.

The Depression: Cash Down at the Store

The reality of the Great Depression hit the Yilgarn early in 1931 when farmers saw that, despite the bumper crop, they faced ruin because of the collapse in wheat prices. The farmer who planted the local average of 113 hectares of wheat grossed only \$1026 for his crop. He owed \$250 of that to the bank as interest. For many this was the last straw. They had been in deep recession since the crop failures of 1929 and could not expect further bank loans. Some despaired. Charles Greenall of South Moorine Rock, had expressed anger at the financial crisis, telling his 12 year old son, "The best thing we can do Peter, is to shoot ourselves". Their bodies were found on their farm on 28 December, 1930. Others just walked off. What showed was their bewilderment: They had believed the politicians' promises that success awaited those who were prepared to work hard. It was not so, and they could not grasp whom to blame. "Bushie" wrote:

We've chopped the last tree, the axe is no more,
 There's nothing to come from the bank;
 No fallow, no super, "cash down" at the store,
 And we're not quite sure whom we're to thank.

(*Southern Cross Times*, 15 August, 1931)

Cyril Goode, about to walk off his Turkey Hill farm, offered his own lament in the same paper on 13 June, 1931, in a parody of Robert Browning:

I gaze o'er the field that badly needs
 The axe and plough in the weeds entwined.
 At the desolation the heart nigh bleeds,
 For the place is ruined now its assigned
 — Assigned not because of my own misdeeds.

There's nobody out on the clearings now.
 Just a starving few by their camp fires set,
 For the best of the life is all allow
 At Blackboy Camp — or better yet
 On an outbound passenger boat, I trow.

Thus entered I Yilgarn, and thus I go,
 In such failures people have dropped down dead.
 Ah, thus am I paid for the wheat I grow,
 I might have paid all — but now instead
 I owe the lot: O why is it so?

Yet, despite the crisis, many farmers remained hopeful, believing the price slump to be temporary. Their reactions were, firstly, to increase the level of farm self sufficiency as reflected in the increasing numbers of house cows, pigs and poultry in the district; and, secondly, to seek further government and bank assistance so as to increase production in the expectation that this would increase income. Clearing continued, bigger areas were sown and planting actually peaked in the 1932-33 season. The principal limiting factor for most farmers was the capacity to plough, sow and harvest. Using horses, about 150 hectares was the maximum crop of an individual farmer. As a consequence, those who could afford them bought tractors and benefitted from the capacity to cultivate bigger acreages. Not that it mattered, for the hoped for price increase did not eventuate. The wheat price remained low, recovered briefly in 1935-37 before again collapsing to 27.25 cents per bushel in 1938-39.



*Plate 8: First Agricultural Show, Southern Cross, 1932. Antares Street: Mechanics' Institute (right), Universal Stores (centre), Club Hotel (left).
 (Courtesy Yilgarn History Museum, Southern Cross)*

On the Miners' Settlement only a few farmers walked off in 1931-32. Rather, they turned to political and industrial action to try to counter the depression. A mass meeting of 150 farmers on 3 January, 1931, in Southern Cross, voted to request the government to guarantee 40 cents per bushel for the current crop. They threatened to refuse to plant wheat unless guarantees were obtained, mistakenly thinking that it was within the power of the State government to influence international wheat prices or to find the money for subsidies.

When the government remained unmoved, threats of direct action emerged periodically throughout 1931, particularly after a Yilgarn branch of the Wheatgrowers' Union was formed early in 1931 under president J. V. Crewe and secretary W. Hartley. The union sought guaranteed land tenure to prevent the eviction of bankrupt farmers, a direct government subsidy of wheat produced, and sustenance of \$300 per year. However, a union deputation received short shrift from Country Party, Agriculture Minister Charles Latham: "What are you doing here?", he thundered, "You should be on your blocks . . .". Subsequently, in September 1931, miner-settlers led by Irwin Graves voted to hold up the delivery of wheat. Nothing came of the threat until the 1932 harvest when the Wheatgrowers' Union attempted a state-wide boycott of wheat deliveries. Early in December over 100 farmers from the Southern Cross and Miners' Settlement branches of the union voted to join the strike.⁷ Pickets were set and the boycott held firm at most sidings, although the lines were broken after police intervention at Noongaar. Eventually, on 15 December, the strike was called off by the central executive of the union after Premier Mitchell announced the distribution of \$4 million of Commonwealth assistance to Western Australian farmers. The strike had demonstrated the solidarity of Yilgarn farmers and, in particular, the pugnacity of the miner-settlers who were prominent in the dispute. However, it had achieved little, directly, as government assistance had been in the pipeline, but, in any case this was too small to make much difference to Yilgarn farmers. The strike was fuelled by the desperation of wheatgrowers but they were not taken seriously by the government. The premier knew that farmers could not afford to delay indefinitely the delivery of wheat. Nor would the Agricultural Bank stand aside and see the crops, over which it held liens, undelivered to the wheat buyers. It would, if necessary, force the issue in the courts.

Matters came to a head quicker than most would have predicted. Faced with a desperate situation: massive debts to the Agricultural Bank and to local storekeepers and agents who had extended credit, and needing carry-on finance to meet essential needs for food and machinery, the farmers of the Miners' Settlement decided to take matters into their own hands. Events were precipitated by the bank's imposition of a three month suspension of sustenance payments in December 1932 and by a number of individual decisions by bank inspector Gatherer refusing credit for items considered essential by farmers. The only solution open to settlers seemed to be to sell part of their own crops to obtain cash and to reduce overdrafts at stores which were demanding "cash down". The idea was not original. Indeed, the road board secretary had been authorized late in 1930 to take wheat from farmers in lieu of vehicle licence fees. However, farmers realized that such sales would be illegal as all farm produce was owned by the Agricultural Bank, which had required "all proceeds" orders to be signed by farmers as part of mortgage arrangements when developmental loans were advanced. Under the law, the private sale

of wheat would amount to stealing from the Agricultural Bank. Despite this, the farmers decided to take this course. It was typical of the ex-miners that they should act vigorously and directly to solve their financial problems rather than awaiting a government solution; but, however brave, the effort was doomed to failure.

In deciding to steal their own wheat, the farmers did not act in concert. However, it seems certain that some informal discussion of the action occurred because there was a sudden spate of sales in December 1932-January 1933. The *Southern Cross Times* blamed communists and asserted that:

these discontents utter malicious and red threats . . .
several of the reds forgetting themselves to the extent of
becoming criminally inclined to . . . enter into illegal
trafficking with a product which although grown on their
land, they have signed . . . away in return for advances . . .

However, this attempt to isolate the miner settlers by branding them as extremists fell short of explaining the motives of the large numbers of farmers who became involved.

Wheat stealing was simple. Hiding the fact was more difficult. Most farmers delivered wheat directly to agents for the principal wheat buyers: Bunge Ltd, Dreyfus & Co., John Darling and Westralian Farmers. Some sold directly to butchers, grocers, fuel agents and the like who had been forced in self defence to refuse further credit to farmers. Many of these traders had small rural holdings and could hope to pass off wheat as their own produce. The farmers sold under assumed names and adopted various subterfuges to avoid detection but to no avail. There was no chance that in a small community the sales would go unnoticed. As soon as they came to the attention of the Agricultural Bank, criminal charges of wheat stealing were laid. In all, 39 farmers were charged. Almost all were from the Miners' Settlement with close to half the settlers being involved. Several grocers, including W. P. Dunstan and Co. and John Chadwick, the butcher, were also charged with receiving stolen wheat. The cases aroused great local and even state-wide interest, the Southern Cross court being packed for the hearings. All farmers pleaded not guilty and gave evidence of extenuating circumstances of poverty and necessity that had compelled them to sell wheat.* Michel Derich, for example, charged with stealing 60 bags of wheat worth \$40, explained that he was a dusted miner aged 62 years about to be sent to Wooroloo Sanatorium with tuberculosis. He had no money, a wife and six children to support and had forfeited any entitlements to worker's compensation from the mines by taking a block on the Miners' Settlement. He owed \$5178 to the Agricultural Bank. For months he had got up at three in the morning to cart stock water using a truck with tyres stuffed with straw. He had given the wheat to John Chadwick the butcher to repay money he had borrowed to seek medical treatment, after Adam Gatherer had refused credit on the grounds that the Agricultural Bank was "not a benevolent institution". Magistrate H. D. Mosely expressed sympathy but recorded a conviction. Derich was to die in July 1936.

Others told similar tales of bank indebtedness: Peter Regolini, \$5250; Charles Hahnel, \$4942; Edgar Smith, \$4474; Ben Brown, \$5200 and William Pittaway, \$5066, and of the need for cash for essential purposes. The debts were huge at a time when \$300 was reckoned to be a reasonable sustenance wage for a year. Significant also was the extent of indebtedness to local traders: Peter McInyre owed Dunstan & Co. \$128; Sydney



*Plate 9: William Hartley, 1934, gaoled in 1933 for stealing his own wheat.
(Courtesy The Sun, Melbourne)*

Crowley owed \$180 to Murphy and McMahon and \$120 to Dunstan. These sums were not unusual and help explain why farmers attempted to sell wheat and why traders were willing to receive it. For their part the miner-settlers, who had a good reputation with local business for their honesty, found their debts profoundly embarrassing. The traders had their own problems as they had been able to extend credit only through bank overdrafts. They too were being squeezed.

In the end, the farmers from the Miners' Settlement were all convicted and bound over on good behaviour bonds of up to \$50 for twelve months — with one exception, William Hartley, who was goaled. He had not been an original miner-settler but had taken over Block 466, south of Cookatoo Tank. His debt to the Agricultural Bank was \$4876. Over the past year he had received sustenance of \$306. He owed \$256 to the bank for annual interest and \$84 for superphosphate. None of this was exceptional. Nor were the circumstances of his wheat stealing. On 24 December, 1932, in mid harvest, his tractor had broken down, requiring a part which cost \$22. The Agricultural Bank inspector had refused to advance the money, suggesting that he approach the Industries' Assistance Board. Hartley realized that the delay involved in this would threaten his crop so he sold 40 bags of wheat for \$24 and telegraphed for the part. Later he had sold an additional 220 bags to buy machinery parts. He also gave \$40 to his brother who had worked for him for three years without wages.

Yet there were differences in Hartley's case. He was not a dusted miner so that he could be treated differently without arousing special sympathy. Moreover, he had something of a reputation as a troublemaker, having been active in the Wheatgrowers' Union and the wheat strike. Worse, although largely a self educated man, he was well read, an intellectual and a leader. He was one of the "reds" identified by the *Southern Cross Times*.

In summing up the cases, Mosely singled out Hartley, branding him a "cool, shrewd man", and sentencing him to one month's imprisonment, cumulatively, on each of five charges, to be served in Fremantle prison. Whatever the legal justification of this sentence the conclusion is inescapable that Hartley was made a scapegoat for the wheat stealing, not so much by Mosely as by the prosecution. The state needed a harsh sentence to be imposed to reinforce the seriousness of the charges and to ensure that anarchy did not ensue as farmers all over the state commenced selling their own wheat over which the Agricultural Bank held a lien. The prosecution achieved that purpose.

As events turned out, Hartley did not serve the full five months of his sentence. He was released early by the in-coming Labor Government in 1933. A rousing party was held on the Miners' Settlement to welcome his return. But, if the farmers expected sympathy from the Labor Government, they were mistaken. When Minister Troy received a deputation from the Miners' Settlement branch of the Wheatgrowers' Union led by State President I. G. Boyle, local farmers in Irwin Graves, J. Worthing, J. Mulqueny and Bill Hartley requested that all convictions for wheat stealing be quashed. However, Troy made clear the government's view that the crimes could not be condoned and nothing was achieved despite support from the road board.

Hindsight shows that the wheat stealing episode was the last throw of the dice for the Miners' Settlement. The failure to achieve significant results in either relieving the debt burden or improving financial liquidity destroyed hope. While there were still 69 settlers

on their blocks for the 1934 harvest, departures then accelerated. Many of the young men sought jobs in the local mining revival of 1935-38. Irwin Graves was one of the last to leave in January 1938.

This exodus from the land was reflected in all districts of the Yilgarn. Relatively few settlers who took up blocks in the middle and late 1920s survived the 30s. Of the Wheatley settlers, for example, not one remained. On the Miners' Settlement only Alf Bennett and his son Henry survived. Where farming continued it was often in the hands of older established settlers who had been able to reduce their debts before the depression struck — as was the case with Percy Forrester of Southern Cross and John Cameron of Noongaar. The latter had taken up land in 1923 and cleared his debt by 1930 (see A. Cameron, *Yilgarn Venture*). Yet there were exceptions. In South Moorine Rock, for example, a significant group stayed on their blocks including: Bill Nicholson, Bill Saxby, Stewart Nicholson, Dick Gethin, George Irving, Jack Gill, Bill and Joe Harvey, Henry Sherar, Hugh Rose and Joe Goodhill. These settlers and those further west at Dulyalbin and Bodallin were favoured by marginally higher and more reliable rainfall than those further to the east and north, which helped their crops. In several cases the farmers were assisted by stock firms, Goldsborough Mort, Elders and Dalgety, to diversify into sheep. Where water was available from the goldfield pipeline or from local catchments such as Dulyalbin Rock, sheep were the saviour of farmers.

Henry Sherar, who tells his story in *South Of Nulla Nulla*, illustrates the importance of diversification in the Yilgarn. He did not take up his block at Dulyalbin until 1929 and received a relatively small loan of \$1100 from the Agricultural Bank. This turned out to be an advantage, for despite suffering poverty, he was able to clear the debt and buy a tractor. With assistance from Goldsborough Mort he then expanded into sheep.

Not all vacated land remained unoccupied. Some farmers, such as John Cameron took up neighbours' blocks. In other cases new settlers — mainly Italians, took up the blocks left by departing farmers. Typical of these families that were to become prominent in the district after the World War were Della Bosca in the north Yilgarn and Panizza in the south.

Leone (Leo) Della Bosca migrated to Australia from Verrio in Italy in about 1912 and worked at Marvel Loch, where he was joined by his brother Antonio (Tony). Eventually, six brothers and one sister were to immigrate in a typical pattern of chain migration. Leo worked in mines at Kalgoorlie, Gwalia and Laverton before carting timber for the Cunderdin pumping station. After his marriage to Angelina Senini, he cut timber at Karalee and then at Ghooli in 1929-1933, where Tony had the pumping station timber contract in 1922-1949. In about 1934 Leo took up a vacated block at North Bodallin close to where another brother, Luigi, had land. He worked with horse teams and basic machinery and added to an existing two roomed house as his family grew. Angelina was particularly important in the success of the farm for not only did she do the normal chores of milking, looking after pigs and fowls, cooking, tailoring and mothering, but she also learnt good English and conducted most of the farm business.

The brothers survived the depression by supplementing farming income with a little government sustenance and the occasional cribbing of wheat to pay the grocer. They acquired further blocks in the 1940s and were well placed to benefit from post war prosperity, when Tony also took up land on the Koolyanobbing road.



*Plate 10: Leone (Leo) and Angelina Della Bosca, pioneer North Bodallin settlers.
(Courtesy Mrs Irene Coward, Southern Cross)*

The three Della Bosca brothers through their children created something of an empire in the north Yilgarn: Leo and Angelina had six children; Tony and his wife, Florence Northey, had seven, while Luigi and his wife, Maria, had two sons. Of Leo's children, Irene resides in Southern Cross, the wife of Ted Coward; Raymond and Edward have farms on the Bullfinch road; Alfred occupies the original North Bodallin block and Robert also farms at Bodallin. Luigi's sons, Gino and Charles have farms at Bodallin and Moorine Rock, respectively. Of Tony's seven children, five had Yilgarn connections: Evelyn is the wife of W. Capelli, a Moorine Rock farmer; Horace farmed at Wheatley where Laurie now has a property while Robert has a farm close to Southern Cross. The eldest son, Cyril, was killed in New Guinea on 4 August, 1945, in the closing stages of the Japanese war. In all, nine Della Bosca sons became Yilgarn farmers and benefitted from the post war expansion of agriculture. It was a remarkable achievement by what had been an impecunious, immigrant family.

In the south Yilgarn settlers tended to survive through employment associated with gold mining rather than pumping stations. John and Agnes Symes raised 12 children on their isolated Holleton farm some 70 kilometres from a railway. They survived by working a small gold mine, and six of their descendants farm in the district today. Dominic Patroni, who came to Western Australia in 1924, also worked land clearing and mining near Holleton. In 1935-1940 he worked several small mines around Marvel Loch and Parker's Range before taking up a vacant farm near Howlett's battery. He introduced sheep and supported himself carting timber to the Mt Palmer and Burbidge mines. Rising wool prices after the war gave him the capital to buy machinery so as to diversify into wheat. Guiseppe Armanasco and Peter Carnicelli had similar experiences after taking up vacant land in the Miners' Settlement. While their families lived on the farms, they worked in mining, particularly at Edwards' Find, until they were able to turn to full time farming.

However, of all the south Yilgarn farmers, perhaps the lives of Bortolo (Bob) and Bendetto (Ben) Panizza best illustrate the success of immigrants. Bob Panizza, born at Tirano, North Italy, 29 January, 1900, came to Australia in 1922. For eight years he worked at the Port Pirie smelters and in mines at Broken Hill and Mt Isa and accumulated some savings. He came to the Yilgarn when a kinsman, Andy Capelli, advised him that land was available. When he decided to stay, Bob sent for his wife Caterina, whom he had married while visiting Italy in 1928, and for his brother Bendetto. He then took over Location 396 from an absent miner, built a house and harvested his first crop in 1930 just as prices were collapsing. He was fortunate to have money to buy farm equipment, including a McCormack Deering tractor and an International truck. As the economy worsened he supported himself grading and pickling wheat on contract to local farmers. He also carted wheat to sidings and prospectors' ore to Howlett's battery, using a semi-trailer truck said to be the first in the district. He bought a second block, Location 424, in 1934 and introduced sheep in 1938. By using tractors he was able to sow relatively large areas of wheat — planting 160 hectares on the home block in 1941 and an additional 300 hectares on Location 428 which he bought from Capelli. By the end of the war he held 6500 hectares and was well positioned for wheat and wool production.

Ben Panizza, meantime, had bought Location 628, south of Ghooli. He built himself a house of bush timber and bags, grew wheat and prospected between seasons. He had



Plate 11: Bortolo (Bob) and Caterina Panizza, pioneer South Yilgarn farmers and mine owners.

(Courtesy Senator John Panizza)

brought some capital from Italy, but a lucky strike south of Donovan's Find yielded 4.6 kilograms of gold, enabling him to buy a truck and farm machinery including a tractor. On a trip to Italy he married Olandina Caterina Abordi in 1935. The couple transferred their home to Location 423 in 1939 and introduced sheep, the basis of their future prosperity.

Both Bob and Ben Panizza invested in mining by staking prospectors and by developing the May Queen mine which they owned in partnership with Joe Guidice, Silvio Reghenzani and Lui Tuana. The mine produced rich ore and helped finance the brothers' farming, although gold stealing was a constant problem. The culprit was never caught. A suspect used to travel to Kalgoorlie periodically to return with large winnings from the races: the horses stopped winning for him when the mine closed. By then, however, the Panizza brothers were well established farmers.

Not all Italian immigrants had capital for trucks, farm machinery and mining investments. Many families had much greater difficulty surviving the Depression. Giovanni and Teresa Gianoncelli were one such case. They occupied a block south of Ghooli and lived in a one room humpy and slept in a tent with their three children before building a kitchen and two bedrooms out of scrounged iron and bags. It had earthen floors and was so cold in winter that water froze in the kitchen. Mattresses stuffed with chook feathers, bag blankets and quilts made from old jumpers helped ward off the chill. As the depression deepened the Gianoncellis made themselves self sufficient, save for what they could buy with meagre earnings from Giovanni's timber cutting and the sale of a little

wheat and Teresa's domestic produce. They lived in dire poverty but as their daughter, Daria, recalled, they never went hungry, thanks to their pigs, milking cows and 150 fowls. Beasts were bartered with a Southern Cross butcher for meat. Teresa made her own pasta, bread, cheese, butter, sausages and bacon and all the family's clothes. She also had a large vegetable garden, thanks to water drawn from the Marvel Loch pipeline. The family had only a horse and sulky for transport and rarely visited Southern Cross. Yet they stuck it out on the farm, one reason being that Giovanni's poor English and lack of capital gave him few alternatives.

What showed through in the experiences of these Italian settlers was their strong desire to own land and their tenacity and capacity for hard work in achieving that end. They were generally very versatile. None survived solely on the basis of farming. Few would have survived without the work of women. The men added to family income by land clearing and timber cutting, and as cartage contractors and miners. Meantime, their families lived on the farms and kept them going, often supported only at busy times by husbands and fathers.

Yet the tenacity and versatility of the Italian survivors fails to explain fully their success, for these characteristics were possessed equally by other Italians who, for example, walked off the Miners' Settlement and, indeed, by other settlers who battled difficult circumstances for up to ten years before walking off. It is true that the Italians stayed because they had fewer alternatives than others, but even this fails to explain the exodus of established farmers. In the final analysis the only distinguishing feature between the survivors and the failures was the level of debt. Farmers who had received Agricultural Bank loans came to see the \$5000 debts as millstones. As wheat prices remained low year after year in the 1930s, they saw no prospect of ever repaying their loans or even of paying the annual interest. Lacking any reasonable prospect of economic viability they became utterly dispirited and departed, leaving everything except their personal belongings. Most left quietly. Not so Frank Evans of Booderockin who, after clashing with the Agricultural Bank over his debts, burnt his camp and stable in 1935. When sent to an asylum he was declared sane and then imprisoned in Fremantle Gaol. There he starved himself to death on 15 January, 1936.

The liberal bank loans hailed as the strongest feature of agricultural expansion in the 1920s thus came to be an impossible burden for Yilgarn farmers dependent solely on wheat. Those who replaced them had no debt and, although some of these people were forced to live in poverty, nevertheless they had no interest to bear and always saw the possibility of owning their own farms. Their hopes remained high and they survived.

Back to Bogging: The Mining Revival

The world wide collapse in commodity prices in the 1930s, exemplified in Australia by falling wheat and wool values, produced a loss of confidence within capitalism and a focus on gold as a safe investment and ultimate security. To stimulate production the Australian government paid a gold bonus of \$2 per ounce in 1931, but this was quickly overtaken by the gold market price which soared from \$8.495 to \$18.805 per ounce (31.1 grams) in the next decade.

Increasing prospecting activity had been apparent in the Yilgarn as early as 1930. It

then mushroomed. As the Depression deepened in Perth and in the wheatbelt, men drifted to the goldfields seeking jobs with mining companies. However, as there were too few jobs to go around, most finished up chasing the weight as prospectors. The government helped by providing prospectors' subsistence of \$1.50 per week, which could be repaid from crushings. It also loaned basic tools and subsidized ore cartage to batteries. Such assistance stimulated prospecting and at times literally saved men from starvation. If at times it encouraged them to crush unpayable, low grade ore it was a small price to pay.

The Yilgarn was always one of the most popular fields for prospectors. By December 1933 there were 160 men receiving prospecting subsistence, mostly around Southern Cross and Marvel Loch. At that time the *Southern Cross Times* estimated that 25 per cent of the district's population was being sustained by gold mining. The proportion increased over the next three years.

To cater for increased ore production the government subsidized the erection of a five head battery on the Copperhead lease at Bullfinch in 1932; and Howlett's public battery was enlarged to 10 head. In this period diesel power largely replaced steam as the rising gold price brought private capital into the industry making government subsidies unnecessary. By 1935 there were batteries running at Mt Jackson, Marda, Clampton, Hope's Hill, Corinthia, Manxman (2) and Koolyanobbing in the north Yilgarn; and at a number of centres in the south Yilgarn: Kennyville (2), Nine Mile, Jacoletti, Nevorla, Donovan's Find, Parker's Range (2) and Holleton. In addition, public companies were erecting plants at Mt Palmer, Marvel Loch and at the Great Victoria at Burbidge. Gold production increased from 146 kilograms in 1929 to over 886 kilograms in 1935.

Luck was still an important element: Ivan Unkovich, Jim Black and Frank Edwards all found gold on their Miners' Settlement blocks. M. H. Reynolds, too, found gold on his farm north east of Bullfinch. The Edwards were stony broke at the time of their discovery in 1931. A mine was developed and a battery built through the injection of capital from Southern Cross businessmen, S. McInnes, C. Goodin, G. Stallard and S. O'Neil, who formed a mining syndicate with the Edwards brothers, Frank (Jnr), Jim and Alf. The deposit proved to be small but rich. A crushing of 80 tonnes in 1933 yielded nearly nine kilograms of gold. In 1945 total production reached 437 kilograms from 25,352 tonnes.

Over the years, Edwards' Find became a useful employer of local labour. A number of farmers including Fred Dunbar owed their survival to the jobs it provided, even though contract work necessitated long hours for small returns. Peter and Eric Carnicelli, for instance, had the sands contract at Edwards' Find in 1940-46. It involved shovelling 30 tons of sand per day at nine cents per ton; but the income was reliable. The mine was the scene of a tragic double accident on 6 October, 1938. On that morning Paul Casserley lowered Francesco Pagoda into a winze, which they had fired the previous evening. When he reached the bottom Pagoda called to be raised but he fell from the bosun's chair. Casserley, realizing that the likely problem was bad air, threw down an air hose for a few minutes and descended to help his mate. He also became affected by the carbon monoxide and called to be lifted but fell from the chair. A second attempt was made to lift him out. Workers could scarcely believe their eyes as the chair rose and Casserley was seen to be clinging by his hands to the outside. He fell back just before reaching the brace. Eventually, after the winze was blown out, both men were recovered. Pagoda was dead; Casserley, aged 35 years, died a week later. He received the posthumous award of the

Royal Humane Society Medal for his brave attempt to save his workmate. Altogether, in the decade 1932-1941, 165 men were injured and 23 killed in mining accidents in the Yilgarn Goldfield. The large total was indicative of the risks of mining.

Another lucky discovery was made by Eric Carnicelli. As a young lad he found a rich outcrop near Glendower while setting a rabbit trap on a warren. The rabbits had literally burrowed into the ore. By dint of hard work and considerable skill, Carnicelli emerged after the World War as the Yilgarn's most successful developer of small gold deposits, working the Francis Furness in 1950-1974 for 193 kilograms, the Constance Una at Parker's Range in 1969-1978 for over 130 kilograms and Fraser's at Southern Cross in 1975-1979 for 18 kilograms.

Undoubtedly the most unfortunate prospector was A. C. "Daddy" Palmer who struck gold in new country but failed to reap the full benefit. In the spring of 1934 he decided to try the country south of Yellowdine. A nearby track had been used by hundreds of prospectors in the old days, but they had avoided the barrier of a chain of salt lakes and the wooded ridge on its western margin. Here Palmer, backed by W. Colhoun and A. Pollard, sampled with encouraging results. Unfortunately, however, he forgot the prospector's golden rule — to keep mum while exploring a find. He encouraged others, including James Brown of the Miners' Settlement, to peg leases before he had tested the prospect.

J. S. Whinfield, Goldfields Water Supply inspector at Southern Cross, happened to be at Yellowdine and got wind of the find. He hurried south with George Madin, his 21 year old assistant. In partnership with Fred Marony, J. Maiklen and J. Whinfield (Jnr) they bought Brown's lease on high ground to the north of Palmer's strike for \$600. Another party, T. Egan, L. Nylund, G. Waiter and J. Bryant, pegged further to the north again. Between them these two groups secured the best ground, the site of the Mt Palmer mine.

The mining promoter, Claude de Bernales was quick to take heed. Events were to prove that he made a better assessment of the prospect than the miners on the spot. Through Commonwealth Mining and Finance he offered Egan's and Whinfield's syndicates \$20,000 each for their leases, plus \$2000 in shares to each partner. In an unusual deal, each party was also permitted to remove ore for one month. This proved to be a bonanza for the syndicates, for the ore body opened up particularly well; but it also revealed quickly that the company had got the better of the deal in the long term. Jack Whinfield put on 22 workmen and mined 1250 tonnes in the month. It assayed over 60 grams to the tonne and yielded 67.6 kilograms of gold worth \$42,000, with another 23 grams per tonne in the sands, when crushed at Howlett's battery. This was a small fortune. Whinfield promptly resigned from the water supply. Young Madin left for England to study aviation. Palmer was left lamenting his misfortune.

What followed was reminiscent of the old gold-rushes. There were 200 men on the scene by December 1934 and leases were pegged for kilometres north and south of the strike. There was talk of Yilgarn's Golden Mile. Prospectors found surface deposits on the lake shore adjacent to the mine. Their incursions were opposed by the company but the Warden's Court ruled that the material was alluvial and could be taken by the diggers. Soon up to 80 alluvialists were frantically busy. Water was carried from the lake by strings of men with buckets. A variety of improvised shakers, puddlers and cradles was used to recover the gold. A few, particularly C. Connolly, who used a horse scoop to



Plate 12: Alluvial diggers with dry-blower, Mt Palmer, 1935. Company shaft-sinking in background.

(Courtesy Yilgarn History Museum, Southern Cross)

gather the loam, made good money recovering up to 100 grams per week until the deposit was exhausted.

The operating company, Yellowdine Gold Development, commenced shaft sinking and opened up the lode for a distance of 360 metres. A 20 head mill was erected. The mine proved rewarding for de Bernales. In its first 20 months of operations to the end of 1937, 85,000 tonnes of ore were crushed for gold worth \$940,000. Working costs were only \$200,000, based on a workforce of 130. A dividend of \$417,612 was paid to the shareholders: Commonwealth Mining and Finance, 46 per cent; Anglo-Australian Gold Development and Goldfields Australia Development, 18.5 per cent each; and Great Boulder Mining and Finance, 17 per cent. Until its closure in 1944, the mine officially produced 4928 kilograms of gold from 310,728 tonnes of ore at an average grade of 15.9 grams per tonne. The actual yield may have been higher. There were rumours that some Mt Palmer gold appeared in the production figures of other de Bernales mines as he speculated in shares. More certain is the prolific gold stealing from the mine. The ore was free milling and gold stealing was relatively easy from the battery, despite the elaborate precautions of the company. A measure of the extent of stealing might be the number of nearby shows that went barren immediately the mine closed; or the production from nearby private batteries such as the Kurrajong.

In this era, companies provided neither amenities nor accommodation for miners who at Mt Palmer camped around the mine site, sleeping in humpies or under stolen railway tarpaulins. There were complaints of the lack of sanitary arrangements and of the



*Plate 13: Norm Temby outside his hessian clad butcher's shop, Mt Palmer, c. 1936.
(Courtesy Ernest Douglas Davey, Bentley)*

“absence of the rudest form of privacy for women and children”. The Yilgarn road board then declared a townsite and initiated a pan sanitary system. J. Latter arrived in August 1935 to open a school in a temporary hessian and iron room built by residents; in September an extension from the goldfields pipeline was opened. Development was so rapid that by the end of the year the town was fully functional with a population of 500. It comprised corrugated iron shops and hessian and iron houses mainly erected by the miners themselves using bush timber and with earthen floors often linoleum covered. Rows of neatly white-washed houses were characteristic of mining towns of the period. Most services were available: Dick Monks’ power station; Ben and Dulcie Cox’s general store and post office; A. Leggett’s billiard saloon; John Bryant’s newsagency; a garage; Clement and Margaret Keitel’s restaurant and hall in which Bob Davey screened films regularly; Norm Temby’s and Errol Haynes butchers’ shops; Joe McDonald’s bakery; Les Andrew’s greengrocery; and the boarding houses of Gwen Green, Kathleen Hayden and Ester Carnicelli, for there was a preponderance of unattached men in the town who relied on such facilities. Cricket and football were played on an oval laid out on a nearby clay pan. The football team won the Yilgarn district’s 1935 premiership — undefeated for the year. The reason seemed obvious: the mine foreman, Charles Perkins, supported the team



Plate 14: Mount Palmer Football Team, Premiers, 1935.

Back Row (left to right): D. Sauage, H. Johnson, B. Bovell, J. Whinfield, D. Melrose, J. Sloss, R. Newton. Second Back Row: M. Grainger, A. Perkins, B. Walker, A. Brown, L. Stafford, K. Hill, A. Prince, R. Yates, J. Blechynden. Third Row: T. Heany, B. Tiffin (Hon Sec), H. Carrington (Capt), C. Perkins (President), J. Maynard (Vice Captain), W. Bucknell, J. Ahearn. Front Row: V. Boyle, A. Masters, J. Scott, R. Bowden, K. Puddy.
(Courtesy Ernest Douglas Davey, Bentley)

and he recruited only the best footballers from the men who congregated outside his office each morning seeking work.

It was a lively town on pay nights with drunkenness and street fights not uncommon and difficult to control as Constable Joe Farrell visited from Marvel Loch only fortnightly. The town settled down after Alice M. Cummins, who was associated with the Kalgoorlie and Merredin breweries, opened a substantial brick hotel on 18 December, 1936. It then became easier to control sly grog sales; and after 16 men were fined \$4 each in November 1937 for playing two-up in a common gaming house, the police were able to isolate the ring in the bush well away from the townsite.

Mt Palmer's rapid growth was typical of the rise of mining towns. It faded just as quickly when the mine closed in 1944. The area could not support prospectors. Nor were there farmers close by to use its facilities. The town simply ceased to exist.

Mining companies did relatively little exploratory work in new country in the 1930s. An exception was Western Mining Corporation which carried out surveys in a reservation of 777 square kilometres centred on Nevoria and Burbidge, commencing in 1933. Little was achieved at first but this work commenced a long association with the Yilgarn which culminated in the formation of Western Mining's subsidiary, Great Western Consolidated, in 1948, and the erection of a large treatment plant at Bullfinch. The role of capital in the 30s was mainly in the speculative re-opening of mines previously worked in the gold-rush. Typical examples were Southern Cross Gold Development and Marvel Loch Gold Development.

At Southern Cross, Claude de Bernales had secured a reservation of 260 hectares in 1931 covering Fraser's mine. Prospectors complained of being excluded from this ground particularly as no exploratory work was done. When gold mining boomed, de Bernales had his geologists report favourably on prospects and to predict production of 20,000 tonnes of ore per month. He then sold the leases to Southern Cross Gold Development which was floated on the London market with a capital of \$720,000. Mining commenced in 1936 with 80 men employed. However, development was disappointing and the mine closed in February 1938, having produced only 28 kilograms of gold. It was in the words of the *Southern Cross Times*, "a fiasco".

Equally speculative was the formation of Marvel Loch Gold Development to mine the northern extension of the old Marvel Loch lodes. The company was floated on the basis of surface indications of ore, with inadequate exploration at depth. Despite this, a production of 4000 tonnes per month was confidently predicted and the latest in tube mills was installed with an elaborate 760 metre tramway to connect a series of shafts. The plant opened early in 1936 but from the start difficulties were experienced in maintaining ore production. The writing was on the wall when the company dismissed its 110 workers on 4 February, 1937. Most of them were re-engaged three weeks later but newspaper speculation was rife particularly when ore reserves were substantially downgraded. "Where have 180,000 tons of ore gone?", asked *Smith's Weekly*, noting that ore reserves had been reduced from 250,000 tons in July 1936 to 43,000 tons in February 1937, despite mine production being only 33,000 tons. The answer was that the ore had never existed. As a consequence, the company closed in April 1938 having produced 392 kilograms of gold from 89,000 tonnes of ore.

The town of Marvel Loch blossomed in 1935-1937 mirroring the rise of Mt Palmer.

Noteworthy, was the chain migration to The Loch from the Avon Valley. From York came Percy and Jim Brand, George Duperouzel, Rupert Parker and Jim Ovens; from Beverley and Brookton came Ted Longsford, Roy and Paddy Ottway, Tommy Jackson, Frank Lodge, Fred Botcher and Arthur Jacobs. They found a lively, self-contained town with a full range of services including: the general stores of Duncan McLaren, and Rose and Sydney Crisp; Jack Lewis's newsagency; Goodin's picture theatre; Bill Clough's hall; Jack Ryan's barber shop, Jack Buckingham's billiard saloon; Jimmy McAuliffe's betting shop; Len Roberts' band; and, of course, the South Yilgarn Hotel.

Unlike several neighbouring towns, Marvel Loch survived the closure of its principal mine, partly because of the nearby farming lands but, more importantly, because of the auriferous zone surrounding it which gave many opportunities for prospectors. In 1940 the Marvel Loch mining district still engaged 184 men who produced 36,000 tonnes of ore. Most of these were self employed as there were no large companies to employ labour. Not all lived in towns as they preferred to camp on their leases, but they all used The Loch as a service centre and kept it alive.

Reflecting the opening of the large mines at Mt Palmer, Southern Cross and Marvel Loch, employment in mining in the Yilgarn goldfield had leapt to 915 in 1935 and peaked at 1105 in 1937. In that year production reached 2330 kilograms, the highest since 1918. Both employment and production declined slowly in the next four years to 823 men and 1729 kilograms in 1941 but then collapsed dramatically as labour was drawn off into the armed services to bottom at 184 kilograms in 1945.

The boom in the 1930s came to be called "The Revival", harking back to the gold-rush. The term was appropriate for many aspects of mining in the 30s were reminiscent of the earlier period, particularly the important role of the prospectors. It was they, rather than companies that made the discoveries. Like its predecessor, the Revival also saw much speculation and the over-capitalization of mines. Production increased greatly as a consequence, although few mines paid dividends. Finally, the Revival was like the gold-rush in the way it affected the lives of workers. Hand labour predominated. Mining methods were similar, relying on shrink stopes and hand bogging, although there was some technological innovation in treatment plants in the 1930s; and towns arose because of the efforts of the men and their families. Mining companies were not providers of board, lodging and amenities, mainly because labour could be secured without expenditure in these areas.

The mining revival proved a boon to Southern Cross after the long struggle through the depths of the Depression in 1931-34. The increased employment in mines helped compensate for the loss of farmers so that the total population of the district probably increased after the 1933 census to peak in 1936-38 when major mines were in operation.

The Depression had proven particularly difficult for the road board. Rates were hard to collect and the board found it impossible to meet the demands on its services. On the one hand it tried to increase expenditure to assist the unemployed by giving them occasional work repairing footpaths or roads. On the other hand its income declined as rates were not paid and farmers were given permission to work off their obligations by road clearing.

These problems were compounded when arsonists destroyed the Mechanics' Hall and Library on 5th February, 1933, and caused extensive damage to the board's power

station 24 hours later." George Edward Martain, a wheat lumper and member of the Southern Cross Volunteer Fire Brigade, won praise for his prompt attendance at the blazes but there were no clues as to the culprits. Over the next week the spate of fires continued: a wheat stack was fired at the railway yard with minimal damage; another fire was suppressed at the Universal Stores in Antares Street; and the waiting room at the railway station was set ablaze. The town was at fever pitch.

On the following Saturday evening two men were observed setting alight to the Yilgarn Road Board office with oil saturated sacking. The fire was quickly doused and the men arrested. One was George Martain and the other Clarence William Spencer, a railway employee. They were duly charged with arson but their motives were never satisfactorily explained. The road board was left to ponder how to raise funds to replace its facilities, for the insurance of \$2104 fell far short of replacement value.

Evidence of the road board's financial stringencies and of its inability even to collect rubbish and to enforce health regulations in the Southern Cross business centre was presented to the local Board of Health in September 1934. The medical officer had found rubbish stacked in heaps in the main shopping block, and dirty water running from shops into the gutters. Horse manure had accumulated behind several shops and there were pools of "offensive liquid". The back of the Palace Hotel was particularly dirty. The septic tank overflowed onto vacant land and men were observed "micturating against the wall of tea rooms" adjacent. The report noted that the town's bakeries were clean but that the butchers' premises were dirty and contained rusted tables unsuitable for meat handling. The slaughter yards were worse. Both were "disgusting" with piles of offal, hides and bones and pools of "stinking fluid". Overall, the report indicated that not much progress had been made since the gold-rush in cleaning up the town. Many health hazards existed and helped spread disease, particularly as the majority of privies in the town were found to be in disrepair and open to flies. Little could be done about these problems. Solutions awaited improvements in the finances of businesses and the road board.

As it was, there were serious differences of opinion on the road board concerning levels of expenditure and priorities. These tensions surfaced in 1933-1935 as pressure mounted to build a town hall to replace the Mechanics' Institute. The differences sprang from the rural-urban dichotomy, as in the 1924 electricity dispute. In broad terms, farmers wanted increased expenditure on rural roads and, where necessary, town amenities, to be financed by loans and town rates. Southern Cross ratepayers on the other hand wanted expenditure on roads and a town hall constrained by board income so as not to force an increase in their rates.

The board's problems were compounded by its reliance on motor vehicle licences. In 1933-34, for example, rates were estimated to raise \$904 whereas \$4008 was sought from licences. Both figures were illusory. Many people, particularly farmers, could afford neither to pay rates nor to licence their vehicles as the Agricultural Bank refused to advance money for that purpose. Their problems were increased by the high cost of licences: a truck licence cost \$18 annually — something like two weeks' wages — although farmers were entitled to a 75 per cent discount. In practice the board simply allowed outstanding rates to accumulate, while its efforts to collect vehicle licences were sporadic. Board secretary Charles Alday (1927-1934) occasionally raided vehicles at the Sunday football cr in Antares Street on shopping Saturday but to little effect. Twenty



*Plate 15: Yilgarn Road Board, 1933-34. Left to right: (Back) J. Connaughton (auditor), W. K. Leggett, J. B. Stacey, E. A. Stannard (assistant), Chas. Alday (secretary), C. H. Beer, T. W. Green. (Front) G. Yule, L. F. Kelly, P. T. McMahon (chairman), J. F. Worthing, J. Nunn.
(Courtesy Yilgarn shire)*

people were charged in 1931, for example, but a number took the option of imprisonment so forcing the board to give way.

Matters came to a head after P. T. McMahon was elected chairman of the road board in 1933 after an initial tied ballot which reflected the differences of opinion on the board. Of stocky build and pugnacious manner, Tommy McMahon, a staunch Catholic, was a long-standing Southern Cross resident with wide interests. He was a versatile Great War veteran who had earned a living as a produce merchant, a butcher, as a farmer cum mail contractor in the early 1920s, and in 1926-1933 as co-proprietor with M. T. Murphy of Southern Cross Universal Stores trading as grocer, hardware merchant, fuel agent and garage operator. He had been hard hit by bad debts in the Depression and forced to let his house and to do contract work for the board on road maintenance. His popularity in some quarters probably sprang from his wide sporting interests: prominent footballer in his youth, boxer, forceful batsman, volunteer fireman and later president of the cycle club and the golf club. But he was not a man likely to raise consensus on the board. He could be prickly in debate and dogged in disputation. Over the years he had clashed heatedly with prominent citizens, including board secretary Charles Alday in 1928 and local chemist and board chairman Frank Rowe in 1930, so that his election to the chair raised editorial doubts from the *Southern Cross Times*, possibly reflecting sectarian and political differences now difficult to plumb.

It seems that early in 1934 McMahan decided to tackle the board's financial problems by collecting outstanding licences and rates.¹⁰ It was a brave decision, firstly, because only one board member in nine had paid rates so that any policy of collection would, at best, cause embarrassment; and, secondly, because amongst the first persons served with licence infringement notices by Alday were J. F. Worthing, a farmer turned greengrocer and prominent freemason whom McMahan had defeated for the chair, and board member and farmer J. B. Stacey who as the electrical engineer had been a central figure in the 1924 power dispute.

Bitter recriminations followed the court hearings in which Stacey was fined \$2 and required to pay three years' licences and Worthing was fined \$8 and required to pay fees of \$44. Stacey duly paid his debts but Worthing was able to raise only \$22. He was saved from humiliation only by Alday paying the fees himself and accepting a post-dated cheque from Worthing. If the secretary expected his gesture to mend broken fences he was mistaken for, as the *Southern Cross Times* put it, Worthing, Stacey and two other board members in Charles Beer and Walter Landon set out to "get" Alday.

In the road board election of April 1934, Worthing was opposed in Southern Cross ward by Wally Metzke, a well respected saddler and ironmonger who had donated land for a new sports centre. The campaign was bitter. Editor H. V. Courayne used the *Southern Cross Times* to support the town interest and Metzke. He attacked Worthing in his role as justice of the peace and made accusations of corruption while Worthing was board chairman in 1932-33. Apologies were accepted in the ensuing defamation action and Worthing won the poll by 103 votes to 74 and then defeated McMahan for the chairmanship.

At a bitter road board meeting on 11 May, 1934, members were given free rein by the new chair. Hostility between Stacey and Beer on the one hand and McMahan and Alday on the other was marked by a "fierce and overheated crossfire of expletives" as the press put it. Alday resigned on the spot. He had little alternative as his position was untenable. McMahan lasted one more year but was not re-elected to the board in 1935. He afterwards served in the World War and later compiled a record of Yilgarn history entitled, *They Wished Upon a Star*.

The political climate remained tense for some time. There were petitions from rival groups: one from townfolk requesting the minister for works to inquire into the road board (which was ignored); the other urging the board to assist farmers rather than borrowing money for a town hall. The new board secretary, N. F. Haynes, tried to make his position clear by issuing a notice that all licences were due and that "failure to comply renders defaulters liable to prosecution". However, brave words did not solve the insuperable problem of farmers' inability to pay. Twelve months later the board noted that fees were slow in coming in and that only registrations outstanding for three years would be proceeded against. In 1935 it was estimated that only 403 vehicles in the district were licensed out of a total of 775. Occasional raids in Southern Cross and neighbouring towns brought only slow improvement. The position in regard to rates was even worse, for \$6160 in farming arrears had to be written off in 1935.

Haynes proved to be a decided asset to the board in bringing the town hall project to fruition. Decisions were made to build on a new site rather than on the old lot, to raise a loan of \$7000 for the hall, which was estimated to cost a maximum of \$7800 and to accept

an architectural design by W. Pickering. However, the lowest tender of over \$12,500 was far beyond the board's resources. Haynes saved the day by using his engineering and drafting skills to prepare a cheaper design; and the board accepted his recommendation to build in timber and asbestos with only the board offices to be built in brick. He supervised the building by the General Construction Company and the project was completed for less than \$6000.

The grand opening of the town hall by Lieutenant-Governor Sir James Mitchell on 24 December, 1936, symbolized the mining revival of Southern Cross. During the opening ball, magnate Claude de Bernales spoke by radio from London to the 400 guests and he donated a clock for the hall's tower. It never did function correctly — an omen perhaps of the impending disaster of Southern Cross Gold Development which in 1936 was raising hopes of a major redevelopment of Fraser's mine.

Five months before, a battery had opened on the Three Boys mine. Its rhythmic beat was the first sound of mining in Southern Cross for 20 years. Evidence of the new energy was seen everywhere. Telephone facilities were extended by two hours and operated from 8.00am to 10.00pm. Professional offices were opened by dentists A. E. Heathcote and G. R. D. Sanders, lawyer Neil Graham and medical practitioners L. D. Hodby and P. Shanahan, who replaced W. H. MacGranahan. J. F. Worthing and L. F. Barry started a newspaper, the *Southern Cross News*, in November 1935, to rival the long running *Times*. There were new shops and flats, new bedrooms for the Palace Hotel and the Club Hotel was doubled in size.

An emerging sophistication was revealed when the erection of hessian houses was banned in Southern Cross in 1934. Then, a new fire station was completed at a cost of \$1800 in 1936. There were renovations to the court house, railway station and post office to cater for increased business, and additions to the hospital. Since November 1933 the hospital had been run by a local board which added a maternity ward and an enlarged men's ward in August 1938 to overcome the necessity to place patients on verandahs. The excitement of the era was symbolised by the illumination of the district's first neon sign advertising the Palace Hotel in February 1936.

Goldfields' tolerance was reflected in newspaper pride in reporting the erection of new billiard saloons and illegal betting shops in Southern Cross, Marvel Loch, Mt Palmer, Burbidge and Nevoria. More solid progress saw the paving of footpaths outside shops in Antares Street with concrete slabs in 1936; but efforts to overcome the seasonal problems of dust and mud by laying bitumen strips in the shopping centre stalled because of the cost and were unsuccessful until after the World War.

An impressive achievement of the Revival was the erection of a Catholic church, the brainchild of Emilian Planas OSB, who was parish priest of the Yilgarn, based in Southern Cross, from 1922 until his death on 29 June, 1948. Planas was born near Barcelona in 1874 and came to New Norcia mission in 1901. He was a man of culture who must have lacked stimulation in the pragmatic world of the frontiers of settlement. An accomplished musician, master of the piano, organ, violin and clarinet, he also composed church music and popular songs including "Golden Australia". Two marches had Yilgarn themes — "Westonia" and "Sunnyside". He has been judged the best musician of New Norcia after Salvado and Moreno.

Father Planas visited Barcelona in 1934 and raised \$1690, mostly from his brother,



*Plate 16: Father Emilian Planas, OSB, and evacuated children, Sacred Heart School, Moorine Rock Hotel, 1942.
(Courtesy Senator John Panizza)*

to build a church in Southern Cross. Construction began upon his return, to a rectangular design by a Spaniard, Father Zusi. The dark brick church was opened on 26 April, 1936, and dedicated to Our Lady of Montserrat. It remains one of the enduring memorials of the Revival.

In this period entertainment flourished in Southern Cross, but there were fewer visiting performers than during the earlier gold-rush. Touring groups no longer stopped over on their way to Kalgoorlie; and artists like Lawrence Tibbetts merely waited impatiently while their aircraft refuelled before pushing on to eastern capitals. A repertory club and choral society functioned in Southern Cross; and in 1936 John K. Dixon leased Liddle's hall and promoted dancing, badminton, wrestling and boxing. Dances were very popular but, overall, entertainment was dominated by motion pictures. Even the occasional circus or W. R. Heaton's vaudeville troupe, "Brevities of 1936", and Rocky Vane's snake show found it difficult to compete.

Motion picture entertainment was significant in that screenings involved virtually all ages and social groups — except the very poorest — in mass entertainment. All turned up: children in the front seats; adults in the middle with prams within earshot; and courting couples to the rear. Unlike those in some country towns, the principal Southern Cross theatre, Goodin's, had no Art Deco facade in Hollywood style. It was a simple galvanized iron clad hall with gardens attached where films were shown on summer evenings: The town larrikins then preferred to watch from the "ripple seats" — the corrugated iron roof of the adjacent Club Hotel. The "flicks" were also screened in the Mechanics' Hall, until it was burnt in 1933, by Baker's Pictures in Liddle's Hall, and, later, in the Town Hall. In the mid 1930s films were screened on four nights per week in Southern Cross. It was the time also of the travelling picture-show men — like Paddy Baker in the 1920s and, later, Rupert Morris, who brought weekly films to remote towns until the era ended, firstly with the advent of drive-in pictures and, then, with the return of entertainment to the home when television reached the Yilgarn.

In the male dominated mining communities, relaxation for many rarely extended beyond beer drinking. Mostly this was centred on hotels. Sly grog was uncommon, although one purveyor caused merriment by selling beer around the mining camps disguised as a fishmonger. He even sold fish to the local police constable who did not notice the beer underneath. Usually prospectors conserved their energies for a spree in town following the clean up of their latest crushing. Three such men from isolated Mt Jackson regularly finished up in the cells of Southern Cross police station. Hotel brawls were common. These were ignored by the police until they got out of hand causing serious injury or involved more than fisticuffs, when justice could be harsh. In one incident, Felix Thurkle, charged with disorderly conduct, obscene language and resisting the police, received two months' hard labour; his mate, Henry Arnold, got one month. In a more serious incident, Doug Slater was found not guilty of unlawfully killing Luigi Gianoncelli after hitting him on the head with a beer pot at Bullfinch in March 1940.

Such events were easy for the police to control. Being drunk and disorderly rarely brought more than a \$1 fine and most offenders took the option of 24 hours in the cells. They were not seen as risks to society. By contrast the large groups of men in sustenance camps, and the many individuals moving from town to town in search of work, were perceived as serious risks to law and order in a Western Australian setting in which as

many as one third of the male workforce was unemployed. Camps like the one with over 100 men maintaining the Bullfinch railway in 1934, or the large Yellowdine camp, were deliberately located well away from towns to reduce the risk to property and to isolate discontent. Other steps were taken to neutralize the men moving through the district begging for work or a meal to tide them over. These men mostly walked or jumped a goods train from town to town. The 13 arrested in Southern Cross in March 1931 for illegally riding a train were typical: they ranged in age from 21 years to 40 years and were dealt with leniently by the justice of the peace, being fined 20 cents each, for the aim was not to punish the men but to move them on. In many cases the police did not bother to arrest train jumpers but pushed them to the next town with threats of arrest if they dallied. When individuals were arrested it was because they were seen as troublemakers, that is, they were unco-operative or argumentative.

This selective application of the law was seen as protecting society against unrest and, ultimately, against revolution. Yet there really was little threat, at least in the Yilgarn, where concentrations of population were too small to ferment unrest and no ideological framework existed to focus disillusionment. Few advocated the radical restructuring of economic society as a solution to financial disintegration. One reason was that the school system for generations had stressed loyalty to the existing order. There were concerned individuals, such as the reading group formed in Southern Cross to study literature and economic issues, but its members: Dr and Mrs MacGranahan; Alf Brown, the headmaster; Fred Whittle, the Methodist minister; Berwick Hanton; Charles Alday, the road board secretary; farmer Bill Hartley; and Edgar Hogg, the mining registrar, had little influence on society at large. There were also occasional lectures in Southern Cross from representatives of the Liberation League, advocating the stimulation of consumption through wage increases, and the abolition of taxes other than on land, but these ideas were taken seriously by few.

Southern Cross court records have not survived from the Depression but newspaper accounts suggest that the stealing of property was not a major problem despite the goldfields' habit of leaving homes unlocked. Where it occurred the community reaction was one of shock and the punishment severe but often inconsistent. This point may be illustrated by two cases of theft in Southern Cross. After it was discovered that a turkey was missing from the Railway Hotel yard in November 1935, two men, Victor Bowman and Thomas Heath, were arrested when bones were found near their camp in the railway yards. They were sentenced to terms of three months and two months respectively (the difference in their sentences was itself significant as it would hinder future consorting). By contrast, a charge of stealing a bag of lime against Reg Nunn in February 1940 was dismissed, despite evidence of possession, probably because he was well known locally and not perceived as a threat to society.

Gold stealing was an exception to the rule of general respect for property. It was known to occur, particularly from rich mines such as Mt Palmer, and was winked at by the mining workers although relatively few were directly involved. Local police had no specific responsibility for investigating gold stealing, which was in the control of Kalgoorlie based detectives. They seem to have interfered little in the affairs of the Yilgarn.

In contrast to the law's concern to protect private property, workers often found it

difficult to secure the payment of wages through the legal system. Frequently award conditions did not pertain and workers were, in effect, contracted out of their rights. Many were frightened to risk their jobs by seeking redress. When they did approach the courts they often found that they received less than the 1935 basic wage of \$8.56 per week. The workers' problems arose in part from the weakness of unions. Few if any farm labourers were union members and, in the mining industry, only workers employed by large companies such as at Mt Palmer and Marvel Loch were unionized.

The difficulties experienced by workers are illustrated by the case of Albert Roberts who started work as a farm hand in December 1932. His duties were to milk cows, to attend to 500 fowls and to deliver produce to Southern Cross. His wage was 50 cents per week plus keep and he was permitted three hours off on Sundays. But at least he was paid. By contrast, an unnamed Yugoslav worker had to take H. Davey, a Bodallin farmer, to court to secure wages. The farmer claimed that the man was employed carting, fencing and clearing for "tucker and no fixed wage"; but the magistrate awarded him \$2 per week. In a similar case, William Maney and a boy, Peter Cooper, had to go to court to secure payment for building sheep yards for John Chadwick, the Southern Cross butcher. Chadwick claimed that the workers were entitled only to keep and the right to trap dingoes and to keep their skins. The court ordered that Maney be paid \$6 for four weeks' work.

Another case of failure to pay wages involved the Deliverance Gold Mining Company of Corinthia, which was sued by C. Whitehead for payment for 48 shifts worked at \$1.72 per day. The Police Court ordered payment of the wages to Whitehead and 25 other miners, but payment was never made because the company was bankrupt. This case and those involving the non-payment of wages to farm hands illustrate the difficulties experienced by workers during the Depression when labour was in over-supply and employers in many cases "broke". In these circumstances there was little protection for workers to secure either wages or reinstatement if they were sacked. This latter point was well illustrated in the case of two miners, Victor Monti and Tom McGrath, who were dismissed by the Marvel Loch Gold Development Company in 1937, contrary to their award. The Industrial Court upheld the complaint by the Australian Workers' Union and fined the company \$10, but the men were not reinstated.

Difficult situations were created for the law in the several boycotts that were applied in the Yilgarn in the Depression. It has been noted that there was no police interference in the picketing of wheat receival centres by farmers in 1932 except at one centre. Nor did police interfere in a prolonged boycott of the South Yilgarn Hotel in 1935; but there was a different story at Bullfinch in January 1934 during a prolonged boycott of H. A. Lazlett's Exchange Hotel in an attempt to force down beer prices.¹¹ Events came to a head on 27 January, when Constables Chester and Gregory were sent from Southern Cross to control an angry crowd of 50 men who were taunting six customers in the hotel. Constable Chester, it seems, objected to photographs being taken by Stuart Scott, the son of the chairman of the strike committee. The camera was broken and Scott received a perforated eardrum. The resultant charge against Chester was dismissed by Magistrate E. M. McGinn who determined that "no jury would convict the constable".

Instances such as this were rare, for the Yilgarn in the 1930s was essentially a conservative society. The wheat stealing episode was a uniquely radical and serious challenge. Most good people were content to individualize their response to broader social

and economic problems, for example, by helping the occasional, unemployed beggars with a meal. Sometimes they were disappointed when the same people then stole goods in the town. They could not comprehend how this could happen and thought little of wider concepts of social justice. They accepted happily the selective application of the law and the right of the police to tolerate two-up in the bush and to settle arguments with the fist.

The degree of police tolerance could vary in place and time. Brothels, for instance, were acceptable in Kalgoorlie but not in Southern Cross in the 1930s; and they were tolerated everywhere in the gold-rush but not during the Revival. There were occasional complaints of soliciting by women in Southern Cross in the latter period, but the smaller scale of prostitution compared with 25 years earlier probably reflects different economic pressures on women and the rigorous elimination of pimping by men.

A particular instance of the selective application of the law concerned illegal off-course bookmaking which was not only tolerated but used to raise revenue on a regular basis. Each November or December the police informed bookmakers in all local towns of an impending raid, giving them time to arrange for volunteers who agreed, in return for fees, to be charged with illegal betting or with keeping premises for the purposes of betting. All then pleaded guilty and were fined \$30. The revenue raised in the cynical courts could be significant — \$270 in 15 minutes in the Southern Cross court in November 1936, for example. Next year a different set of volunteers would be recruited, to ensure that no one arrested had a "record", and the process would be re-enacted. The system bred cynicism and relied on both sides playing by the rules. The bookmakers were therefore affronted when Sergeant Robinson changed the rules early in 1938 and charged William Poole, the actual bookmaker, with running an illegal betting shop. The Officer explained to the court that his new tactic was to raid the shops separately and without warning. If enforced this tactic would have wiped out illegal betting and the revenue it raised for the State. But cooler heads prevailed. The tactics were not tried again and the sergeant was himself transferred to another district soon afterwards.

The year 1938 was a bad one for the Yilgarn after the high hopes of 1936-37. Mine closures at Southern Cross, Marvel Loch and Mt Jackson threw hundreds out of work. Conditions were bad throughout the Eastern Goldfields, where 500 were reportedly unemployed, and several Yilgarn men who sought jobs there returned disappointed. There were many calls on benevolent societies, and cases of families living on bread and dripping. Things did not improve much in 1939 and as war commenced in Europe the Yilgarn was still in a depressed state. Certainly there were fewer itinerants in the district than previously, but many prospectors in the bush were crushing three 'weight dirt which was returning the barest of subsistence — scarcely tucker money.

Road board finances were still precarious. In May 1941 secretary Haynes reported that less than one quarter of the rates due for 1940-41 had been paid, with Southern Cross contributing \$920 and the rest of the district \$1022. Farmers were still not being required to pay their rates so that Haynes queried whether it might not be fairer to forego all rates rather than collect only in townsites. He had tried hard in 1939-40 to improve living conditions in Southern Cross by building a swimming pool but had been thwarted by the refusal of ratepayers to approve the necessary loan.

Further evidence of the depressed economy came from the number of men in part-time employment or receiving prospectors' subsistence. Edwin George Gawned was

a case in point. His experience of the Depression typifies the period. He was born in November 1915 and left school just as the Depression was biting. Jobs were hard to come by, but he was lucky to secure work for fifteen months on a farm at Maya. It paid only \$1 per week but eventually his employer had to turn him away. In 1934 he decided to try his luck at Southern Cross. At first fortune smiled and he secured twelve months' full time work with the Goldfields Water Supply. Then, because he was single, he was placed on "two weeks on, four weeks off". The wage of \$12 per week was good; but it had to last him for six weeks. In those in-between times, Gawned prospected at Burbidge with his mate, Joe Peachey. They lived in a tent and batched in rough conditions, returning to The Cross by push-bike on weekends. Forty years later, Gawned recalled this life as "idyllic" as he was his own boss and had few responsibilities. But the prospecting yielded little income. Its advantage was that "it took up the time . . . it kept us going until we could get back to a normal life — it really wasn't normal". The longing for normalcy was to be delayed for Gawned. He enlisted in the 16 Battalion early in 1940, when recruitment for the second A.I.F. commenced, and served for five years in the Middle East and South East Asia.

Black-outs and Shortages: The World War

The Yilgarn's response to war was enthusiastic. The *Southern Cross News* reported that 50 or 60 men appeared before the recruitment officers on 13 March, 1940, and only three were rejected. On 29 May, there were animated scenes at the Town Hall when recruitment officers returned: By 9.00am, 30 men were waiting to be enrolled. During the morning, trucks arrived from Evanston, Moorine Rock, Mt Palmer, Marvel Loch and Corinthia and 150 men were examined. Only one failed the fitness tests.

Yilgarn enlistments cannot be confirmed from official records but newspaper lists indicate that 125 Yilgarn men had volunteered for war service by December 1940, including 41 from Southern Cross, 21 from Mt Palmer and 30 from Bullfinch. This had grown to 156 by August 1941. The rate of enlistment was greater than it had been in the first 18 months of the Great War but the economic circumstances were very different. It is tempting to conclude that recruitment in 1940 was stimulated by the depressed economy in the Yilgarn. Certainly the disastrous drought of that year provided incentives for young men to take the King's shilling. For both farmers and prospectors like Edwin Gawned the army offered the chance to escape a precarious existence. For many, those army pays of 1940 were the first regular and assured income for a decade.

The introduction of compulsory military service in 1941, requiring the conscription of all young men into the army, except those in exempt categories, took the heat out of recruitment campaigns. There were distinctions made between the volunteers of the A.I.F. and other services on the one hand, and the conscripted "chocolate soldiers" or "chocos" on the other, but there were fewer community tensions over enlistments than during the Great War. Local newspapers even stopped reporting inductions into the services. What tensions there were came mainly from occasional criticisms of "cowards" sheltering under reserved callings considered essential to the domestic economy, who escaped military service.



Plate 17: Cec Styles, Southern Cross draper, in Special Police, guarding the Ghooli pumping station, 1942.

(Photo courtesy Mrs Olive Watts, Masonic Village, Mt Lawley)

The European war had little direct impact on people, other than through fund-raising activities such as the "Win the War Rally" in Southern Cross in the spring of 1940. For a time local hopes were raised that an R.A.A.F. flying school would be established at the airstrip on Forrester's farm. Much clearing and levelling was done and footings for buildings were laid. Then, just as suddenly, the proposed school was transferred to Geraldton.

The realities of war were brought home by the dramatic Japanese drive into Malaya in December 1941. Neighbours discussed the sinking of the "Prince of Wales" and "Repulse" in hushed tones as they came to realize that the British fleet would not be defending Australia. However, the deep gloom of the early months of 1942 soon gave way to optimism engendered, firstly, by General McArthur's arrival in Australia and, secondly, by the rush of activity as people rallied to self-defence. The locally recruited special police guarded key installations such as the Ghooli pumping station; and the Home Guard paraded under platoon leader N. F. Haynes. They had no .303 rifles, however, as these had been requisitioned for army use. Air raid precautions were initiated by head warden Reg Nettle. Southern Cross was divided into four districts: The Palace Hotel to Achernar Street, population 160, warden J. F. Worthing; Achernar Street to Phoenix Street, population 370, warden J. Beach; Phoenix Street north, population 270, warden G. Webb; and east of Lake Polaris, population 110, warden F. Russell. The wardens prepared the population for "black out" conditions in case of air raids. An alarm was installed at the Town Hall. The road board was approached to dig slit trenches in Antares Street. As bombs fell on Broome and Wyndham a Patriotic Ball was held in Southern Cross to raise war funds.

Fortunately, war did not reach the Yilgarn directly, although 19 local men are recorded as casualties of the overseas fighting — far fewer than in the Great War. There was only one serious incident during military training. On 27 August, 1944, an R.A.A.F. Vultee Vengeance aircraft on a training flight from Pearce base crashed in the south Yilgarn about 110 kilometres from Southern Cross. The fate of one of the crew has remained a mystery to this day. It seems that the aircraft became lost in bad weather and when fuel was exhausted the pilot and navigator baled out. Warrant Officer A. S. Ingram walked to a farm house but navigator C. L. King was never found. There has been speculation ever since that one day his skeleton would be found during land clearing for farming.

Early in 1942 panic buying of food and clothing occurred in Western Australia, but severe shortages were overcome once the distribution of items in short supply was regulated by the issue of ration books in June 1942. Thereafter, coupons were required to purchase clothing and a range of foods — meat, tea, sugar and butter. Fuel rationing was particularly severe. Private vehicles soon sported charcoal burning gas-producers. The road board, which had hitherto used 4500 litres monthly, found itself restricted to 200 litres. Road works were severely limited as a consequence but, in any case, the board was restricted in its maintenance work by the severe shortage of labour. Children, meanwhile, were kept active collecting rubber and scrap metal as shortages of imported materials multiplied. The piles of old truck tyres were a feature of wartime life in Marvel Loch, Bullfinch and Southern Cross.

In the worst days of 1942, when invasion seemed imminent, preparations were made

for the evacuation of Perth and coastal Western Australia. The Yilgarn was identified as one possible destination of evacuees and a register was compiled of farm accommodation. Increased school enrolments reflected the movement of women and children into the district in 1942. At Bodallin school, for instance, attendances rose from 15, in 1941, to 36 in March 1942. The teacher noted that "the number of children admitted during such a short period has increased teaching difficulties": However, the most significant event was the evacuation of Sacred Heart school from Highgate to Moorine Rock where some 54 pupils and their teachers took over the hotel building by courtesy of its owner, Alice Cummins, and lessons were conducted in the former bars.

Ethnic Tension

By far the most distressing domestic issue of the war was the position of Italians in the community. Migrants from Italy had worked in the Yilgarn from the earliest days of the gold-rush. Their numbers increased, particularly during the Bullfinch rush and in the 1920s after Mussolini's rise to power in Italy. Once in the district they quickly adapted to local life, being concerned like everyone else with economic survival. At the outbreak of hostilities there may have been 200-250 first generation Italians in the Yilgarn. Many of these had become naturalized either directly or by being listed on a husband's or parent's certificate. These people had little to fear from Italy's decision to enter the war alongside Germany in May 1940; but unnaturalized people feared for their future.

In June 1940 Sergeant D. Chesher of the Southern Cross police received instructions to intern male Italian citizens over the age of 15 years. He quickly rounded them up, but won praise for his tact. In some cases he merely passed word on to those he knew and the men reported. Official records of internments are unavailable but oral evidence suggests that 70 or 80 men were locked away in Liddle's Hall. Most were prospectors and miners with only a few from farming families. The most unfortunate individuals were those who had thought they were Australian citizens but who had been omitted from naturalization certificates. After several days they were all marched disconsolately to the railway station to join a train for Perth and internment on Rottneest Island. Fear spread amongst the detainees so much so that one, Benvenuto Botacchi, a prospector, aged 64 years, committed suicide by cutting his throat and bleeding to death in a train toilet before reaching Perth.

The war was an unhappy experience for Italian-Australians even if they were not interned. Official propaganda promoted hatred of enemy nationals and this carried over so as to affect individuals in the Yilgarn. Many felt under surveillance and the police increased tension by breaking up casual groups of Italian-speaking citizens who congregated in the streets of Southern Cross. Those men who escaped military service either by being in exempt occupations or because of poor English were vilified by gossip and the press. Newspaper criticism was patriotic in tone: "What sacrifices have enemy aliens to make? Mussolini's kind . . . (should) protect their adopted country . . ."; but the complaints were also economic in origin: "Most of the small mines are passing into Dago hands". This publicity caused grave concern in the Italian-speaking community. During major conscription drives in April and December 1942 many Italian-Australians in the

Yilgarn were caught in the net of compulsory military service. There were two suicides of “foreigners” at Marvel Loch in this period, possibly reflecting ethnic tensions, but details were suppressed by strict censorship of radio and newspapers at the time. Even children did not escape the pressures of the period. Forty years later senior Yilgarn citizens recalled being teased at school by the threats of classmates: “They’re coming to get your old man next!”.

Much of the pressure on Italian-Australians during the war reflected latent anti-foreign feelings festering beneath the surface of Yilgarn society. Many Italians who pioneered in the inter-war period remember that they were well accepted by Anglo-Celtic neighbours, although they tended to worship and to socialize separately. But there were tensions, often reflecting little more than Australian xenophobia — a resentment of foreign culture and language and concern over competition for jobs. These concerns were often directed against an abstract concept of foreign intrusion and could exist alongside friendly relations between individuals. Hostility tended to surface at times of social stress, as during the Great War, and was frequently expressed in hotels under the stimulus of alcohol. The strains of the Depression also caused resentment to surface. A series of letters to the *Southern Cross Times* in 1929-30 directed attention against large groups of Italians camping under unhygienic conditions at Railway Town, Southern Cross. As often happens in these situations, concerns were expressed in racist terms against the ‘filthy menace’ of ‘undesirables’ whose “communal methods . . . (are) distasteful to many Australians”.

Ethnocentric objections were directed not only against Italians. Local farmers, Louisa and Henry Fullgrabe, for example, felt compelled to place advertisements in 1929 to explain that they were not German but Australian born; and Max Kruger had to explain that he was South Australian born, when people objected to the road board giving him part-time work in 1931. Yugoslavs also faced prejudice. Joe Granich immigrated to join his father at Turkey Hill in 1931. Over 50 years later, as a prominent Moorine Rock farmer, he recalled the racism of the period:

If you were talking in a foreign language the bloke would give you a black look and if he was a bit full you developed a fight nice and easy . . . a lot of the Australians didn’t know the difference between a Slav and an Italian and if you didn’t speak English properly they . . . called you a “ding bastard”.

However, while other ethnic groups suffered discrimination, the Italians faced the most prejudice and this extended even to the courts. The case of a Mr Livioti who sued Peter Morellini of Bullfinch for \$65 unpaid wages illustrates this point. Both men gave evidence through an interpreter but, as the *Times* reported on 6 October 1934, “The court became tired of the parties talking in Italian and told them so”. Finally, magistrate McGinn ended the action by nonsuited the plaintiff and dismissing the case.

Elsewhere in the Eastern Goldfields xenophobia exploded in violence. In the sensational Kalgoorlie riots of January 1934 many homes of Italian-Australians were burnt and the inhabitants fled for their lives into the bush. Fortunately this did not happen in the Yilgarn but there was fear of a repetition. This apprehension surfaced following a hotel brawl in Southern Cross in October 1935 which culminated in Michael Piduli stabbing Robert Weir in the buttock. As reported by the *Southern Cross Times*: “In consequence of the feeling aroused, Sergeant Robinson caused word to be sent around for

the Italians in town to get out . . . , which was acted on . . . ”. The incident illustrates the depth of ethnic tension and community fear, for not only did the police feel obliged to warn of a breakdown of order, but local Italians quickly responded and fled.

Community tensions should not, however, be over emphasized. In the main, Italians and Australians co-existed in the Yilgarn effectively, although they tended to lead parallel lives. Many of the Italians were prospectors, small mine owners and timber cutters. In these occupations they worked in closed groups to facilitate communication in Italian. Few found jobs in company mines or other paid employment. Even as farmers the Italians tended to cling together, often for mutual economic support and social life. It was this separate community life that aroused suspicion in the rest of the population.

Legend has it that ethnic tensions were relieved in the Yilgarn following a fierce brawl occasioned by a group of Italian-Australians deciding to break the unofficial segregation of drinkers in Southern Cross which excluded them from the Club Hotel. It seems that they won the fight and ended segregation. If so, the event was cathartic and opened the way for the better co-operation and integration of cultural groups in the next generation.

The achievement of the Italian-Australians in the inter-war period in the Yilgarn was considerable. Often they performed the hardest and most dangerous work in land clearing and mining for little financial return. They were, next to the Aborigines, the lowest socio-economic group in the community. Nevertheless, some made good money in mining and a number survived as farmers to stand poised to reap the benefits of post war prosperity.

Conclusion

The period from the Great War to the World War saw rapid change in the Yilgarn reflecting wider Australian and world political, economic and social changes. The population increased rapidly in the 1920s as farming came to dominate the district's economy. There was a tragic element in the land settlement schemes, however. Any attempt to settle farmers on 1000 acre blocks in climatically marginal country was doomed. Families suffered privation and the ignominy of failure despite prodigious work and commitment. The Depression merely hastened the end. Despite the population increase in the district, per capita income, reflecting the Australian pattern, remained low and probably did not recover the level of 1911-14 until about 1950. Most people battled just to survive and family life was often disturbed by poverty and the absence of breadwinners.

This was an era of rapid technological change. The internal combustion engine revolutionized transport, creating a more mobile community. Its effects were equally dramatic in the mining industry and on the land where tractors began to replace horses. Simultaneously, wireless sets and motion pictures transformed entertainment. Moreover, electricity became more widely available so that farmers and townspeople alike began to set consumer goals in terms of household appliances. The *Southern Cross Times* in 1928 looked ahead to an era when the successful farmer would own a decent house, crop 500 acres and run a few sheep using his own farm machinery and an International or Chev'

truck. He would own a car to take his wife and kids to town, a wireless set and “maybe even a Kohler lighting plant”. Twenty years later these goals seemed no closer to being realised for, despite the technological innovation, the 1930s produced economic dislocation, high unemployment and poverty.

The mining revival was the saviour of many in the Yilgarn. Just as in the 1920s when everyone had been a farmer, so in the Revival, everyone was a miner. The versatility of Yilgarn citizens — farmers, miners and tradespeople alike — in seeking income from a variety of sources, was often the key to their survival. Moreover, self-sufficiency became the order of the day so that official statistics fall short of describing the Yilgarn economy in which both home production and barter were significant elements additional to the market economy. Here women were often the key to survival.

Through all these changes, conservative social and economic values prevailed. The dominant economic and political structures were challenged by few, despite the economic collapse. Mainly this was because people saw everyone as being in the same boat, the victims of economic forces beyond their control. Shopkeepers, farmers and miners suffered alike. There was no affluent class in the Yilgarn, although civil servants had the advantage of tenure. A perception of egalitarianism prevailed, despite the disadvantageous position of migrants and Aborigines. This was to be undisturbed until the emergence of an affluent and dominant farming class in the three decades after the World War.

People were optimistic in 1946 as they had been in 1919. However, the permanency of human occupancy of the Yilgarn was very uncertain. Wheat farming had failed in the economic climate of the 1930s. Mining by its very nature had a limited life, particularly given the low grade of local gold deposits. The lesson of the past was that the country was marginal for both industries and that high capital costs and debt were to be avoided. Whether the Yilgarn survived as a productive region would depend not only on the efforts of its citizens but on the chance of the seasons and the vagaries of international wheat, wool and gold prices as they reacted to the uncertainties of gluts and shortages, wars and commodity speculation. The district was fortunate in that the capitalistic, economic forces that caused a downturn in farming were likely simultaneously to stimulate mining. At least that was the hope of the future.

Lyall Hunt

End Notes

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E. D. H. (Doug) Davey. Bentley.

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H. Gordon Andre. Kalgoorlie.

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TOIL OF THE LILLIES

In the fields in the fields
Goats are grazing cropping
The bitter grass fossicking
Gibber patch and salt flat
Finding little less nought.

In the fields in the fields
The cumbrous throb of machine
Dwindles and dies out. The wheels spin to a halt.
Mud hardens in the slurry pool.
The battery stops. Echoes die in the scrub.

In the fields in the fields
Red earth recovers from
The drench of storms
Swelling hard seeds to fracturing life.
Days pass until great tracts of blooms
Start up out of that unpromised land.

And feverish travellers
Passing through
We draw
No such glory
From our
Measured fields.

Glen Phillips

Chapter 8

Land Settlement and Farming Systems

Agricultural activity in the Yilgarn owes its origins to the expansion of European demand for wheat. From the eighteenth century on, the expanding population centres of the northern hemisphere initially imported grains from the Baltic countries and Russia, followed by the eastern seaboard of North America, the prairies and great plains of Canada and the U.S.A., then the Argentinian pampas and finally, Australia. Within Australia, the most accessible areas were exploited first—the near-coastal wheat lands of South Australia in the 1880s, the Wimmera and Mallee of Victoria in the last decade of the last century, and Queensland's Darling Downs and New South Wales east of the great divide in the 1900s. Western Australia's was the last of the world's great wheatbelts to be opened up and the Yilgarn, being on the fringe of this area, was amongst the last areas within the state to be exploited. These two factors of location and timing have given the development of farming in the Yilgarn two special characteristics. Being on the edge of agricultural settlement, the area has seen uncertainty and experimentation: uncertainty about the limits to agricultural expansion and experimentation with land tenure and farming systems. Secondly, because sustained development did not occur until the middle of the 1920s, farming was not fully established let alone consolidated by 1930 and the disruptions caused by depression and war caused more hardship, abandonment and retreat here than elsewhere.

The European settlement of the Yilgarn has gone through a number of quite distinct phases (see Figures 1 to 4). The first was characterised by extensive pastoral usage with only a small number of people involved and little impact on the environment. In the second, from 1922 onwards, the area of private and improved land increased dramatically, with a concentration on wheat cropping and with few livestock. More people lived and worked on farms then than before or since. The depression heralded the commencement of the third period—one of decline, which lasted for approximately twenty years. Farm population and the area sown to wheat plummeted and the area occupied fell dramatically. The period was prolonged by war, and it was not until the early 1950s that recovery gathered momentum. In this fourth phase, growth was led initially by the emergence of sheep grazing as the most important farming activity, as Figure 2 indicates. Over time, however, the expansion of sheep farming was outstripped by wheat cultivation, which led to extensions to the occupied area, and increases in the number of farms and the area of improved land until 1969. This period too, was one in which farms became fully

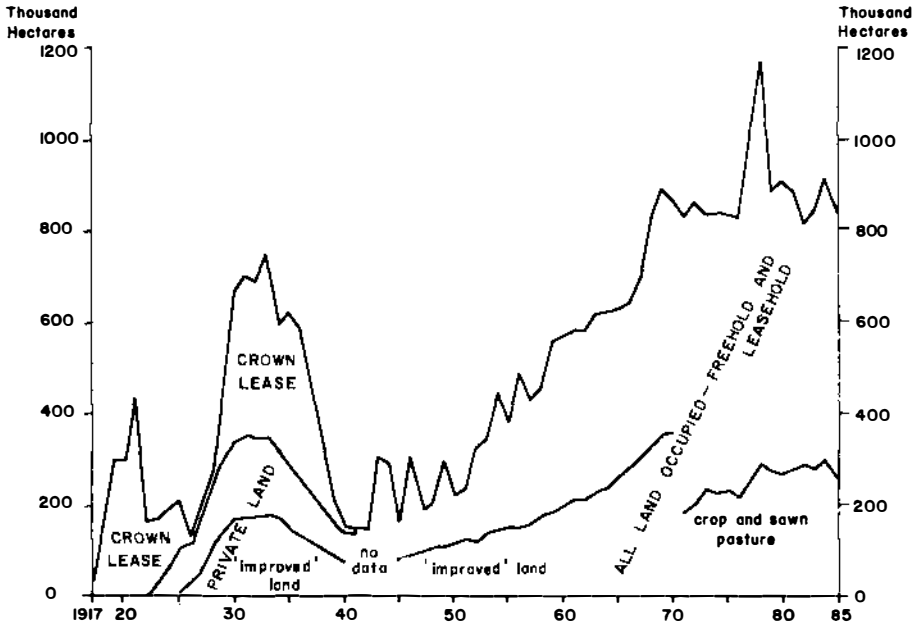


Fig. 1: Land Occupation and Use, 1917/18-1985/86.

Source: Australian Bureau of Statistics. Statistics of Western Australia.

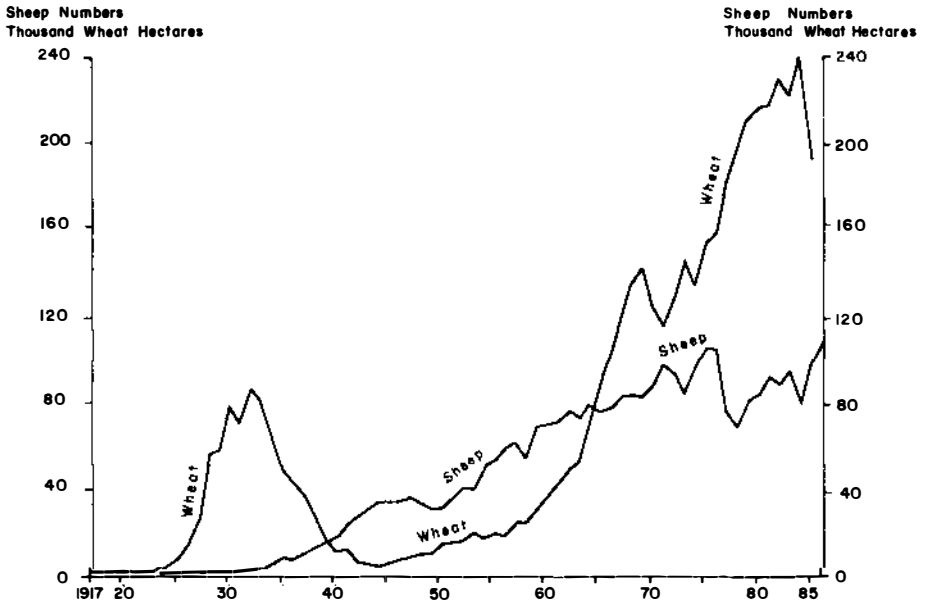


Fig. 2: Wheat and Sheep, 1917/18-1985/86.

Source: Australian Bureau of Statistics. Statistics of Western Australia.

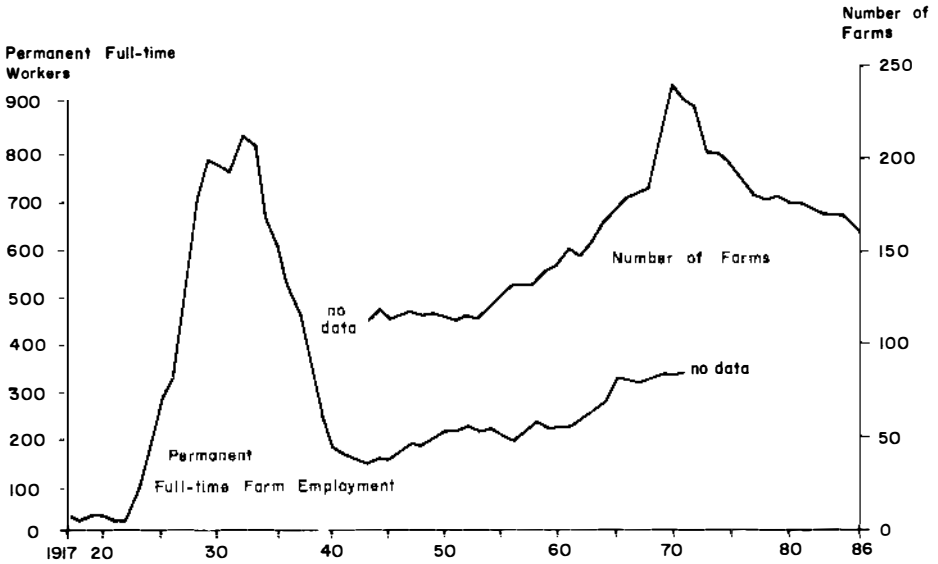


Fig. 3: Employment in Farming and Number of Farms, 1917/18-1985/86.
 Source: Australian Bureau of Statistics. Statistics of Western Australia.

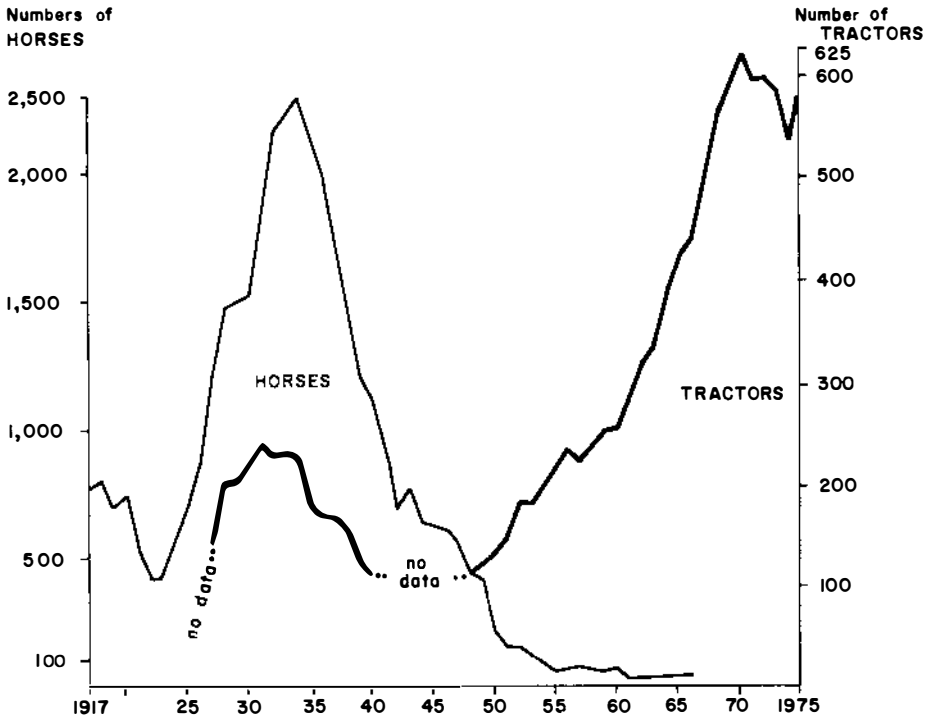


Fig. 4: Horses and Tractors, 1917/18-1975/76.
 Source: Australian Bureau of Statistics. Statistics of Western Australia.

mechanised, as reflected in the growth in the number of tractors and the decline in the use of horses. Since 1969, in a fifth phase, the pattern has become more confused. Whilst sheep numbers and the area sown to wheat have remained high and the area occupied has remained much the same, there has been a marked decline in the number of farms, but this time associated with increases in farm size, not in the abandonment of farm lands.

Early Pastoral Occupance and Agricultural Assessment

Sandalwood cutting and extensive grazing on pastoral leases were the first two land related activities in the Yilgam. George Clamp was probably the most prominent sandalwood cutter in the district, moving to Southern Cross from York in 1889. He and his sons cut many hundreds of tonnes of sandalwood along the railway line from Southern Cross to Coolgardie and in the Bullfinch-Golden Valley area. A sandalwooder could earn \$4 per ton pulling timber, using a horse and a light dray with a long chain to pull the wood out of the ground and then stripping the trees of top limbs and roots. In good country, one tonne per day could be cut and carted. Although based at Bencubbin, Clamp continued to be active in the Yilgam and was joined after the Great War by a handful of returned soldiers, attracted by the high price of sandalwood. These pioneers cut tracks and opened up waterholes that were used by the agriculturalists who followed, but their dominance was short lived. By the late 1920s the government, concerned that the resource was over exploited, introduced controls, licensed the industry and restricted the amount of wood that could be cut. The day of the sandalwood cutter was over.

Pastoral leases were large and used for grazing cattle on native pasture and edible scrub species, with a small labour force. The case of Lease 1199/102 illustrates the extreme nature of the land use. John Atkinson (Jnr), a Fremantle butcher, held 75,000 hectares in six separate leases including Lease 1199/102, south of Southern Cross. In 1914, the under secretary for lands agreed not to cancel the leases because of Atkinson's submission that "owing to the bad season he had no Fats for sale; his butchering business was in a bad way; he had an interest in a mine and hoped to be able to settle in two months".¹ The rents were paid, but in 1917 the leases were cancelled with Atkinson bankrupt and owing \$493.95. Ownership of the lease then passed to a discharged soldier, Horace Butcher, who also leased 920/94 north of Bullfinch. However, almost immediately subdivision of land for agricultural settlement was contemplated and negotiations for resumption commenced. Stock was transferred to the northern lease and a payment of \$300 was made for several miles of fencing, stock yards and seven hectares of clearing. The nature of this phase of occupance is illustrated in Figure 5. Pastoralists selected suitable areas in large tracts close to water. Some of Atkinson's leases are marked, to the east and south of Southern Cross, along with those of J. E. Kleesh and J. Garrett, a settler from Canada. North of Noongar, Garrett had relinquished an 8000 hectare lease. North of Bullfinch, C. G. Durbridge held a large area and Percy Forrester held leasehold land in the Turkey Hill area. Further south, and not shown on the map, N. C. Carter held two leases of 8000 hectares each around Mt Hampton and immediately to the west of Skeleton Rock which were cancelled in 1910. These became absorbed into the Mt Hampton Station of 100,000 hectares which extended southwards from Sandalwood Rock and westwards

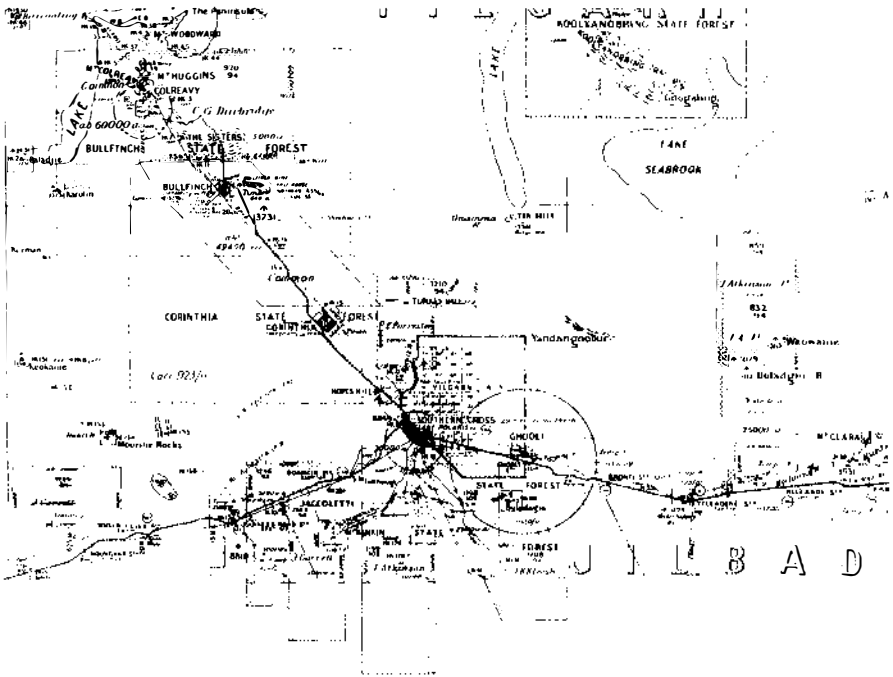


Fig. 5: Southern Cross area — pastoral leases, 1914.

Source: Department of Lands and Surveys. Map sheet 24/300. 1914.

almost to the Rabbit Proof Fence. Despite its size, the owner, Jack Eddy ran only 150 head of cattle on it.

Beyond the area where cropping was possible, pastoralists were to continue in occupation. For example, Jack Garrett held pastoral leasehold land to the north of Bullfinch in the 1920s, in addition to a farm near Southern Cross, and Samuel Clarkson moved his pastoral operations from the Cue area after a series of bad seasons and commenced a long association with Mt Jackson station. He too held cropping land within the agricultural area and used abandoned blocks in the 1930s for grazing purposes, as well as having slaughter yards and holding paddocks near the Southern Cross townsite. Some areas were held under pastoral lease for short periods only. S. G. Growden held a large area north of Koolyanobbing in the early 1930s and W. R. Ickeringill held 20,000 hectares north of Lake Deborah in the same period. It was only possible to use the land for extensive cattle grazing, partly because of the shortage of water, but also because of attacks on sheep flocks by wild dogs and dingoes. The McKenzie sheep station at Yellowdine was at one stage eaten out by dingoes.

Pastoralism and sandalwood cutting involved very few people and changes caused to the natural environment were difficult to detect. When people in any numbers did come to the Yilgarn, they were attracted initially by the lure of gold and not the possibilities of farming. After the first discovery in 1887, the Yilgarn attracted prospectors by their thousands. By 1894 the railway had reached the Yilgarn, and in 1896 a 32 kilometre wide band along it from Hines Hill to Southern Cross was classified by surveyors with a view to

settlement. In 1899 an Agricultural Area of 6000 hectares was established adjacent to the eastern boundary of the Southern Cross townsite and surveyed mainly into 160 acre (64.75 hectare) blocks suitable as homestead leases for part-time subsistence farming. The extent of the Area as shown in Figure 5 would indicate that eventually expansion of the small blocks was contemplated. Some of the mining-related developments are also shown in the same figure — in particular the reservation of large areas for timber supplies for use in the mines and as fuel for the pumping stations.

The prospectors not only represented a ready market for agricultural produce, particularly dairy products, but their main means of transport, horses and camels, also needed feeding. The creation of miners' homestead leases gave prospective commercial farmers a base on which to operate. Consequently, cropping gradually emerged, at first the production of hay and later, wheat. Early papers record T. Ellerby as the first to cut his own hay; Hugh McDonald, a butcher, ran cattle, pigs and sheep; A. Gaston ran poultry and grew fruit trees; J. Nunn specialised in hay fodder crops; Owen McMahon experimented with a small plot of less than half a hectare of wheat and a settler from South Australia, Percy Forrester, established the first commercial dairy and in 1904 grew the first commercial wheat crop of 1.2 hectares.

Methods in those days were primitive indeed. A forked stick dragged over the ground by a pony was used by Forrester as a plough; the seed was broadcast; the "plough" was used to cover the seed; and the crop was cut by a scythe. Later, he bought a single furrow plough and by 1915 had increased the area cropped to 80 hectares and was supplying Southern Cross with butter from his Minburra Dairy. Others followed suit: Edwin Chadwick who took up 170 hectares for hay cropping; Arthur Rogers who homesteaded 120 hectares; and the Reverend Orchard who was also involved in wheat cropping. In 1916 the *Southern Cross Times* reported the shipping of the first pigs out of the district by the Yilgarn Butchering Company, which also sent the first truck of wheat to Kalgoorlie from a crop that stripped 17 bushels to the acre (1.14 tonnes per hectare); and a yield of



Plate 1: Owen McMahon's Farm, 1908.
(P. T. McMahon Collection: Courtesy Patricia Lawton)

482 tons of hay from 75 hectares belonging to Alex Mackay. By 1910, a small but thriving group of agriculturalists had established themselves and had begun to put down roots. Small but comfortable houses were built (Plate 1) and from a base of horses and hay (Plate 2), experimentation with wheat cropping emerged. Yet, despite these developments, the area was still regarded as being climatically too marginal for reliable agricultural returns and the Agricultural Bank rejected Forrester's application for a farm development loan. In addition, the official description of the Yilgarn Agricultural Area, although evaluating the soils as "good", noted the "very light rainfall" and considered the area to have grazing potential only. However, by 1910, land had been surveyed in large contiguous blocks as far east as the No. 1 Rabbit Proof Fence in the Merredin district and it seemed only a matter of time before the surveyor's theodolite advanced further. The outbreak of the Great War interrupted this process, and in the early post-war years the initial focus was on general economic reconstruction and the settlement of returned soldiers within the already farmed districts. In the Yilgarn, the area in alienated holdings and pastoral leases declined, and livestock numbers and the number of people working the land remained relatively static.

The 1920s - Agricultural Foundations

The 1920s was a decade of enthusiasm - the Great War was over and at last the State could resume its unquestioned duty of settling its unused lands with pioneers to be attracted not only from Western Australia itself, but also from the eastern states and Great Britain. A larger population was what the State needed, and what more worthwhile activity was there than clearing the bush and transforming wastelands into productive farms?

Settlement Strategy

By the early 1920s, there was great demand for land in the wheatbelt, and two main ways were sought to cater for it. The first was through consolidation within the existing agricultural area, by the use of the medium and poorer quality lands that had been bypassed by earlier settlers. The second was by extending the settled area, initially in the Esperance region, and then in areas east of Kondinin-Lake Grace-Ongerup and along the goldfields railway and the Bencubbin-Mukinbudin line as it was extended eastwards to Lake Brown and Bullfinch. There were three prime considerations to the settlement strategy: the availability of land suitable for settlement; the availability of settlers (including migrants); and the access that such farmers would have to the major export port at Fremantle or alternatives at Albany, Bunbury or Geraldton.

In assessing land suitability, the surveyors focussed on soil quality, usually using vegetation types as indicators. Also of concern was accessibility to rail transport. It was considered that the maximum economic distance for wheat carting was 20 kilometres, so surveyors concentrated their efforts along the lines of existing or proposed railways. The final major consideration and the most difficult to assess, was rainfall. For many of these unsettled areas, rainfall records simply did not exist, and in their absence, a rainfall gradient away from the west and south coasts was assumed. Unsurprisingly, the rainfall

isohyets marked on maps were inaccurate and the placement of the ten inch (254mm) isohyet, regarded as the lower limit for grain growing, varied from map to map, but invariably lay somewhere between Southern Cross and Menzies. The location of this line even then, indicated one of the major problems that agriculture in the Yilgarn has always faced: where does the absolute limit to reliable long-term wheat cropping lie? Previously, this question had not been important, as soil quality and accessibility to rail transport were the prime considerations. The location of the No. 1. Rabbit Proof Fence, built in 1906, was somewhat arbitrary, but came to be regarded as a possible boundary to wheatbelt expansion south of the goldfields railway, that is until settlement expanded eastwards of this somewhat artificial barrier.

Pressure for more land

Pressure for agricultural development did not come only from the wave of expansion of settlers from the wetter western areas. Settlers in the core of existing farming in the district close to Southern Cross and non-farming residents around Bullfinch also argued for the release of more land. In October 1919 the premier instructed that agricultural settlement prospects in the Yilgarn be investigated and G. L. Sutton, the director of agriculture and district surveyor Lefroy visited the Bullfinch area. Although there was no cropping there at that stage, the farms of Stacey, Nunn, Forrester and Alice Kennedy further south were visited. Nunn held 600 hectares with 200 hectares cleared, of which 100 hectares were under crop. His land was only partly fenced and he grazed 60 head of cattle and 16 horses. Forrester had most of his 650 hectares fenced, with a 120 hectare crop and 100 head of cattle and 30 horses. Both conducted dairies and marketed their products locally. However, although both farming operations were regarded as successful, Sutton's main concern was the rainfall of the area, which he considered too unreliable and marginal for farming based on cropping. As a consequence, the main recommendation was that, within 40 kilometres of the goldfields railway, land should be thrown open for selection under a grazing leasehold tenure, with leases ranging in size from 5000 acres to 20,000 acres (2023-8094 hectares) and capable of carrying 2000 sheep (or the equivalent in other stock). The leases were to be subject to conditions of adequate water conservation, the erection of boundary and other fencing, and the preservation of timber and scrub to prevent erosion. However, in recognition of the successful cropping that had already been pioneered by Forrester, Nunn and others, it was also proposed that within each grazing lease a settler be permitted to select up to 2560 acres (1036 hectares) as a "grazing farm" on a freehold basis with the right to clear and crop 1000 acres (405 hectares), subject to residence and improvement conditions. Because of the value attached to the improvements required, the price to be charged for the "grazing farms" was to be nominal. The main aim was not to raise revenue but to develop the district. These proposals were significant in their attempt to provide a form of land tenure suitable for farming systems in marginal areas. What was sought was an alternative to the more extensive forms of pastoral land tenure suitable for the clearly semi-arid areas where cropping was undoubtedly impossible, and the conditional purchase which was the norm in areas where cropping was clearly climatically feasible. It is likely that for Sutton, the mixture of lease and farm was a compromise. From a study of the rainfall records he



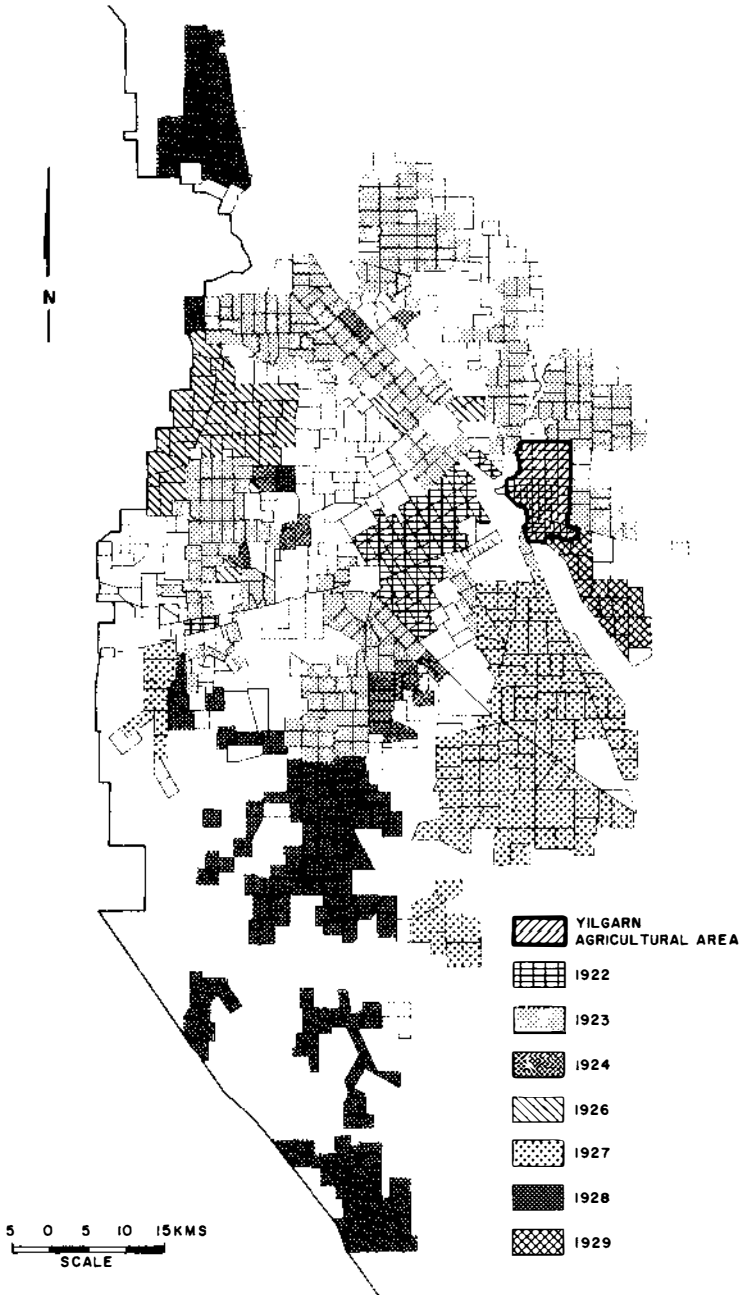
*Plate 2: Agricultural beginnings — horses and hay, 1908.
(P. T. McMahon Collection: Courtesy Patricia Lawton)*

believed that the area was too risky for permanent cropping, but in the face of the reality that cropping was already taking place, apparently with some success, he felt obliged to permit it to continue. The compromise also recognised that normally no clear line can be drawn between agricultural and pastoral areas; that between them lies a zone which, given favourable economic and climatic conditions, may be suited to one or the other of these two main activities. Such a system was different from the rotational mixed wheat-sheep farming of wetter areas, in that a relatively larger area of semi-improved pastoral land was envisaged.

The mood of the times, however, worked against consideration of the proposals. In February 1921, the Mines Department agreed to the release of an area near Bullfinch for agricultural settlement and on 21 June, 1922, a public meeting at Bullfinch asked for the release of more land. As a result, the surveyor general recommended that land be made available in the area, as well as in the safer forested country between Carrabin and Southern Cross. He did, however, add a cautionary note calling attention to Sutton's opinions and the reluctance of the Agricultural Bank to make advances in the locality. By this stage, agricultural settlement along the goldfields railway line had reached the Yilgarn Road Board district's western boundary and the remainder of the 1920s was punctuated by requests from the board for the opening up of more land — in November 1922 in the Southern Cross-Parker's Road area; in early 1924 in the area along the proposed Bencubbin-Bullfinch railway line; and in 1927 in the Dulyalbin area. The land rush was on.

The Process and Progress of Land Release

From 1922 to 1929, land was progressively classified, surveyed and offered for sale, usually with conditions of residence, improvement and payment over 25 years. In most



*Fig. 6: Major land releases, 1922-1929.
Source: Government Gazettes. 1922-1929.*

years quite large contiguous areas of land were subdivided into blocks of a size believed sufficient to support a farming family. As Figure 6 shows, subdivision and sale proceeded from areas of heavier soils located close to the railway lines, to infilling and extensions further to the north and south. Other individual blocks were taken up by application before survey, or were offered as isolated releases. Figures 7 and 8 give examples of the details of the major land releases, commencing with the first openings in December 1922. In the early years a unit size of 1000 acres (405 hectares) was considered sufficient. Later, block size was increased in areas of lighter land and less reliable rainfall to as much as 3800 acres (1540 hectares). The actual size of a block was only one criterion. Of greater importance was the amount of cultivable land and the anticipated rainfall. An inspection of the details provided in Figure 8 of two 1928 releases illustrates these points. The Lake Deborah blocks and their cultivable areas are larger, in part at least because of their more climatically marginal location. In addition, within each release individual blocks varied in size depending on the amount of cultivable area contained. The desire to create a neat, near-rectangular survey grid also exerted an influence, so the relationship is by no means perfect.

Prices too, varied. Although these were based on the assessed land quality, there was a trend through the 1920s for land to become more expensive, with most blocks offered in 1922-23 ranging in price from 90c to \$1.10 per acre (\$2.22 to \$2.72 per hectare), in

Yilgarn District (between Doongin and Parker's Road).				Jilbadji District (6 to 14 miles South of Nulla Nulla).			
Corr. No. 5033/22.				Corr. No. 5001/22.			
Open under Parts V. and VI. (Plans 36/S0, and Locations near Doongin.)				Open under Parts V. and VI. (Plan Locations near Parker Road, Sheet 2.)			
Location No.	Area.	Price per acre.	Remarks.	Location No.	Area.	Price per acre.	Remarks.
	a. r. p.	£ s. d.			a. r. p.	£ s. d.	
431 ...	996 3 20	0 11 0	Classifications, pages 6 to 21 of 5033/22. Areas are subject to alteration if found necessary on examination of original plans.	322 ...	1,099 0 0	0 8 9	Classifications, pages 47 to 71 of Corr. 5001/22. Location 350, containing about 423a. 1r. 7p., is hereby set apart as Reserve No. 18440 for "Water". Areas are subject to adjustment if found necessary on examination of original plans. Subject to the Minlog conditions respecting the selection of land in this District.
432 ...	1,000 9 0	0 10 6		323 ...	1,080 0 0	0 8 0	
433 ...	999 3 24	0 9 0		324 ...	1,070 0 0	0 8 0	
434 ...	1,000 0 17	0 9 0		325 ...	1,120 0 0	0 8 9	
435 ...	1,000 0 0	0 10 6		326 ...	1,051 0 0	0 9 0	
436 ...	1,000 0 22	0 10 0		327 ...	1,050 0 0	0 9 0	
437 ...	1,000 1 1	0 11 0		328 ...	1,046 0 0	0 9 0	
438 ...	999 3 10	0 10 6		329 ...	1,828 0 0	0 8 0	
439 ...	999 1 35	0 9 6		330 ...	1,040 0 0	0 9 0	
440 ...	996 0 2	0 9 0		331 ...	1,040 0 0	0 9 0	
441 ...	1,000 1 8	0 11 0		332 ...	1,039 0 0	0 9 0	
442 ...	1,000 0 2	0 9 6		333 ...	1,113 0 0	0 8 0	
443 ...	1,000 0 15	0 10 0		334 ...	1,028 0 0	0 6 6	
444 ...	999 2 35	0 10 6		335 ...	1,200 0 0	0 7 6	
445 ...	999 3 30	0 10 0		336 ...	1,177 0 0	0 8 0	
446 ...	1,000 2 16	0 9 0	337 ...	1,287 0 0	0 7 6		
			338 ...	1,012 0 0	0 8 6		
			339 ...	990 0 0	0 8 0		
			340 ...	1,099 0 0	0 8 0		
			341 ...	1,000 0 0	0 8 0		
			342 ...	1,095 0 0	0 7 6		
			321 ...	1,160 1 39	0 8 6		
			320 ...	1,259 3 38	0 6 6		
			319 ...	1,004 3 36	0 6 6		

These locations are available subject to the inclusion of the following clause in the leases thereof:—This lease is subject to the right of any person being the holder of a Miner's Right to enter on the land for prospecting purposes, and also to a right reserved to the Crown, in addition to the statutory rights of resumption, to resume the said land or any portion thereof, and to declare the same to be Crown land within the meaning and for the purposes of "The Mining Act, 1904," without compensation, excepting for the value of the improvements (if any) then being on the land so resumed.

Subject to the conditions that the Goldfields Water Supply or anybody authorised by it shall have the right to remove timber from the land at any time, and that the holder of the block shall not be permitted to sell the timber, but shall have the right to kill or clear it for the purpose of preparing the land for cultivation or grazing rendered necessary by legitimate farming operations.

Subject, also, to the condition that no application will be approved unless the applicant can satisfy the Minister that he possesses the necessary capital to successfully develop the holding by providing his own working plant, seed, super, etc., and bearing half the cost of the developmental work, as the maximum advance which will be granted in this locality on any approved holding will be £625, and then only on the basis of half the value of the improvements effected.

Provided, also, that each successful applicant must leave a strip of growing timber (if existing), one chain in width, along the North and East boundary of his holding as a breakwind.

Fig. 7: Land openings, December, 1922, November, 1923.

Source: Government Gazettes. 26 November 1922, 2178; 16 November 1923, 2214.

comparison with the blocks opened in 1928 which, with some exceptions, were valued at between \$1.00 and \$1.60 per acre (\$2.47 to \$3.95 per hectare).

By 1930, the bulk of the core agricultural area of the Yilgarn had been classified, surveyed and offered for sale. In addition to the major releases shown in Figure 6, an area of special settlement south of Southern Cross was created in 1927 to settle dusted miners suffering from silicosis. Because this episode is the subject of another chapter, only passing reference will be made to it here. By 1929, 92 ex-miners had received assistance. In 1930, 8577 hectares were cropped and it was reported that the settlers had made excellent progress.²

Yilgarn District (near Lake Deborah).					Jilbadji District (near Dulyalbin).								
Corr. No. 2546/25.					Corr. No. 1668/28.								
Open under Parts V. and VI. (Plan Locations near Lake Deborah, and 53 & 54/80.)					Open under Parts V. and VI. (Plan Locations near Dulyalbin, and 23/80.)								
Loc. No.	Area.		Price per acre.		Area Cultivable Land.	Loc. No.	Area.		Price per acre.		Area Cultivable Land.		
	a.	r. p.	s.	d.			a.	r. p.	s.	d.			
1076	2,024	0 32	10	6	1,224	0 0	*486	1,000	1 15	14	0	825	0 0
1075	1,738	0 15	11	6	1,163	0 0	†487	1,011	3 4	14	3	872	0 0
1074	1,606	0 19	12	6	1,106	0 0	*488	1,001	1 20	15	9	960	0 0
1073	1,538	0 12	12	0	998	0 0	*489	1,215	2 15	11	6	763	0 0
1072	1,508	1 20	11	9	1,028	0 0	*490	1,005	1 0	16	0	1,005	1 0
1068	1,989	0 29	11	3	1,100	0 0	*491	1,466	1 15	10	9	801	0 0
1067	1,841	2 3	11	3	1,050	0 0	*492	1,005	1 15	16	0	1,000	0 0
1066	1,597	3 38	11	3	1,000	0 0	*493	1,028	2 38	12	6	664	0 0
1065	1,420	0 0	11	3	1,090	0 0	*494	1,201	2 34	10	9	616	0 0
1064	1,216	0 36	15	0	1,121	0 0	*501	1,171	3 28	14	6	894	0 0
1063	1,216	0 24	15	0	1,134	0 0	*502	1,019	0 3	13	6	803	0 0
1062	1,397	2 22	12	0	1,017	0 0	*503	1,189	3 2	13	6	924	0 0
1059	1,106	1 4	15	9	1,064	0 0	*504	1,223	0 31	10	9	727	0 0
1060	1,014	0 3	16	0	1,014	0 0	*505	1,519	3 25	10	3	739	0 0
1061	1,012	1 35	16	0	1,012	0 0	*506	1,913	3 35	9	0	865	0 0
1058	1,524	2 13	14	3	1,282	0 0	*507	1,586	1 29	10	9	849	0 0
1057	1,167	2 13	16	0	1,167	0 0	*508	1,000	0 31	12	3	710	0 0
1056	1,532	0 28	14	3	1,310	0 0	*509	1,430	0 35	10	6	754	0 0
1055	1,214	3 19	16	0	1,214	0 0	‡510	1,107	2 13	10	9	540	0 0
1054	1,620	3 29	13	9	1,320	0 0	*511	1,411	3 27	10	9	766	0 0
1053	2,720	1 13	9	0	1,195	0 0	*512	1,287	2 3	11	3	691	0 0
1052	1,585	3 10	14	0	1,316	0 0	*513	1,099	3 28	13	0	764	0 0
1051	1,683	2 34	14	0	1,306	0 0	*514	1,420	2 16	10	3	611	0 0
1050	1,737	1 16	12	0	1,032	0 0							
1049	1,046	0 14	15	6	1,046	0 0							
1048	1,412	0 20	15	6	1,356	0 0							
1047	1,150	1 24	15	6	1,144	0 0							
1046	1,554	0 27	12	0	1,242	0 0							
1045	1,085	2 0	15	3	1,030	0 0							
1044	1,619	2 10	10	9	020	0 0							
1043	3,290	1 31	5	0	622	0 0							
1042	3,751	3 8	7	0	1,298	0 0							
1041	1,543	0 25	10	6	050	0 0							
1040	1,194	3 13	10	6	905	0 0							
1039	1,415	2 15	11	0	790	0 0							
1038	1,508	0 35	11	6	1,040	0 0							
1037	1,282	1 15	11	6	1,090	0 0							
1036	1,684	2 2	11	3	1,124	0 0							
1035	1,355	2 00	14	0	1,205	0 0							
1034	1,316	3 14	14	0	1,256	0 0							
1033	1,164	3 0	12	6	1,000	0 0							
1032	1,095	1 15	12	6	1,025	0 0							
1031	2,918	3 25	8	0	1,200	0 0							
1030	1,083	1 8	14	0	1,083	0 0							
1029	1,083	2 35	14	0	1,083	0 0							
1028	1,000	2 0	10	6	1,220	0 0							
1027	1,232	2 0	12	9	950	0 0							
1026	1,120	1 23	13	0	1,060	0 0							

* The Agricultural Bank Trustees are prepared to make a maximum advance of £1,300 on these locations under Loan No. 2 conditions, which provide the maximum of—
 25s. per acre for clearing.
 5s. per acre for following.
 £50 for dwelling.
 £100 for water supply.
 £150 for stock and plant.

† The Trustees will be prepared to consider an application for a loan on this location, subject to inspection.

‡ No advance will be made on this location.

The Government retains the right to resume free any land required for railways, townsites, or any other public purposes.
 Subject to the payment of the value of improvements (if any) to the Minister for Lands.
 The Agricultural Bank Trustees will consider applications for advances only on standard blocks not more than 12½ miles from an existing or authorised railway on conditions which at present apply to the Bullfinch area, viz.—maximum for clearing 25s. per acre, and 5s. per acre for first following only.

Fig. 8: Land openings, April-May, 1928.

Source: Government Gazettes. 13 April 1928, p.937; 4 May 1928, p.1075.

The Role of the Agricultural Bank

The Agricultural Bank was an integral part of the settlement process. Its role was to advance monies to settlers at low rates of interest principally for developmental work including clearing and fencing, and the purchase of livestock and farm machinery. Although it increasingly became an instrument of government policy, operating as a social institution rather than as a cautious banking concern, it was justifiably wary in its approach to advancing funds to farmers in the lower rainfall areas. Yet, pressed by the government policy of agricultural expansion, the bank was forced to formulate a policy for such districts and in 1920 five returned soldiers in the Agricultural Area were being assisted "by way of experiment".

In 1922, the Yilgarn was divided into two districts by the bank. To the west of Moorine Rock, advances of up to \$2000 for development purposes were to be made; to the east, the maximum was restricted to \$1250, and was not to exceed 50% of the value of proposed improvements. In addition, it was required that each holding contain not less than 640 acres (259 hectares) of "first class forest country" and be within twenty kilometres of a railway line.

Yet the bank remained under considerable pressure to liberalise its terms. On 28 June, 1924, the *Southern Cross Times* called for the district to receive full financial assistance, using the argument that if Noongar could get 100%, so too should Parker's Road. After inspecting the area, the trustees held a meeting with 50 local settlers at Bullfinch. The prevailing optimism was reflected in the report of the meeting in the *The West Australian*. Under the caption "Bank Trustees Impressed", the managing trustee of the bank, McLarty, was reported as claiming that "a new province had been added to the wheat lands of the State" and that the bank had agreed to lift the restrictions on lending to farmers west of Moorine Rock. Unfortunately, the bank's actual recommendation was much less liberal: its only advice was that existing settlers were to be allowed \$2.50 per acre (\$6.18 per hectare) to clear up to an additional 250 acres (101 hectares), the work to be carried out by the settlers themselves. The trustees were torn between their fears concerning unreliable rainfall and the realities of the performance of established farmers in the area.

Eventually, after intense pressure from settlers, early in 1927 full advances of \$2600 were extended to the area. Yet the bank's uncertainty about the area to the north and east of Bullfinch remained — so much so that in mid-1927 the manager advised the under secretary for lands that bank support was to be withdrawn.

This caution appears not to have applied to other areas in the Yilgarn, as can be seen from details of the major releases made in 1928 and 1929. In the Dulyalbin, Gibb Rock and South Ghooli areas advances of up to \$2600 were offered, whilst north of Lake Deborah, although funds were more limited, some financial assistance was available. Thus, the development of land even at the northern, eastern and southern extremities of the agricultural zones in the Yilgarn was possible with Agricultural Bank support at the end of the 1920s.

Over the years the bank had also liberalised its policy in other ways — the limit of support was extended to 32 kilometres from a railway line for certain classes of land; "second class" and "light" lands became eligible for some development assistance in 1927; and loans for fallow land were made more extensive in 1929.

The Yilgarn Experimental Farm

As more settlers arrived in the Yilgarn, an increasing need for a state experimental farm was perceived. At the time local farmers relied on advice from the Merredin experimental farm, 110 kilometres to the west with some field trials also being undertaken on Richards' farm near Southern Cross. An area of 2000 hectares of mainly heavy "first class" soils supporting salmon gum and gimlet forest in three blocks at Ghooli was temporarily reserved for such a purpose, but no further action had been taken by mid-decade.

Consequently, at Southern Cross on the 17 February, 1926, a deputation of settlers waited upon the premier and urged that an experimental farm be established at Ghooli. Sutton inspected the site at the end of April and also looked at land 70 kilometres further east, much to the consternation of the settlers. The secretary of the Yilgarn agricultural society, W. E. Landon, immediately wrote to the minister expressing the settlers' concerns and pointing out the advantages of the Ghooli location including closeness to Southern Cross and the farming community it was to serve. Sutton eventually agreed and the station was established in December, 1926, but not officially opened until nearly two years later on 26 May, 1928. In a report on the event in the *Southern Cross Times*, the headline "A KEY TO FIVE MILLION ACRES", reflected the community's hopes for the future of the district and the further expansion of farming.

Although the first land had been ploughed in 1927, the experimental farm had little time to establish itself before the depression. In 1928, a start was made on time and rate of seeding, superphosphate application and seasonal planting experiments. In 1929, depth and time of ploughing, and nitrogen experiments were also commenced. However, by 1930 the on-going trials had not reached a stage where results could be reported in anything but a most tentative and preliminary fashion. Significantly, no work into pastures or livestock was undertaken and it was not until 1929 that a flock of 50 sheep was introduced, and then only to clean up fallow land.

Railway Development Proposals

Access to markets was an essential ingredient in the settlement process. By the early 1920s, the goldfields railway and the Southern Cross-Bullfinch line (both built for mining purposes) were able to take on the additional function of providing for agricultural settlers, particularly to the north of the goldfields line, where the only areas outside of the 20 kilometre limit were to the north and west of Keokanie and Kerman Rocks and north of Lake Deborah. There was much competition from settlers seeking railway lines through their particular districts. Westonia, Geelakin and Goomarin residents in particular lobbied hard in support of their areas and it was not until 1926 that it was decided that the rail loop from Mukinbudin through Lake Brown linking to Bullfinch should be constructed, and it was not until 1928 that it was completed. To the south of the goldfields line, the need for rail facilities was also recognised, and in November 1924, a deputation led by C. Andre of Marvel Loch waited on Minister for Agriculture Troy to argue for a railway line from Southern Cross to Ravensthorpe, on the basis that "There were millions of acres of good country through which such a railway would pass" and "If the line ... were joined to

Hopetoun, the harbour there would be a natural outlet and a natural port for the District of the Yilgarn".³ Although expressing interest, Troy cautiously suggested that settlers should become more established in the Southern Cross area before any major expansion were contemplated. Such a bold scheme was ahead of its time, as the proposed railway was to pass well to the east of the cutting edge of the settlement wave then just approaching the Lake Grace area.

The 3500 Farms Scheme

The 3500 Farms Scheme was a proposal on a scale never before contemplated in the State. Within a single planning operation, over a five year period, two vast areas totalling nearly three million hectares between Southern Cross and the southern coast, and from Mollerin eastwards were to be subdivided into 3500 farms. These were to be for Australians and British migrants, serviced by over 1000 kilometres of railway line, a road network and water supplies, and funded from the State, Australian and British treasuries. The scheme was part of the broader agreement reached between governments for the funding of migration from Great Britain and agricultural development in Australia. For Great Britain, population pressure and unemployment was to be relieved; for Australia both capital and labour were to be provided for development projects.

Western Australia had already participated in two earlier British-Australian schemes which had established Group Settlement in the south-west corner of the State and had provided water supplies and railways in parts of the wheatbelt. Surveyor General Camm already had in mind an ambitious proposal for the development of areas north and west of Salmon Gums and in 1926 a surveyor reported favourably on the region. Buoyed by these findings, in August 1927 he set up an advisory committee to recommend a scheme for land settlement and development under the migration agreement. In its report, the committee identified a large area for settlement and the map accompanying the report marked an even larger area, extending to the south coast between Esperance and Ravensthorpe (see Figure 2.4). It was the committee's belief that, although there was a paucity of rainfall records, the area could sustain at least 3000 wheat and sheep farms. The cost, however, would be high. To place each settler within 20 kilometres of a railway would require 1040 kilometres of line, costing \$5.9 million, with an additional \$0.6 million for railway water; water for settlers would cost \$1,000,000, with a similar sum for roads, giving a grand total of \$8.5 million for the basic development work and a further \$9 million to be set aside for loans to settlers on the basis of \$3000 per settler. In its enthusiasm, the committee believed that all the holdings could be surveyed by the end of 1929 and the whole programme completed within five years.

The Development and Migration Commission accepted the proposal in principle. In the 3.2 million hectares involved, 3500 farms would be created and it was predicted that the area would produce 12 million bushels of wheat and support 1 million sheep. If realised, these figures would have represented a 20% increase in the State's wheat production and a 12% increase in sheep numbers. On the basis of this preliminary approval, the State extended settlement southwards from Southern Cross into the Miners' Settlement and the Dulyalbin, Mt Hampton and Holleton areas of the Yilgarn as well as into areas east of Lake Grace in the belief that railway and water facilities would soon

follow under the 3500 Farms Scheme. Given the capital cost, however, it is not surprising that the commission required a complete classification of the whole area and a plan for a rail net, which was provided by the Railways Advisory Committee in 1930 (see Figure 9). The State migration committee requested details of proposed roads, town sites and water supplies. In addition, Dr. Teakle of the Department of Agriculture undertook a preliminary soil survey west of Salmon Gums in early 1929. His report was in the main positive, but his recommendation that slightly under one half of the area he inspected, the equivalent of 250 farms, be excised from the scheme because of "alkali" (soil salt) problems, was viewed with sufficient alarm by the commission for it to require a more detailed soil analysis. Even before Teakle had reported, the Agricultural Bank was having second thoughts. Because of a series of crop failures in the Salmon Gums area, the bank declined to make any advances in the mallee country south of Salmon Gums and, as the surveyor general pointed out to the under secretary for lands, this decision "is bound to have a serious effect on our new Land Settlement Scheme".

Further investigations by Teakle at the end of 1929 confirmed that the salt problem was serious and, although his reports were attacked in the press by "boosters" such as Sir James Mitchell, the sobering truth of the limits to expansion dawned as the depression bit, and were well summed up by an editorial in the *West Australian* of 19 October 1931:

The boom in agriculture in the years after the War was a perfectly natural result of high prices, good seasons, and government policy. Before the War each new district was opened up with some trepidation. What is now the very heart of our wheatbelt was once regarded as doubtful wheat growing country on account of its climate. One by one new districts proved their suitability for wheat production until governments, government departments and would-be selectors threw caution to the winds and embarked on an orgy of wheatbelt extension which culminated in the 3500 Farms Scheme. Dr Teakle's adverse report on certain types of soil and the fall in the value of wheat fortunately arrested this scheme . . .

This editorial was the epitaph for farming in the Yilgarn in the depression years. However, unresolved problems remained for farmers in the south Yilgarn and The Lakes district east of Lake Grace, who had taken up land in anticipation of railway development. In 1932, the railways advisory committee noted that there were 449 settlers (including 92 British migrants) further than 24 kilometres from a railway line; that wheat carting subsidies had cost the State \$16,028 in the 1930/31 season; that \$173,124 had already been spent on roads and water supply; that the Agricultural Bank stood to lose the \$430,282 advanced to settlers (plus interest) and that it would cost \$640,000 to remove the settlers and establish them on farms closer to rail communication. Five railway proposals were considered, and the committee recommended a sixth, which included a 150 kilometre line linking Southern Cross to Hyden. Not only would such a line serve the 249 settlers within 24 kilometres of the route, but a further 40 unallotted but surveyed locations amounting to 30,000 hectares would also be served, along with a further 270,000 hectares of unsurveyed and unoccupied crown land. The recommendation, however, came to nothing. Caught by the depression at a stage of only partial development, the southern parts of the Yilgarn not only had to battle with poor prices and uncertain seasons but also with a faulty, partially-completed infrastructure, with the

essential elements of rail communications and water supply lacking. To the north, more land was not released north-west of Bullfinch, so that although the Mollerin eastwards railway line was extended as far as Bonnie Rock by 1931, the servicing of a struggling settler population was not a problem in that area.

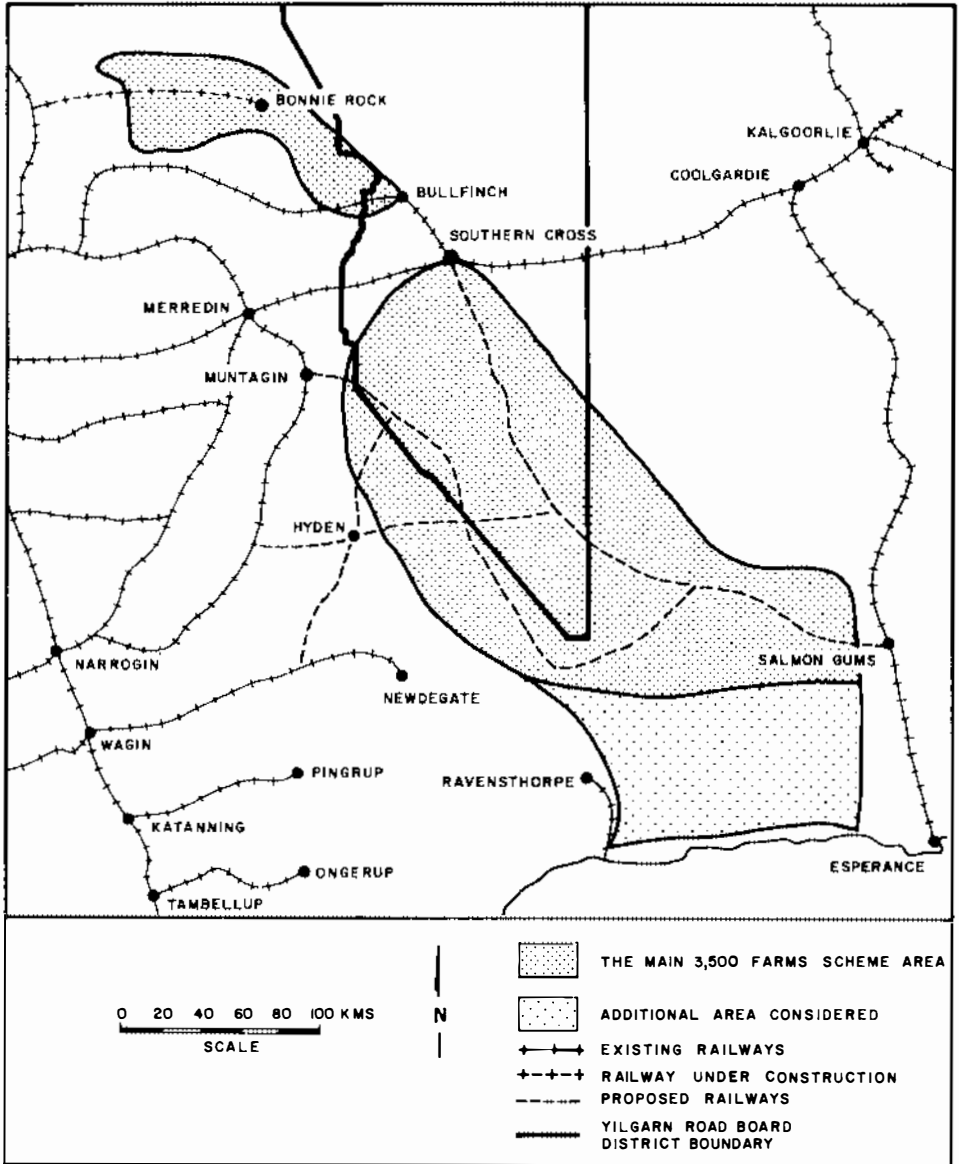


Fig. 9: The 3500 Farms Scheme area, 1928-1929.

Source: Department of Lands and Surveys. File 4031/27. Land Settlement Scheme under Migration Agreement. Appointment of Advisory Committee; and map of "Migration Agreement Works, 3000 Farms Scheme. Proposed Railways". July 1929. Battye Library.

The problem of water

Conservation of water is the urgent and special need of many farmers in the Eastern Agricultural areas. Not only is it the key to the greater prosperity which is possible in these areas, but it is essential for the retention of a healthy, contented and happy community ⁴.

The provision of water supplies from farm dams was a particular problem in the areas of relatively porous soils that were the first to be opened up in the Yilgarn. Consequently, a galvanised iron tank to trap roof rainwater was usually one of the first farm purchases. Although this catered for domestic water supplies for most of the year, water was frequently in short supply in summer, particularly when the narrow rainbearing tracks of summer thunderstorms passed settlers by. Water carting became essential, even in the period before sheep became common, for there were other livestock to be watered — principally horses and the house cow. The problem of water for stock and domestic purposes was recognised early. In 1921, surveyor Macartney observed a man carting from the goldfields pipe to his block 24 kilometres away, which occupied him for a long day at least once a week, thereby taking up one-sixth of his working time. He observed: "If small pipes were run out along main roads to supply new settlers it would give them more time to improve their holdings and make their conditions much pleasanter".

Settlers were quick to recognise the potential supply from the Goldfields Water Supply and in 1922 the Returned Soldiers' League requested a pipeline from east of Southern Cross northwards into the Agricultural Area where seven returned soldiers had their farms. Because of the small number of settlers involved, no immediate action was taken, but the district was considered as part of a much larger area from east of Bodallin where investigations of water supplies were made over the decade. Each year there was at least one such deputation from progress associations and other groups of residents from every district within the Yilgarn. The dire need for water was stressed, along with the difficulty in building useful dams, the saline bore water, the growth in cattle numbers and the inconvenience, for example, of two settlers carting water thirteen kilometres to their blocks in kerosene tins. The Primary Producers' Association, the Wheatgrowers' Union and the Returned Sailors' and Soldiers' Imperial League also made submissions. Individuals and groups lobbied the Water Supply Department, local members of parliament and the minister, to little effect.

Faced with the pressure from these different groups, the Public Works Department set about devising a plan to reticulate the entire area both north and south of the railway line and by 1926 had produced a scheme to service 211 holdings (103,000 hectares) using 338 kilometres of pipes in 13 extensions costing \$176,000. One part of this was installed at Moorine Rock in 1926 to serve an area of 10,500 hectares and costing \$20,000. The unavailability of funds, however, delayed the implementation of the major part of the plan. The Agricultural Bank's unwillingness to lend the full amount to settlers was not encouraging, nor was their own engineer's assessment that the area would not sustain successful wheat growing over a 20 year period. In 1927, the scheme was reduced in size to one which would serve 154 settlers with 192 kilometres of pipes and the migration committee was unsuccessfully approached for funding. With the onset of the depression in 1930, any chance for a major scheme appeared lost.

Two small schemes, however, were completed. In 1931, on the basis of a claim that Sir James Mitchell had promised a water supply to soldier settlers in the Wheatley area, a pipeline was constructed. However by then only four settlers remained and the pipe was later removed. A similar promise of water had been made for the Miners' Settlement area and partial reticulation from the Marvel Loch main was provided in 1930. A water supply network was also part of the planning for the 3500 Farms Scheme area further south in the Dulyalbin-Mt Hampton-Holleton areas, but as the scheme collapsed, so too did the hopes of water reticulation.

With the onset of the depression, then, the Yilgarn was left with only a partial water reticulation infrastructure. This frustrated farmers who could see water pipelines so close, and yet so far in terms of the likelihood of there being any extensions to them.

The Progress of Farming in the 1920s

Although the 1920s finished on a low note with the dramatic drop in wheat prices, much had been achieved over the decade. Figure 10 shows the extent to which land had been taken up, but it is somewhat misleading and the precise number of farms is unknown. Problems in calculating the number of farms arise because the acquisition of a block did not necessarily lead to occupation and development. The *Southern Cross Times* claimed on 31 June, 1924, that, of the 140 blocks that had been allocated in the district, many were unoccupied, leading to a need to prevent dummyming and to "weed out the undesirables". Many blocks were "occupied" more than once, some four or five times, with a succession of would-be settlers relinquishing their allocations without having worked on them. In some cases they had not even seen them. In others, settlers made a start to clearing but found the isolation and pioneering conditions too difficult. Thus, by the early 1930s, although some 700 blocks of 1000 acres (405 hectares) or more had been taken up in the Yilgarn — in so far as they appeared in the road board's rate books, some of these undoubtedly were not actively developed. On the other hand, some settlers had begun the process of acquiring more land. Approximately 60 held 2000 acres (810 hectares) or more, although none had advanced sufficiently for it to be possible to identify the hard core of sturdy pioneers who were to persist through the depression and war.

Also unknown is the total Yilgarn farming population of those times. Figure 3 shows that the number of men permanently employed in farming rose to a peak of 837 in 1932, which would probably have meant a family farming population of over 2500. Certainly there were more people on farms then than before or since. Figures 1, 2, and 4 show other aspects of progress in the decade — particularly the land clearing that had taken place, the almost exclusive concentration of wheat growing and the reliance on the horse for farm work. The settlers came from a variety of backgrounds. Some were returned soldiers, some English migrants; many were young but some already had wives and families; some already had farming experience, but many more had none. Young single men in particular were first attracted to the district as farm labourers, undertaking a variety of jobs such as fencing, wheat carting, bag-sewing, seed grading and pickling, land clearing or root picking, depending on the season. In the Miners' Settlement area, special circumstances applied and a core of southern European settlers who were to make such an important contribution to the development of the area were noticeable. The

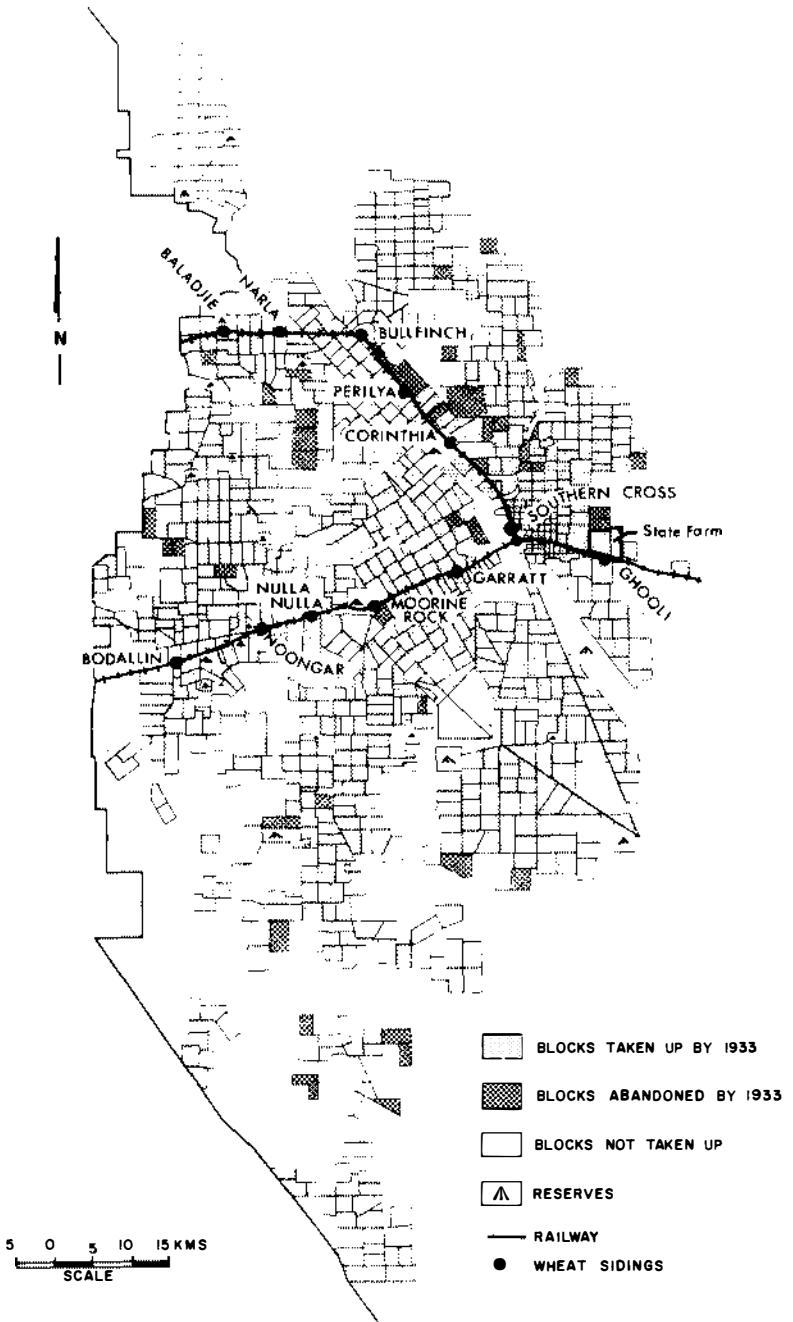


Fig. 10: Land taken up by 1933.

Source: Department of Land Administration. Registration and Deeds records.

progress of pioneer farming and the social life of settlers have been described in detail in two recent books by Sherar and Cameron.⁵ Sherar in particular gives a vivid account of the whole settlement process in the areas north of Nulla Nulla and at Dulyalbin to the south. The early settlers used old sandalwood cutters' tracks to get to their blocks; erected simple camps of bush timber with corrugated iron roofs, bare floors and walls of wheat bags, and commenced clearing the mixture of gimlet, salmon and york gum forest and stands of mallee and ti-tree scrub. Sherar, with his two brothers and father cleared 49 hectares in the summer of 1925-26, of which only 28 hectares were planted with wheat for sale, the remainder being for horse feed. Because of the large number of emus, the crop area was fenced as soon as possible. Longer established neighbours were employed to cultivate and to seed the land and harvest the first crop with their equipment and horse teams. At the same time, the family cleared more land, began building stables and a cow shed out of bush timber and selected suitable timber for fence posts. After harvest, the grain was bagged and carted twelve kilometres to the Noongar railway siding. Sherar's father was paid \$1.50 per acre (\$3.70 per hectare) by the bank once the land was cleared and a further \$1.50 when it had been burnt. He also secured a loan for further clearing, fencing and the purchase of horses. The bank inspector, who authorised such payments only after inspecting the job, was a very important person for all farmers. With the first crop successfully harvested, Sherar began to acquire his own equipment, purchasing a seeder, harvester and horse team in the following season. With finance from the Agricultural Bank, he also employed immigrant Italian labourers to undertake future back-breaking clearing work. This was quite a common but contentious practice. Because much of the development work had been funded by the British government, to provide employment for British immigrants, it was believed that their interests plus those of Australians of British origin should be served first. Thus, not only was priority given to these groups in the allocation of farm lands, but the bank adopted a policy of only approving of British or Australian gangs for clearing. On the other hand, Italian gangs were considered to be much harder working and cheaper, with some such groups prepared to accept 70c per acre (\$1.73 per hectare) as opposed to the \$2.50 per acre (\$6.17 per hectare) advanced to the farmer when the work was completed. Despite this policy, a significant amount of clearing was undertaken by Italian gangs and the proceeds of such work assisted them to become farmers themselves during the 1930s in the Yilgarn and elsewhere.

By clearing, cropping and fencing more land each year, by increasing their equipment inventory and by replacing their first primitive structures with more substantial ones, farmers gradually progressed. As settlers increased in numbers, demands for facilities such as schools, mail services, better roads and in some places water supplies were met, and small towns consisting of a general store, post office and hall emerged at the railway sidings. Such sidings were the focal point of all activity, as many settlers were reliant on the rail for the transport of all their goods. To these points essential supplies were delivered — superphosphate, new seed wheat, implements, galvanised iron. From the huge open mounds of stacked wheat sacks deposited there during harvest, the trains took the golden grain to the port of Fremantle. As the decade progressed, more and more sidings and wheat storage points were established and at each, a small settlement emerged. By 1930, Baladjie, Narla, Bullfinch, Perilya and Corinthian had been established along the northern line, and Bodallin, Noongar, Nulla Nulla, Moorine Rock,

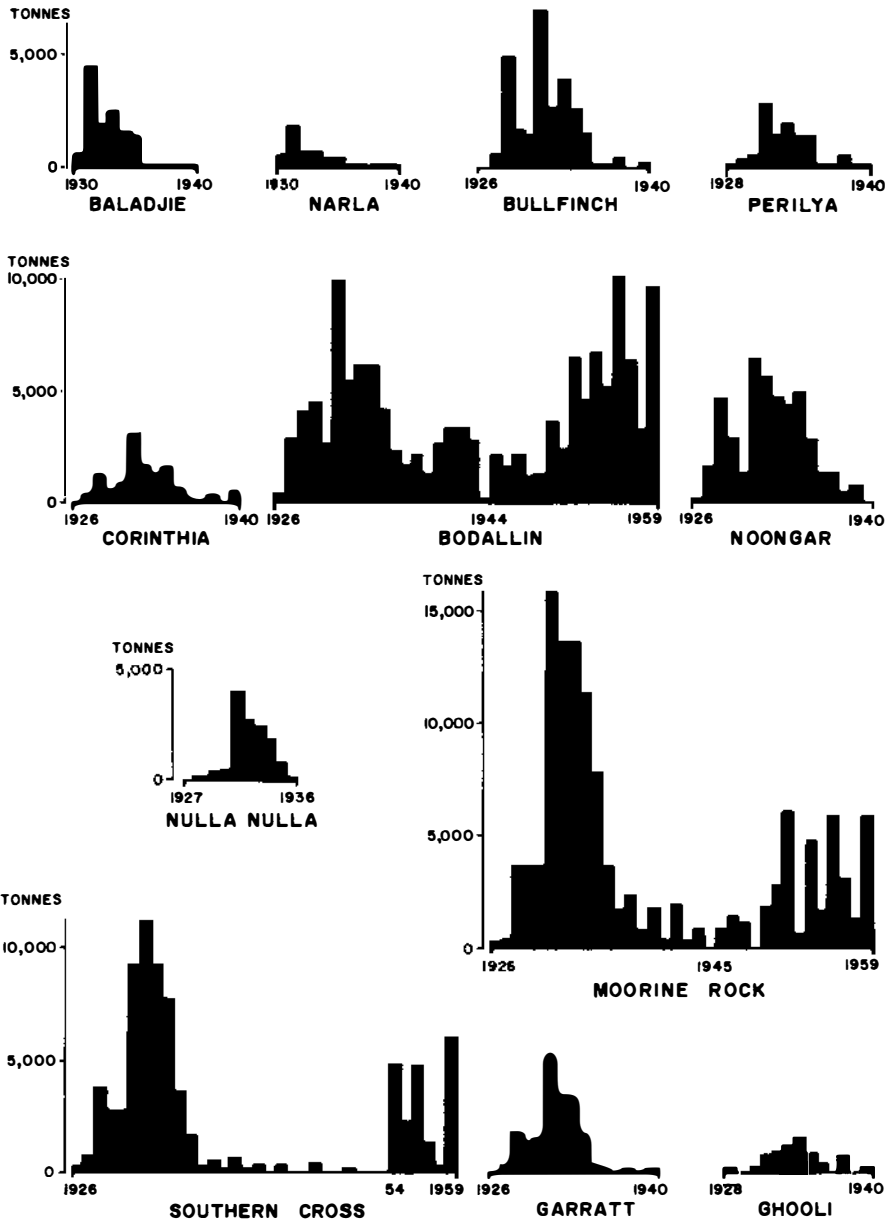


Fig. 11: Wheat from sidings, 1926-1959.

Source: Railways, Tramways and Electricity Supply. Annual Reports. 1926-1959.

Garratt, Southern Cross and Ghooli along the main line to the goldfields, with Moorine Rock siding recording a peak through-put of over 16,000 tonnes shipped in the 1930-31 season (see Figures 10 and 11).

The farming system of the day was heavily reliant on wheat. The system used bare fallow to conserve moisture and restore soil nitrogen between crops. This was seen by Sutton to be particularly important in areas of low rainfall. As an alternative, some farmers adopted the practice of continuous cropping with liberal applications of superphosphate fertiliser but even in those cases, the only role for sheep to play was to clean up the stubble after harvest. The work by the Department of Agriculture into early maturing and drought resistant wheats had certainly contributed to the expansion of farming into the Yilgarn, but there had been no experimentation into dry land pastures. Sheep were simply not an integral part of the agricultural system and any greater concentration on sheep farming would have required capital investments in fencing and water supplies which were not considered to be warranted. They were such a novelty that J. Keightley's flock of 31 merinos at Moorine Rock was the subject of a lecture and field inspection by local farmers in February 1927.

Investment in machinery was a different matter. Although tractors were still a sufficient novelty for demonstrations of John Deere tractors on Adams' and Forrester's farms in 1927 and of a Lanz tractor on Nunn's farm in 1928 to be reported in the *Southern Cross Times*, the adoption of the tractor was very rapid indeed, as shown by Figure 4. So too was the investment in a wide variety of agricultural implements. The Yilgarn, along with other newly settled districts was the salesman's dream. With liberal bank finance and buoyant wheat prices and confidence in the proceeds from the next harvest, machinery and implements were easy to buy under hire purchase agreements. Yet, despite these advances, only between one quarter and one third of the farmers used tractors and the amount of land that could be sown and harvested continued to be small by today's standards. Sherar's first crop in 1926 was sown with a six-horse team at the rate of 10 hectares per day. The 30 hectares of wheat for grain took more than three days to harvest with an eight foot comb Shearer harvester. Then followed the back breaking task of sewing up the 450 bags of wheat and carting 350 of them to the Noongar siding.

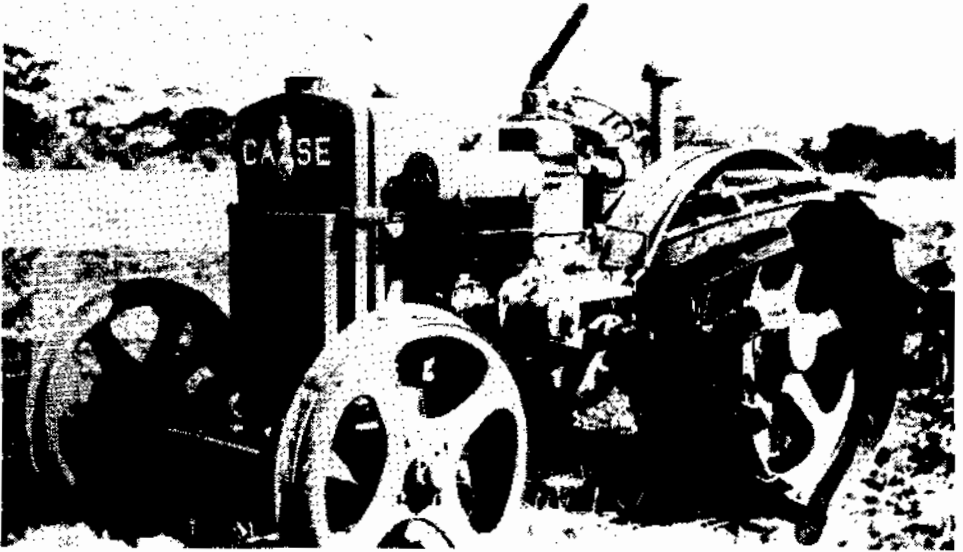
By the end of the 1920s, the agricultural foundations had been laid. A farming system considered appropriate for such a dry area had been devised; an agricultural society with Percy Forrester as its first president had been formed in 1926; land clearing and the extension of cropping continued; farms were beginning to be mechanised and the level of activity was such that the small towns along the railway line with their stores and halls, agricultural machinery, bank and post office agencies, flourished (Plates 3-8). But the position of farming was more precarious than the settlers realised. Time for consolidation was needed. Time in which to clear more land, to build more substantial housing and obtain a wider array of farm machinery. Time too to repay the loans upon which most development had been based. But this essential time was denied by the depression, which also exposed weaknesses in the system on which farming was based — monocultural wheat cropping in an outer marginal area, where only imperfect adjustments to rainfall unreliability had been made.



*Plate 3: Alex Howe's camp, Bullfinch, 1920s.
(Courtesy Yilgarn History Museum, Southern Cross)*



*Plate 4: Jack Garratt and ploughing team, 1920s.
(Courtesy Yilgarn History Museum, Southern Cross)*



*Plate 5: First tractor used in Southern Cross district, 1925.
(P. T. McMahon Collection: Courtesy Patricia Lawton)*



*Plate 6: McMahon's machinery at work, 1927.
(P. T. McMahon Collection: Courtesy Patricia Lawton)*



*Plate 7: Corinthian siding, 1934.
(Courtesy of the estate of the late Mrs M. E. Coolahan, nee Hall)*



*Plate 8: State record wheat stack, Moorine Rock, 1929.
(Courtesy Yilgarn History Museum, Southern Cross)*

Rural Reconstruction 1935-1950

Adjustment Scheme

The collapse of wheat prices in the 1930-31 season did not produce an instant decline in activity. The immediate response was to increase production, and as Figures 1 — 4 show, the numbers of farm workers, the area in crop and investment in agriculture all increased until 1933, by which time it was realised that recovery could be delayed.

From the mid-1930s on, farming in the Yilgarn underwent a long and painful period of reconstruction. The main aim of the government was to assist farmers in difficult circumstances, particularly in the marginal wheat growing areas, but also to retain as much of the State's investment in agricultural development as possible, by ensuring that abandoned properties (and their improvements) continued to be used. Difficult questions faced decision-makers. Of prime importance were the questions of the most suitable farming systems and forms of land tenure for marginal areas, as well as the level of debt burden that settlers could be expected to shoulder. Water availability and the control of grasshopper plagues and soil erosion were also of concern. There was no single view on many of these matters and over time the approaches to the land tenure question changed. To add complication to the process, different areas were treated differently at different times. Initially, a special scheme was devised for the area north of Southern Cross, to which the Miners' Settlement was added later. The special transport problems of the Dulyalbin-Mt Hampton-Holleton and Lakes districts were also treated separately in the initial reconstruction phase; and by the early 1940s a broader scheme for the western Yilgarn and marginal areas in other districts to its north was devised. The superimposition of a Commonwealth reconstruction scheme on top of the State scheme of the late 1930s added Federal requirements which were occasionally in conflict with State ones. The difficulties caused by the series of poor seasons in the late 1930s were compounded by the disruptions caused by war and post-war reconstruction in the 1940s. The whole period then, was one of difficulty and uncertainty about seasons, prices, grasshopper depredations and war-time shortages of labour and materials. There was an underlying uncertainty as to the farming systems most suited to the climatically marginal conditions.

The Bullfinch — Southern Cross Reconstruction Scheme

The number of abandoned farms is clear evidence that the district as a whole is a failure. Most of the settlers who remain are indisputably losing heart and unless encouraged will one by one walk out. (Agricultural Bank Inspector Mitchell, 1937).⁶

As the depression deepened, the Agricultural Bank became concerned about the desperate situation of farmers in the Bullfinch area. Faced with the depression and a series of dry seasons and crop failures, many settlers had walked off their blocks. Although the 1927 and 1930 crops had been very good, those following had been very poor, culminating in a complete failure in 1935. The position had become so bad that the bank sent senior branch manager, C. D. Mitchell, to inspect the area. In a survey of 195 farms north of Southern Cross in mid-1936, Mitchell found that only 72 settlers were in

occupation, and of these only 16 were likely to remain. In all, 151, or 68% of the holdings were abandoned. Worse still, as far as the bank was concerned, when all assets (including improved land value) were balanced against debts, there was a shortfall of over \$140,000 — a figure that rose to \$535,148, if improved land values were included (see Table 1).

The table reveals that, in the decade since the commencement of settlement, some progress had been made, with one-half of each block cleared and a capitalisation in land and assets of over \$0.5 million, or over \$2200 per block. In addition, there were 1270 kilometres of netting and fencing, and 193 horses in the district surveyed. However, Mitchell observed that the rainfall was precarious, dam catchments poor and there was evidence of soil salinisation. Grasshoppers had been very bad and he felt “judging by the damage done by the pest this last year, I expect them to clean up most of the crops and feed this season”. To the north of Lake Deborah, most of the country had been abandoned for years and was rapidly reverting to scrub. Mitchell saw sheep farming on holdings large enough to carry at least 800 sheep as the only hope of survival. At the same time, he observed that unless land was cultivated every four years, the stock carrying capacity diminished rapidly. Clearly, positive action was needed to salvage as much as possible of the investment of over \$1 million and to make as much productive use as possible of the cleared area which averaged 270 hectares per block. Mitchell’s proposals became the basis of a scheme to stabilise the area. It included four principal components: the writing off of debts; changes to land tenure; reduction in rents; and the amalgamation or “linking” of holdings to form larger, viable farm units. A further survey by the chief inspector for the wheatbelt, Donovan, in late 1936, confirmed Mitchell’s findings. In the areas north of Southern Cross and along the railway line as far west as Lake Deborah, there were only 67 settlers in occupation. Only 24 had fallow land (totalling 2400 hectares) and only 8 had harvested sufficient seed for the next season’s crop.

Table 1: Special Reconstruction Areas: 1936-1937.

	Settlers (No)	Total area (Acres)	Area cleared (Acres)	Improved land value (£)	Assets incl Stock (£)	Debts (£)	Write off (£)
Bullfinch:							
In occupation	67	85,732	51,422	77,686	24,392		
Vacant:	128	148,245	81,189	103,167	30,560		
TOTAL:	195	233,977	132,611	180,853	54,952	296,071	241,119
Lake Deborah:							
In occupation:	5	9390	3071	4427	1480		
Vacant:	23	36,054	11,391	12,020	3790		
TOTAL:	28	45,444	14,462	16,449	5,270	31,725	26,455
GRAND TOTAL:	223	297,421	147,073	197,302	60,222	327,796	267,574
Miners' Settlement:							
In occupation:	46	....	....	....	—
Vacant:	52	—	—	—	—		
TOTAL:	98	....	—	....	23,480	....
South Ghooli:							
In occupation:	11	--	....	—	—	
Vacant:	2	—	....	—	....
TOTAL:	11	....	—	....	10,864	....

Sources: Department of Lands and Surveys, File 2162/36; Agricultural Bank. Annual Report, 1937. 9.

On the basis of Mitchell's report, the bank decided that "no workable scheme for the carrying on of the District which would warrant the Bank's spending more money in that area, could be evolved". Accordingly, in April 1937, all vacated holdings were transferred from the Agricultural Bank to the Lands Department, free of encumbrances, and were withdrawn from selection. In August the same year, the bank officially announced that all advances were to cease, except for fallow land; securities were to be handed back, except for stock and plant financed by the Bank, and all settlers were to be offered transfers to safer districts. For those who remained, the bills of sale held by the bank for advances for purchase of stock and plant were to become hire purchase agreements administered by the Lands Department. The same conditions were also to apply to the Miners' Settlement and South Ghooli areas, where the situation was no better. However, only three settlers elected to be transferred, although the reasons for the majority wishing to stay may have had little to do with their confidence in the farming future of the district. Initially, it was proposed to encourage the remaining settlers to take up extra land under conditional purchase land tenure but, fearful that rents might not be paid, the minister for lands opted for a leasehold system with annual rentals within the financial means of the settlers. It was believed that a leasehold system for a finite period would allow the settlers and the government to assess the agricultural capabilities of the area without any long-term commitment to a particular form of land use. The capital value of improvements on blocks — clearing, buildings, dams and fencing, was drastically reduced to less than one-quarter the previous book value, for example from \$2360 to \$500. Vacated blocks were offered to settlers as special leases for grazing and/or cropping purposes for ten years, at an annual rental of 3% of the (reduced) capitalised value. Settlers were liable for rents ranging from \$32 to \$72, with their original blocks linked to one, two or occasionally three or four abandoned blocks to be leased. At the same time, more general changes were being made to the Land Act to increase the maximum of conditional purchase land an individual could hold from 1000 acres to 2000 acres (405 to 810 hectares) of cultivable land. For settlers in the scheme area, C.P. land could be obtained at 40 cents per acre (98.8c per hectare), compared with the previous average of approximately \$1.20 to \$1.60 (\$2.97 to \$3.95 per hectare), plus the value of improvements, payable over 25 years, with the first five years being rent free except for interest on improvements.

By these means, it was hoped to hold settlers on their farms and to give them sufficient land to make a livelihood based on sheep rather than wheat. However, the cleared area of vacated blocks to be leased (averaging 255 hectares per block in the Bullfinch area) would not be abandoned to reversion, and at least some of the capital improvements already made would be maintained.

The implementation of the scheme had its problems. Initially it was difficult to establish exactly which blocks had been abandoned, for many of those who had walked off had not formally advised anyone of their departure and the road board and the bank tended to keep settlers on their books in the hope that payments would be made. There were also some settlers who were using their properties merely as a dwelling place, whilst they worked elsewhere. Given this lack of information, a number of slightly different linking proposals were made, one of which is shown in Figure 12. This attempted to link settlers with adjacent vacant blocks and to give them access to water from existing dams

or the Bullfinch pipeline — lack of water being seen as a severe constraint to the change in orientation from wheat to sheep. The figure also shows the houses on the vacated blocks that were available for disposal. In some cases recommendations for their retention was made, where the settlers involved in the linking intended to use them. Some houses in the Lake Deborah area were little more than humpies, with assessed values of \$6 to \$30. Elsewhere, for example, in the Bullfinch area, some were quite substantial dwellings valued at up to \$400.

A difficulty was encountered in the transfer of debts on farming equipment from the Agricultural Bank to the new hire purchase agreements through the Department of Lands. Most settlers had received some assistance in purchasing horses and machinery from the bank — ranging from a modest \$36 to over \$200. Marco Armanasco of the Miners' Settlement, for example, had been assisted in the purchase of a Mackay sundercut plough, a set of Mackay eight leaf harrows, a 25 tyne cultivator, an eight-foot harvester, a 16/33 combine drill and chaff cutter, to a total value of \$320. In contrast, C. I. Biddle of Perilya had purchased only a ten disc sundercut plough and four horses, resulting in a \$160 debt to the bank. In making out their inventories for the new agreements in mid-1938, some items were deliberately overlooked by settlers resulting in a delay in the new leasing arrangements. Some settlers were unable to pay the interest commitments and deposits for leases, with amounts of between \$1.50 and \$48 outstanding, further delaying the completion of some leasing agreements until after September 1939.

Despite the adjustments, the settlers continued to face difficulties. The rainfall for 1936-37 season was "utterly inadequate for the heavy soils of the forest lands". In 1937-38 "yields were disappointingly light and ranged from three to six bushels per acre". Then, in 1938-39, the average yield in the Yilgarn was two bushels to the acre (135kg per hectare) for only 109mm of rain fell in the April-September growing season. Grasshopper plagues were also a constant menace. For employment, some settlers turned to the mines or to prospecting, which had experienced a resurgence in the 1930s. Others found what work they could — one as a surveyor; two as greengrocers in Bullfinch and Merredin; one on the transcontinental train; one selling Rawleigh's products; one went into the navy and one to the army; several were of retiring age, and P. T. McMahon, previously a large land owner and Southern Cross storekeeper, saw his holdings reduced to one 80 hectare lot which, it was reported, he was prepared to lease to anyone, whilst he managed tearooms in Perth. For those who relied entirely on farming, the situation was grim, as recorded by the bank inspector in March 1939 when he wrote of one settler: "Big struggles, no feed, dam dry. Has had pleurisy and hospital bills to meet; no crop"; and of another: "Runs a dairy, but is in poor circumstances".⁷

A comparison of Figures 12 and 13 reveals that the original reconstruction plans for the area north of Southern Cross were over ambitious. In 1937, 41 linking arrangements were planned, with a further seven settlers left unlinked, largely because they were in the process of abandoning their blocks or had applied for transfers to other districts. By 1942, there were only fourteen farms in the same area including both conditional purchase and leasehold land. A further four consisted of leasehold land only and thirteen of C.P. land only. This last group included a number of settlers who had taken up leasehold land in 1938-39 but who had later relinquished their leases. It is likely that most of the remainder were either no longer on their properties or were in the process of leaving. Of those still

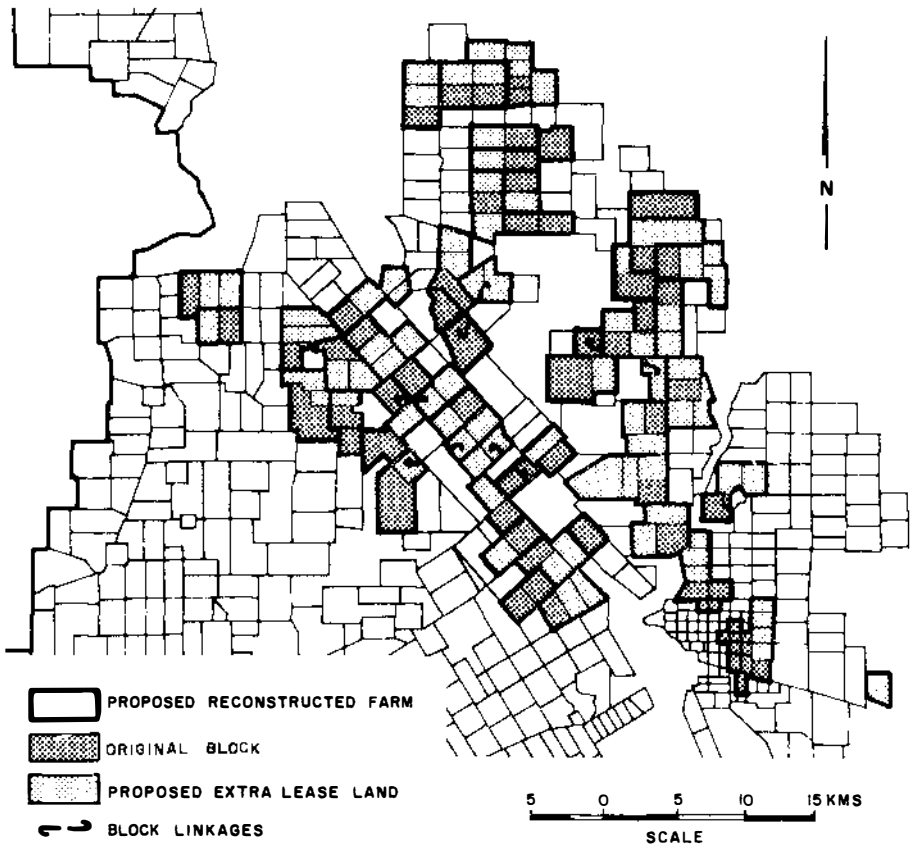


Fig. 12: Southern Cross-Bullfinch reconstruction area, proposed linkings, 1937.

Source: Department of Lands and Surveys, File 1854/37. Bullfinch-Lake Deborah Reconstruction.

farming, some controlled quite large areas, with the Smith brothers at north Turkey Hill holding over 5300 hectares; Newbury, west of Southern Cross, over 3200 hectares; and C. C. Roberts west of Bullfinch, 2800 hectares. Others who held over 1000 hectares included Devane and Johnson in the Turkey Hill area; Bland, Neave and Barr between Southern Cross and Bullfinch; A. H. Roberts, Eacott, Spencer and Lane and Cavanagh west of Bullfinch; and Stacey and Nunn with land based in the Wheatley area.

The pattern in the Miners' Settlement and south Ghooli areas was even more confusing. In all, 26 settlers and their families owned or leased land. Of these, only seven held a combination of C.P. and leased land, with seven using leased land only and a further nine holding C.P. land only. However, these figures are misleading, for in each of these groups were settlers in the process of leaving and it is likely that there were only approximately seventeen farming families in the districts. Here, the most prominent land holding families were the Panizza brothers, Bendetto and Bortolo (Bob) with over 8000 hectares between them, the Armanasco family with more than 3200 hectares, the Posa family with 3200 hectares, Bennett with 2800 hectares and Gobetti with 1600 hectares. At the other end of the scale, some families that were to later become large land owners, were

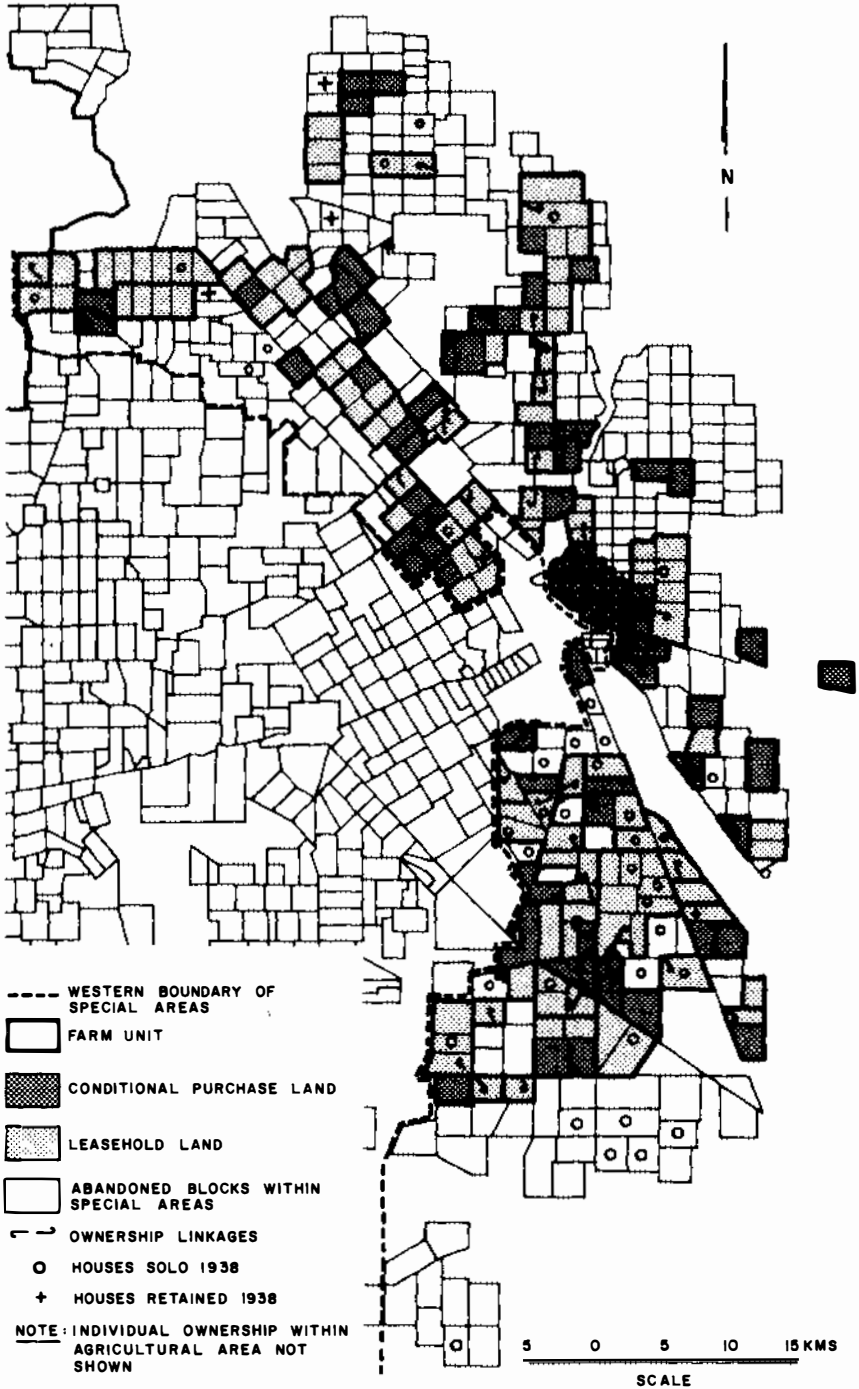


Fig. 13: Special reconstruction areas, land holding pattern, 1942.

Source: Department of Land Administration. Registration and Deeds records.

either only just taking up land or had not had the opportunity to expand by the early 1940s. This group included the names of Gianoncelli, Unkovich, Dunbar, Carnicelli, Divitini and Pasini, all well known in the district today.

North-East Wheatbelt Reconstruction

Although the extreme margins of the wheatbelt in the Bullfinch-Southern Cross-Miners' Settlement areas were singled out for early treatment because of the severe problems faced in those districts, all Australian wheat growing areas faced financial hardship. This was magnified in Western Australia by an almost exclusive concentration on wheat growing, characteristic of early stages of farm development. Thus, although monies were made available by the Commonwealth to all states in 1935, the special problems of the outer wheat growing areas were seen to need separate treatment. Following on from the Bullfinch-Southern Cross scheme, in 1937 the Agricultural Bank turned to the plight of farmers in other "outer" areas in a band of land on the fringes of the wheatbelt from Ajana in the north to Ravensthorpe in the south and including all of the western Yilgarn. The aim was to provide settlers with reasonable areas of cultivable and grazing land, with a view to the establishment of sheep as the main revenue earner. The areas concerned were at various times called "marginal", "outer", "lower rainfall", and "lighter rainfall" areas, but were most frequently referred to as "stock districts" in a deliberate attempt to stress that these areas were to concentrate almost exclusively on livestock grazing.

The strategy adopted was similar to that used in the Bullfinch-Southern Cross area, and from the bank's point of view, the main consideration was the question of "what inducements we can offer settlers to remain in the areas, and thus save portion of the enormous advances which have been made in the past and must eventually be a total loss if properties are abandoned". The bank had a particularly strong interest in the welfare of farmers in these areas, since 93% of them were clients of the bank.

The scheme aimed to increase holdings to a minimum of 2000 acres (809 hectares) either through the sale of abandoned land under favourable terms or by short term leases with the option to purchase. To make each holding a workable unit, required a complete regrouping of blocks in some instances. Land was repriced, improvements revalued and debts adjusted, and finance was made available for fencing and water supply improvements. For those settlers who wished to transfer to farms in wetter areas, the bank provided funds to assist in the costs of relocation.

The aim was basically to hold settlers on the land by providing them with contiguous or near-contiguous blocks of land with a minimum of 1000 acres (405 hectares) improved, at a lease/purchase price they could afford. Farming was to be based on a minimum of 200-300 sheep, but with wheat cropping included on a rotation of approximately once every four years, designed to break up the ground to reduce the grasshopper menace and to provide natural pasture improvement. From late 1939, settlers in the Yilgarn and other marginal areas were applying for and receiving land under these conditions. The process was a slow one and drought conditions in the 1938-39 to 1940-41 seasons seriously affected the progress of the scheme.

The bank's linking proposal of 1940 is shown in Figure 14. In most cases it planned to add a single abandoned block to a farmer's original block, under conditional purchase

tenure. In some cases this involved the relocation of one farmer to allow a neighbour to take over his block; in a small number of other cases a suitable vacant adjacent block was unavailable and a block some distance away was offered. In all, some sixty farmers were involved. In addition to the land taken over on a conditional purchase basis, land was also leased. Unfortunately, details of leased land are unavailable but it is known, for example, that Pasquale Capito of north Bodallin was allocated two blocks but also leased two others

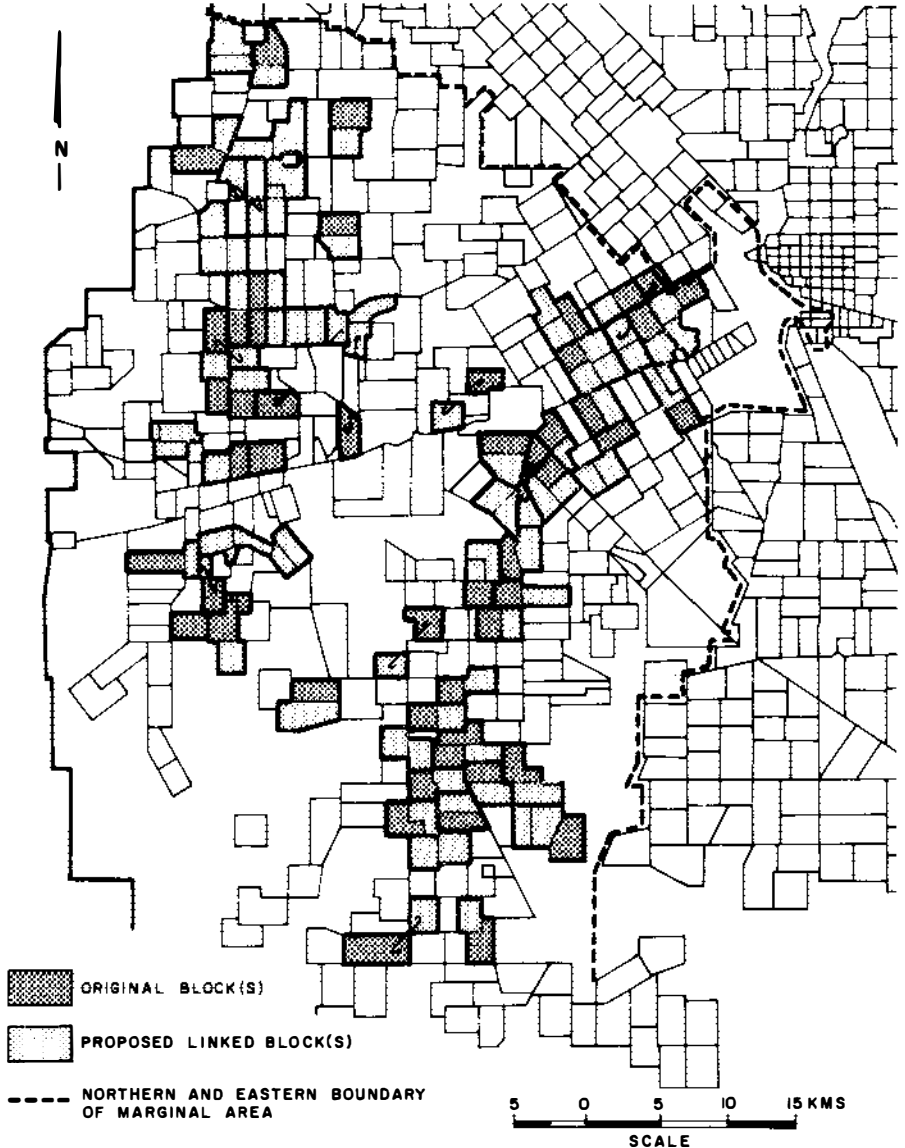


Fig. 14: Proposed linkings for the Marginal Area Scheme, 1940.

Source: Department of Public Works. Water Supply Section. File 1258/40. G.W.S and Country W.S. Rating of Country Lands in Marginal Areas. General Considerations.

which he eventually purchased. Since such a practice was quite common and encouraged by the bank, it is to be assumed that the area occupied and used was much larger than shown in the Figure. Of additional support was the Commonwealth government's Wheat Industry Assistance Act of 1938, which provided for the establishment of a fund for reconstruction in marginal areas. At a national conference early in 1940, each state submitted its plans and the Western Australian scheme was absorbed into the broader national one. By then, the Agricultural Bank was able to show that some progress had been made. Essential preliminaries to any scheme, such as the abandonment of the most difficult Southern Cross-Bullfinch area, the appraisal of the precise situation in the various marginal areas and the establishment of reconstruction needs, enabled the state to go to the Commonwealth conference with its needs clearly identified.

In 1941, however, a complication arose. The Commonwealth, in attempting to stabilise wheat prices, determined a guaranteed price for wheat, but this was contingent upon a 140 million bushel ceiling, and a restriction on cropping in marginal areas. In Western Australia, cropping was seen as an essential part of a farming system in which pastures were maintained by regeneration following cropping every four years or so. As a consequence, it was planned to reduce wheat cropping over a transitional period so that, by 1945, no wheat would be grown in marginal areas other than for fodder purposes. At that stage, further consolidation of holdings into larger sheep farms of 5000 acres (2023 hectares) would occur. However, Curtin's Labor Government adopted a new policy in 1941. This included a guaranteed price to growers on a quota system. Each farmer could sow a maximum of 200 acres (81 hectares) of commercial wheat in 1942 and 150 acres (61 hectares) in subsequent years. The reduction was supposedly balanced by an increase in sheep numbers. Arguments continued about land revenues and appropriate tenures; the surveyor general was concerned that the outer areas were better suited to perpetual leasehold, particularly since some of the areas might be needed for post-war reconstruction. However, the attitude of Minister for Lands, Wise, prevailed when he observed: "If we can get this country permanently occupied it will be something for the State and it seems that a minimum price is all that we can charge under the circumstances..."⁷⁸

As a result, in 1943 leasing was permitted in outer farming areas up to 2000 acres (809 hectares) for grazing purposes in addition to C.P. land. The price of C.P. land was reduced to 10 cents per acre (24.71c per hectare) plus survey fee in the outer "Minimum Price Area" which included all of the Yilgarn.

Farming in depression and war

By 1945, farming in the Yilgarn was in a trough. As Figures 1 to 4 show, the number of farms had fallen to below 120 and the population permanently employed on farms had dropped from a peak of 837 in 1932 to 157 in 1945; the area of improved land was less than half the 1933 figure and only 5800 hectares were sown to wheat compared with 87,800 hectares in the 1932/33 season. The change in the orientation of farming systems was reflected in the steady increase in sheep numbers, which had risen to 87,000 compared with 4000 in 1930.

A comparison of Figures 10 and 15 reveals both the spatial magnitude of this change and also the efforts of the State to assist remaining settlers to enlarge their holdings.

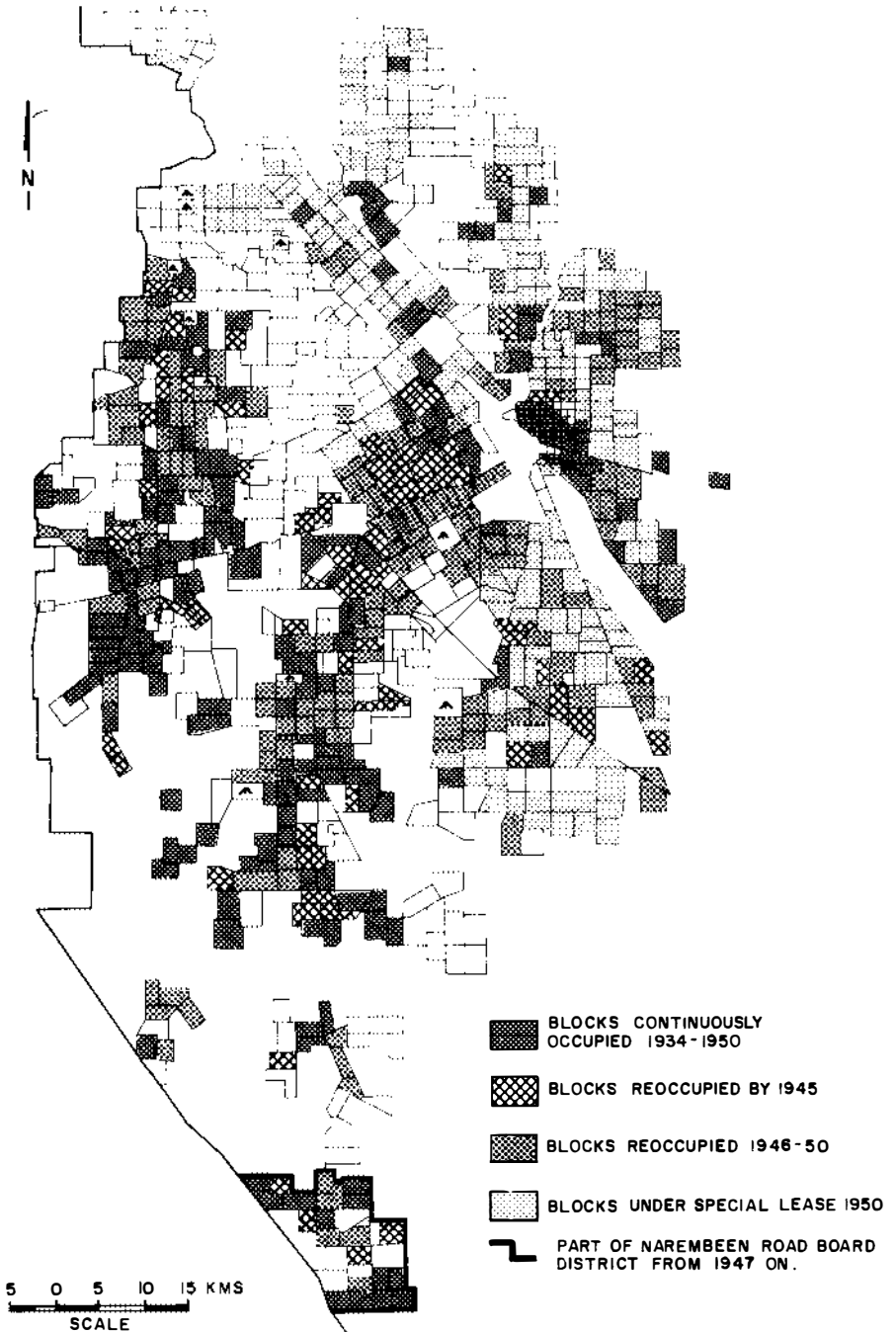


Fig. 15: Land settlement, 1933-1950.

Source: Department of Land Administration. Registration and Deeds records.

Settlement had contracted to the bands of better soils in the South Bodallin-Bodallin-North Bodallin and Mt Hampton-Dulyalbin-Moorine Rock areas; with further concentrations in the Miners Settlement area, along the Bullfinch railway and in the Wheatley area, with an additional narrow band stretching northwards from Southern Cross in the Turkey Hill district. Within each holding, farmers cropped only their best land.

Most of the remaining settlers had taken up land in the late 1920s, but there was a group of notable exceptions. Italian migrants who had worked in the mines, or carted wood to pumping stations, or had been engaged in farm contract work, particularly clearing, had been able to achieve their land owning ambitions. As settlers walked off their farms in the early 1930s, this group took up vacated blocks and through hard work, survived. This was not only true of the Miners' Settlement area, but also held for other districts. In the Turkey Hill area, three migrants — Luigi Burro, Angelo Fragosa and Gildo Guadagnin — worked together, with two of them working in the mines whilst the third took care of the farming operations. Further west, in the North Bodallin district, the names of Della Bosca, Menegola, Capito, Marafioti and Banona were prominent. To this group must be added the names Panizza, Armanasco, Gobetti, Bonetti, Pasini, Gianoncelli and Carnicelli of the south Yilgarn. These immigrants had a limited command of the English language and few skills that would provide them with alternative employment. Consequently, although farming in the depression may have appeared unattractive, this group had nowhere else to go.

Survival during the fifteen years of depression and war was a struggle. With wheat prices so low, farmers sought alternative farming pursuits, but found that opportunities were limited. Many turned to pigs, and for some, a small income was gained from cutting sandalwood stands on their blocks or selling mallee roots for firewood, and growing specialist crops such as canary seed. Most survived by living a near-subsistence existence, producing most of their food needs on the farm itself, with a little surplus for sale along with what ever wheat crop the season produced. Barter too, became common, with Mrs Dorrie Ivey of Bodallin, for example, exchanging wheat for fruit, as well as selling eggs and pies to railway workers and collecting wool caught on the wire fencing for sale in Perth. The resourcefulness of settlers and the variety of farm activities undertaken are illustrated by the case of Henry and Doris Sherar of Dulyalbin who, in addition to wheat cropping and the grazing of a gradually increasing sheep flock, found other profitable sidelines:

We sold eggs in Merredin for ninepence a dozen, also to the miners' mess at the Cross and to the store at Moorine Rock... . Doris made a lot of butter and we sold ten to twelve pounds every week. ... the pigs were increasing: we now had six sows, a boar and twenty four weaners, which we intended to keep until they were baconers.'.

As the depression deepened, there was an upsurge in mining activity and some found employment in the mines or as prospectors. As the move into sheep farming began to take hold, some also found seasonal employment as shearers. Many sought to pay their rates or to earn income through road maintenance work. The road board minutes of the period are studded with approvals for such work as "permission given to Mr Lowden to clear 22 feet wide at 5/- per chain, 40 chains of road along the southern boundary of location 319, such

payment to be carried out in lieu of rates and taxes". Rates frequently remained unpaid, with arrears amounting to \$8000 in 1941, and the road board secretary observing that "the position of collecting farmers' rates is a difficult one".

Conditions were not helped by the series of dry seasons experienced during the 1930s, the grasshopper plagues and an increase in the numbers of emus and foxes. War brought additional problems related to shortages of superphosphate, petrol, fencing material and labour. Fertiliser and petrol were rationed, and in 1942 it was decided that gas producers should be fitted to all vehicles. The progress of wheat shipments out of the area shown in Figure 11 reflects the demise of the wheat growing industry. The tonnage out of Narla dropped below 100 in 1935: The same happened at Baladjie, Perilya, Corinthia and Nulla Nulla in 1936, at Bullfinch and Garratt in 1941 and at Southern Cross in 1942. Only Bodallin and Moorine Rock continued to move wheat in any quantities and even for these two sidings in some years the amount was very small.

Post War Reconstruction 1945—1950

By the end of 1945, numerous requests were being made for a review of the marginal areas policy. The Rural and Industries Bank (successor to the Agricultural Bank) undertook further farm reconstruction with an emphasis on cultivation as part of a rotation to retain soil fertility and to combat pests. Yet, to achieve the five year rotation considered desirable, a 2000 acre (809 hectare) farm could crop only 150 acres (61 hectares) of wheat for sale and the balance of 250 acres (101 hectares) of crop could be used only for fodder. Since such an area was more than sufficient to feed the average flock of 750 ewes or 1000 sheep, approval was given for an increase in the commercial wheat area to 101 hectares, conditional upon it being grown on fallowed land.

The issue of wheat restrictions contained a number of conflicting considerations. The whole reconstruction scheme had been based on the conversion of land use from wheat growing to sheep grazing, but farmers sought an increase in the permissible wheat area, since the five year rotational land use system required a larger area under crop than the quotas allowed. It was argued that the flat 250 acre (101 hectare) limit should be replaced by one related to the amount of cleared land on a particular farm. Thus, a property with 2000 acres (809 hectares) cleared would have a wheat area of 250 acres (101 hectares) and a 150 acre (61 hectare) feed crop area; a property with 3000 acres (1214 hectares) cleared would have 375 acres (152 hectares) of wheat for sale and 225 acres (91 hectares) of stock feed crop. In a meeting with the commissioner of the bank late in 1948, the minister for commerce and agriculture put the Commonwealth's view that the government "would not countenance the reversion to unlimited wheat growing in districts where it had been proved that wheat growing was uneconomic and in which reconstruction of settlement had been carried out with monies provided by the Commonwealth."¹⁰ Despite this, the new scheme of more liberal and variable wheat area allowances was introduced. Even this was not considered satisfactory by the Yilgarn road board, which expressed its concern about restrictions to the director of agriculture in 1951. With the war over, materials became easier to obtain and petrol and superphosphate restrictions were eased. With the increase in sheep numbers, the need for sheep dips became apparent and, with the bank's assistance the Yilgarn road board agreed to build community sheep dips at Bodallin and North Bodallin. In 1947, the bank further encouraged the establishment of pastures by

issuing free wimmera ryegrass seed to settlers in the Yilgarn, using Commonwealth reconstruction funds. In all, some 37 Yilgarn settlers received 120 pounds (54kg) of seed each.

With the increase in agricultural activity, the transport of wheat and stock water became a problem for those without suitable trucks. Local cartage contractors, George "Scotty" Leslie and Jack Whinfield were in great demand. Leslie was more important locally than Whinfield who also carted wheat to Fremantle. If contractors were busy, harvesting had to be delayed and many a farmer waited anxiously for up to a week for "Scotty" to arrive. Such cartage contractors played this vital role from the early 1940s to the early 1950s when bulk bins began to be established throughout the district, and more farmers bought trucks. Meanwhile, attention turned again to the special eastern margin of the Bullfinch-Southern Cross-Miners' Settlement area. There, over the decade since initial reconstruction, the settlers who had remained had adopted the practice of using vacated blocks as well as their own C.P. and leased land for grazing stock, more or less as free range. Not only was this highly disorganised, but some overstocking and soil degradation particularly through wind erosion had occurred. Besides, some settlers were anxious to secure tenure over this extra land which, by now, they needed. To meet their needs, farmers with insufficient land were offered additional locations. The blocks were offered under quite specific leasehold conditions, similar to those advocated by the surveyor general for the whole of the marginal zone several years earlier. Lessees were to have an minimum area of 405 hectares of C.P./freehold land contiguous to the area applied for and a maximum of 7000 acres (2833 hectares) of C.P./freehold/leasehold land for a husband and wife combined. They were committed to cultivate one-sixth of the cleared area of the lease each year so that the entire cleared area had been cultivated once each six years. There were also residence and minimum stocking rates conditions, and clauses to protect the land against soil erosion and to restrict the removal of timber. The leases were to run for 21 years, until 1967.

Under this leasing system an increase in farm size was made possible. To the north of Southern Cross, Burro, Fragosa, Guadagnin, Johnson, Stacey and Nunn all benefitted, as did the three Roberts' families, Frost, Lang, Martin together with Scott in the Bullfinch area and Newbury west of Southern Cross. In the Miners' Settlement-South Ghooli district, Armanasco, Divitini, Dunbar, Gobetti, Unkovich and two Bennett and two Panizza families were able to acquire additional leasehold land. Although the numbers involved were relatively small, the extra land helped these settlers to consolidate their position. In the South Moorine-Dulyalbin area, a larger number of the original settlers survived. The Gethin, Gill, Goodhill, Harveys, Irvyng, Kent, Nicholson, Rose, Sherar and Symes families all continued farming and began to expand their holdings. Descendants of these pioneers continue farming in the district today. However, although a series of favourable seasons and a gradual improvement of prices for agricultural commodities brought a fair measure of success to these farmers, apparently few lessees carried out the ploughing conditions attached to the leases.

Over the period from 1937 to 1950, the Agricultural Bank and its successor, the Rural and Industries Bank had played a major role in the retention of farmers in marginal areas, including all of the Yilgarn. It had administered the payment of funds for development work and sustenance, organised the linking of some blocks and the sale of

others, played an important role in the grasshopper eradication programme, and had encouraged the change to sheep farming through the provision of sheep and the encouragement of pasture establishment. A review of its achievements was made in 1950 and revealed that the North Eastern Stock District, of which the Yilgarn was part, was by far the most important reconstruction area, with over 400 farms assisted and over 500 abandoned blocks disposed of either through sale or linkings. The actions of the Commonwealth and State governments through the bank, had cushioned the impact of depression and war and undoubtedly had averted more widespread farm abandonment.

By the late 1940s, only 10 abandoned unoccupied holdings in the Yilgarn remained in the bank's hands and in 1950, the chairman of commissioners urged that "no stone must be left unturned in our efforts to quit these properties while prices are so favourable". By then only five Yilgarn properties remained, ranging in size from 730 hectares (with 81 hectares cleared) to 1100 hectares (134 cleared) and in price from \$100 to \$380. It took a further five years for the bank to wind up its marginal areas activities and it was not until 1956 that the commissioner was able to declare that "broadly speaking, it must be recognised that the purpose of this scheme has been fulfilled. It devolves upon us, therefore, to take steps to close the scheme down".

The impact of the scheme in the Yilgarn is reflected in Figures 14 and 16 and Table 2. The linking Programme of 1940 was not carried through as initially intended. Some farmers did not take up the linked land offered because they did not want extra land. Others accepted the linking but retired or left before 1956, further reducing the number of

Table 2: Yilgarn Stock District: List of settlers still on their properties in 1956.

Name	Farm area (acres)	Cleared (acres)	Sheep	Name	Farm area (acres)	Cleared (acres)	Sheep
Asman, W.B.*	3246	2000	leased	McKenzie, A. E.*	4117	2100	2000
Beaton, E.S.*	3850	2293	1800	McKenzie, A. G.K.	4591	2050	
Bellord, A.T.	4407	2400	1500	Marafioti, G.	7960	3500	2000
Birtles, W.*	4449	3861	1800	Menegola, G.	6172	3862	2750
Booth, J.W.	4636	2055	650	Moretti, A.	4269	2350	1000
Capito, P.	4140	2748	1000	Murray, V. A.	5628	3000	1400
Carstairs, G.	4452	3176	1136	McNabb, G. N.*	4002	2182	1750
Daws, E.	4267	2907	800	Nicholson, S.	3599	2390	1500
Della Bosca, Leone	4162	1943	1000	Nicholson, W.	3641	2733	1400
Della Bosca, Luigi	4489	2270	1200	Penton, H. & H. W. R.*	3240	2330	2300
Felstead, V. C.*	9779	4640	2500	Price, A. E. H.	3182	2462	1200
Gethin, R.E.	3441	2764	1000	Price, A. A.	4487	2700	1520
Gill, J.S.	4191	2227	850	Robinson, A. R.	6005	4000	2000
Goodhill, J. & N.*	4474	2390	1000	Rose, J.	3543	2094	900
Hale, R. T. & J. C.	4443	2180	1450	Saxby, W. E.	3743	2435	1000
Harvey, J.*	4373	2707	1200	Sherar, H.*	4360	2290	1400
Harvey, W.	4117	2500	1250	Sherar, W.	4475	2670	2000
Heasman, A.	4400	2800	1500	Stacey, J.	2209	1222	650
Irving, G.*	5534	3210	1500	Stewart, J. C.	4187	2207	1200
Ivey, A. J.	2572	2000	1000	Suiter, R. J.	5135	3011	1500
Ivey, E. A.*	1440	1300	1350	Sykes, L. R. & D. D.*	6000	3000	1900
Kent, H. L.A.	5448	2200	1050	Temby, J. N.	4317	2418	1500
Lamzed, S.	2000	1605	700	Trill, S. G.	2761	2000	1200
Liddel, A. E.	5069	2580	1200	Willesmere, R. J.	2865	2056	900

(* denotes those joining the scheme after 1940 and not shown in figure 14

Note: Some of the property sizes in this table do not match titles records for the same year.
Source: Agricultural Bank. File 690/35.

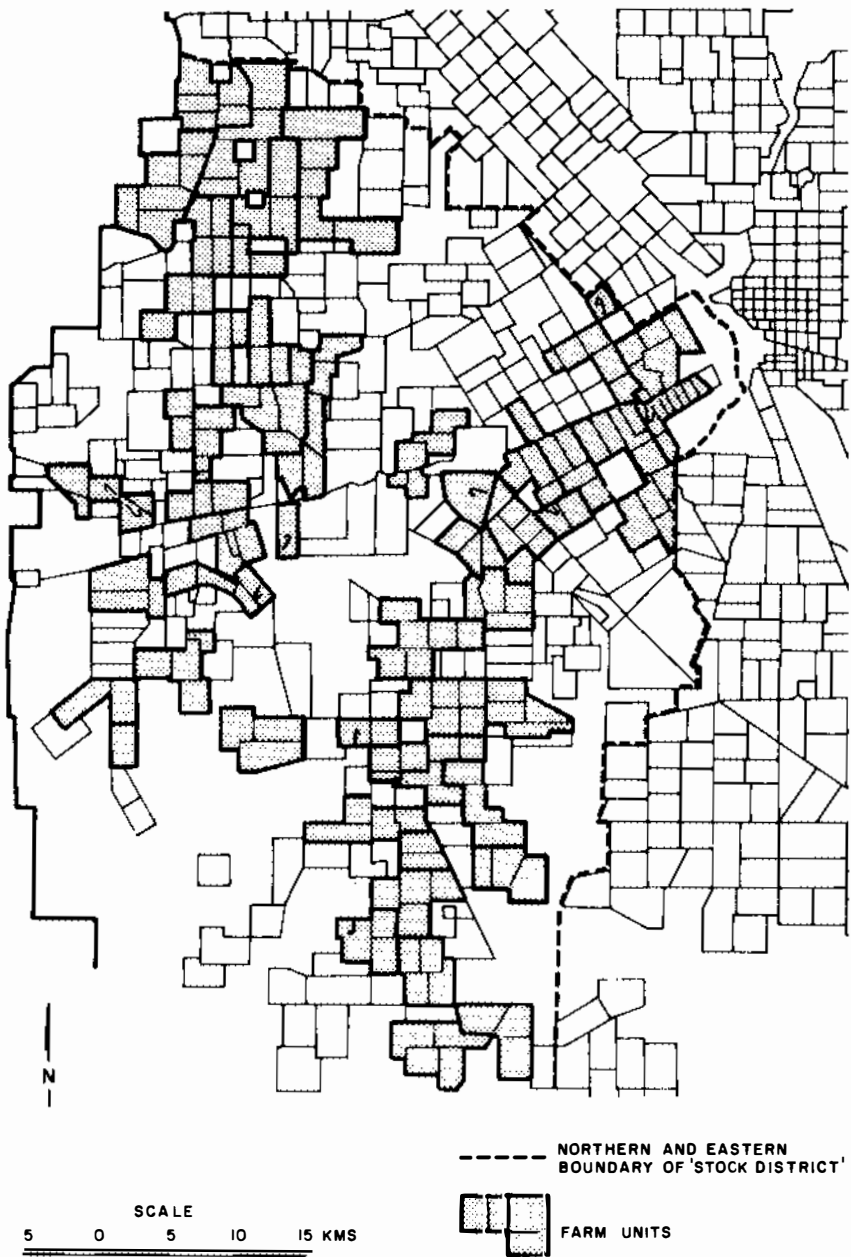


Fig. 16: Yilgarn "Stock Area", Agricultural Bank assisted farmers, 1938-1956.
 Source: Agricultural Bank. File 690/35. Reverted Holdings.

“survivors” shown in Figure 16 and Table 2. Others entered the scheme after 1940 and consequently do not appear in Figure 14. In all, of the 60 farmers listed in 1940, 35 were still farming in 1956, but to these must be added 13 latecomers to the scheme, giving an approximate survival rate of 66%. Figure 16 shows that by 1956, although “surviving” farms were smaller in number, most were considerably larger in size. In the 16 year period, most farmers had managed to convert blocks originally leased to C.P. tenure, or had taken over other blocks as neighbours had left. Most farms were over 1600 hectares in size with at least 800 hectares cleared and running flocks of between 1000 and 2000 sheep. In contrast, the two smallest holdings, those of Ivey and Lamzed, were ones where no linking had taken place. Clearly, property owners who had participated in the linking scheme were in a sound position to take advantage of the boom in rural production which, by then, was under way.

The Problems of Water and Grasshoppers

Throughout the Depression and post war recovery, the question of water supplies continued to be an issue. Periodically, deputations of settlers approached the government, culminating in a scheme prepared by the Water Supply Department in 1936 and shown in Figure 17. The plan was to reticulate an area of 162,000 hectares at a cost of \$250,000. But the timing was astray. Plans for linkages of holdings were being finalised at that stage and the larger units could not bear the water costs which had been calculated on the basis of 400 hectare farms.

Yet pressure continued. In April 1944, requests were made to the Agricultural Bank and the government to improve the Dulyalbin-Mt Hampton water supply; and in 1945 a decision concerning the inadequate Miners’ Settlement extension was delayed, pending the outcome of decisions concerning the future of the district. At this stage, eight settlers in the Miners’ Settlement area were receiving water, four along the Bullfinch main, four in the Agricultural Area, five in the Ghooli area from the goldfields main, and five immediately west of Southern Cross from the same source. Further west, four settlers received water from the main pipe and seven from the Moorine Rock extension. In all then, only 37 settlers had access to piped water. For the remainder, a number of tanks and wells were serviced by the Public Works Department. These supplies were intended for emergency drought use only, but they were frequently empty in summer when most needed. This involved the settler in lengthy travel to alternative sources.

The period of depression and war saw no improvement to the water reticulation network, but through the bank’s reconstruction programme, funds were available for dam construction. The extent to which this affected the Yilgarn’s marginal area settlers is unknown, but it appears as if such measures were inadequate to meet the farmers’ needs.

One particular problem that faced settlers was the infestations of grasshoppers (*Austroicetes cruciata*. Sauss.), which had reached plague proportions in some areas even before the Depression. Grasshoppers had always been present in small numbers in the wheatbelt, but the forest and scrub cover did not provide a suitable breeding ground and feed was scarce. The favoured breeding grounds of the grasshopper were the compact, medium or heavy soils with bare open patches free of forest or heavy grass cover that farm abandonment in the 1930s produced. The series of dry seasons which were suitable for the

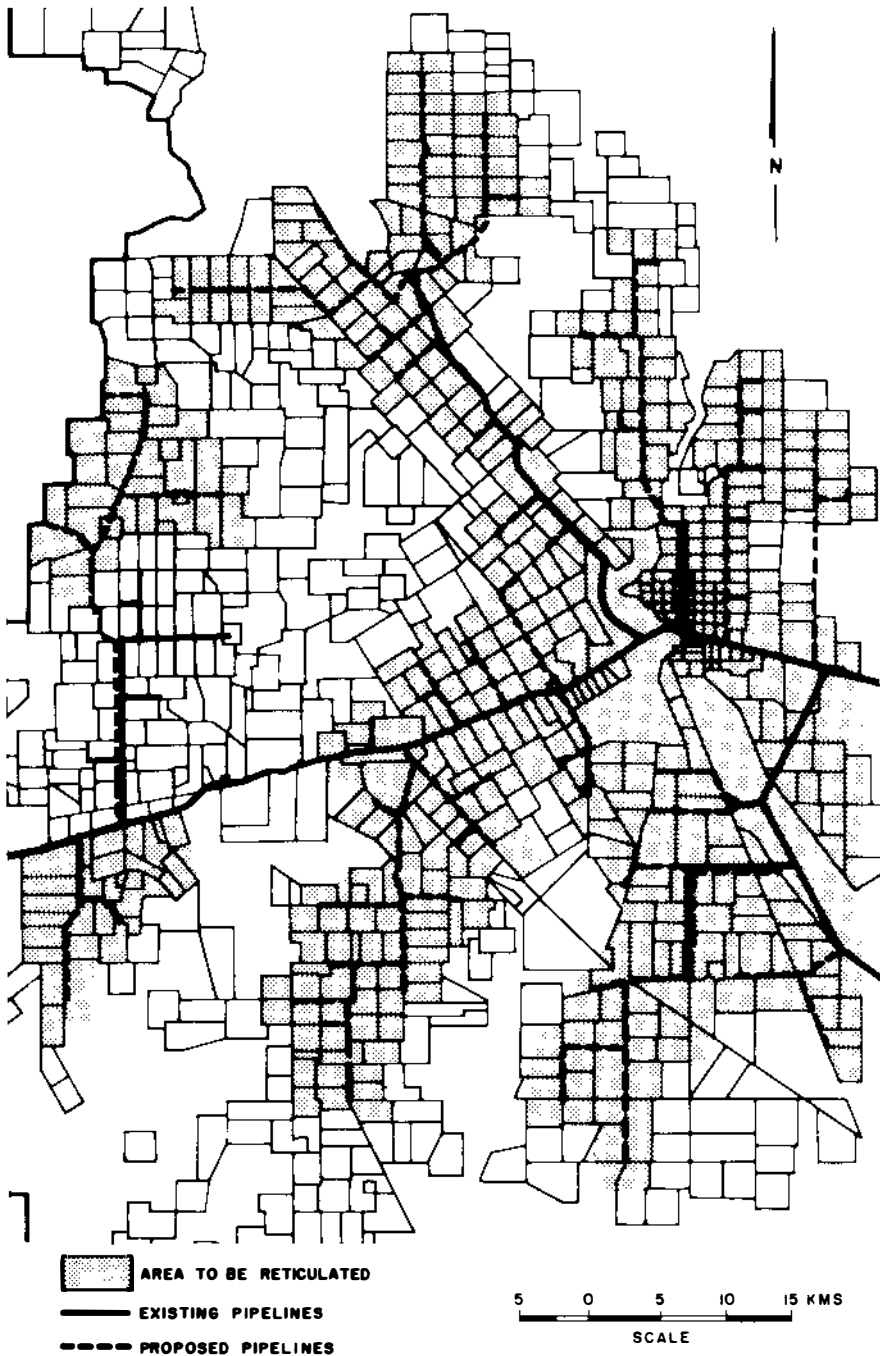


Fig. 17: Proposed water supply, Carrabin-Ghooli, 1936.

Source: Department of Lands and Surveys. File 1659/36. Provision of Water Supply for the Carrabin-Ghooli area.

hatching of eggs, led to a building up of grasshopper numbers culminating in widespread outbreaks in 1936 and 1937, when plague proportions were reached in areas east of a line from Ajana to Corrigin. With its abandoned farms and lower rainfall, the Yilgarn was particularly hard hit by such infestations, and a local farmer, Stacey, claimed that "he had seen from one-third to one-half of the crops destroyed".

Attempts to solve the problem had begun in 1928 with the testing of various baits and sprays, including dusting with arsenate of soda and the use of cyanide gas. A poisoned bait consisting of bran, arsenate of soda and molasses mixed with water was developed. The bait could be spread by hand, but a much quicker method was found using a modified rotary superphosphate spreader. The other obvious measure to be taken was the breaking up of the bare, hard, compact surface. Starting in 1937 with 29,000 hectares, the government contracted for the annual ploughing of breeding grounds, and by 1942 the Agricultural Bank had an annual programme which reached 45,000 hectares of summer, and 24,000 hectares of winter ploughing in that year. Overall, \$72,000 each year was being spent on grasshopper control.

Despite these efforts, the situation continued to cause considerable concern, so much so that in 1942 the minister for lands convened a conference on the "rehabilitation of marginal areas with particular attention to the grasshopper menace". One proposal given serious consideration was for the evacuation of settlers from all affected districts, including the entire agricultural portion of the Yilgarn, along with most of the road board districts of Koorda, Mt Marshall, Mukinbudin and Westonia. However, following considerable discussion concerning the costs of such evacuation and attendant relocation, it was resolved that "The menace of grasshoppers does not at present warrant the adoption of a policy of evacuation of the localities in which settlement still survives".¹¹

The major outcome of the conference, as outlined by the minister for lands in the *West Australian*, 9 February 1943, was to place the eradication programme on to a broader footing involving the formation of district committees in each road board district, with farmers to plough their own breeding ground areas for a payment of 25 cents per acre (61.8c per hectare) and breeding grounds on abandoned properties for 40 cents per acre (98.8c per hectare). Agricultural Bank officers were to map egg laying areas and the road boards and the department of agriculture were to lay poisoned baits. The government was to fund the operation through the bank with \$80,000 annually. In the Yilgarn, a special meeting with the government entomologist C. J. F. Jenkins was held on 30 April, 1943, at which a grasshopper control committee was formed and the road board undertook to bait along roads, hire broadcasters and trucks to farmers on a cost basis and actively encourage the ploughing of affected areas. Each year, farmers ploughed 40-120 hectares and received compensation from the bank. Bank lists of those involved would suggest that virtually every farmer in the Yilgarn's marginal area participated. Despite this activity, the problem was not solved and at the road board meeting of November 1948, it was resolved "that the grasshopper menace be considered as a National Problem".

Increasingly, the problem of grasshopper control became linked with questions of the level of payment for ploughing and the restrictions placed on the wheat cropping area. For example, in 1949 the Yilgarn road board protested that farmers should receive 70 cents per acre (\$1.73 per hectare) for ploughing in excess of the permissible cropping area. Later in the same year, the grasshopper control committee met with the minister for

agriculture, local members of parliament and a representative of the Rural and Industries Bank to express its views. The district had received its five ton quota of poisoned bait, but had requested 600 tons. Since post war shortages and a lack of funds had limited the total allocation to 100 tons, the board's request was considered unrealistic. The minister indicated that the ploughing subsidies would not be continued and strongly advocated rotational farming as the main remedy. He believed that overstocking had cleaned out barley grass and good farming practices were necessary to renew pastures. Indeed, shortly thereafter the new five year rotational cropping formula was introduced, and the organisation of grasshopper ploughing was taken over by the newly formed Agriculture Protection Board.

There was no single turning point to mark the end of the period of recovery and the beginning of the following period of expansion. As late as 1947, the road board somewhat surprisingly sought to divest itself of its southern agricultural land, a possible reflection of the difficulties in administering such a distant area and a lack of conviction as to the value of its agricultural base. It approached neighbouring shires and Narembeen agreed to take over the settled portion of the Holleton area (see Figure 14). Just as grasshopper ploughing continued well into the 1950s, so to did it take the Rural and Industries Bank some time to finalise its marginal lands operations, and for farmers to recover from war time shortages. As Figure 15 shows however, by 1950 much of the abandoned land had been reoccupied, and farmers were poised to take advantage of the generally high prices and good seasons of the 1950s and 1960s.

Consolidation and Expansion. 1950-1969

Consolidation and expansion

The early part of this period was one of transition. Up until the mid 1950s there were still restrictions on superphosphate supplies and shortages of other materials, grasshoppers were still a menace, the Rural and Industries Bank was still involved in the final stages of its reconstruction programme, and it was not until 1958 that the road board applied to have the marginal area line abolished "as it is detrimental to the district and any privileges that were had, have since ceased".

However, even before the war was over, development plans involving the Yilgarn were being investigated. Early in 1942, an agricultural advisor, R. P. Roberts, recommended that, because of the unreliability of rainfall, agriculture should be based on "extensive" methods with wool as the main income earner. As a result, in 1943 the subdivision of lands between Esperance and Southern Cross was included in a list of proposed governmental works for the post war period. The Department of Lands and Surveys placed a preliminary estimate of \$280,000 on the project, consisting of \$80,000 for surveys and \$200,000 for the construction of roads, public buildings and schools in new town sites and the provision of water. In 1944, the immediate creation of 30 farms from an amalgamation of abandoned blocks in the Southern Cross-Bullfinch area was proposed. This was seen merely as a start, to be added to by eventual movement into unsurveyed areas further south.

With the end of the war, however, readily available settlement opportunities for

returned servicemen and civilians were sought, at first through the renovation of existing farms in the wetter areas, and then through the development of vacant "light lands" in areas close to major centres of population, particularly east and west of Albany, and in the Esperance-Ravensthorpe region. Thus, although several requests were made in the late 1950s by the Yilgarn road board for the Forrestania-Mt Holland area to be opened, they were not acted upon.

During this period the Yilgarn actually lost more territory. The Forrestania area, which had been classified and surveyed in the late 1920s, remained unoccupied because of the high proportion of unfavoured morrel country there. In 1956 the Kondinin road board proposed that it be included within its district, a suggestion which was rejected by the Yilgarn. Despite an assurance in 1957 that "Kondinin's only concern is the maintenance of the track from Hyden to Norseman as agricultural development possibilities are very remote"¹², the prospects of development came much closer when the Department of Agriculture placed a rain gauge and undertook cereal and pasture trials there in 1960, even although these were regarded as "purely exploratory". In 1961, Kondinin was able to produce persuasive arguments that the area was a natural extension of its territory and the Kondinin road board's application for the annexation of the Forrestania area was approved by the boundaries commission in March 1962.

Major extensions to the farmed area in the Yilgarn, at the edge of agricultural settlement, were left until last in the settlement expansion surge of the 1960s. Despite lobbying by the local member L. F. Kelly in 1964 to promote new settlement, it was not until 1968, right at the end of the period, that attention was turned to the Yilgarn. In the meantime, consolidation of farming on the land already taken up and reoccupation of previously abandoned blocks continued (see Figure 18). Throughout the 1950s in particular, the road board was inundated with requests for approval of clearing permits. By the late 1960s, the entire area north of the railway previously surveyed for agricultural purposes had been incorporated into farms. Some of this previously unused area was allocated to newcomers to land ownership in the district — Hampel, Treasure and Heppingstone, Bebek, Heal, Poleschtschuk, Maclean, Bessel, Harrison, McGoughan, Jackson, Branchi, Kosovich, McNamara, Shorter and Blair; and some were used for further farm expansion by existing settlers. By this time, some of the original settlers had sold their properties after 40 years or so of farming, bringing newcomers such as Donovan, Wright and Crees into the area. Towards the south, similar processes had occurred. The last remaining blocks from the previous period of expansion in the 1920s were taken up and pockets of lighter land between the settled strips were surveyed and allocated from the late 1950s onwards, affording opportunities for established farming families such as Borona, Gethin, Kent, Ivey, Sherar, Rose, McKenzie and Armanasco.

The special settlement areas of Southern Cross-Bullfinch and the Miners' Settlement and south Ghooli areas in general followed a similar process of reoccupation of previously abandoned blocks, but with the added complication of the special leasehold tenure employed during the depression and war to keep people on the land. Thus, although in both areas settlers were able to expand their holdings, conversion to C.P. tenure did not come about until the late 1950s in most areas and even by 1969, a large number of blocks were still held under special lease. Despite this delay, by the end of this period large landowners had emerged from the core of original settlers. From the mid-1950s there was

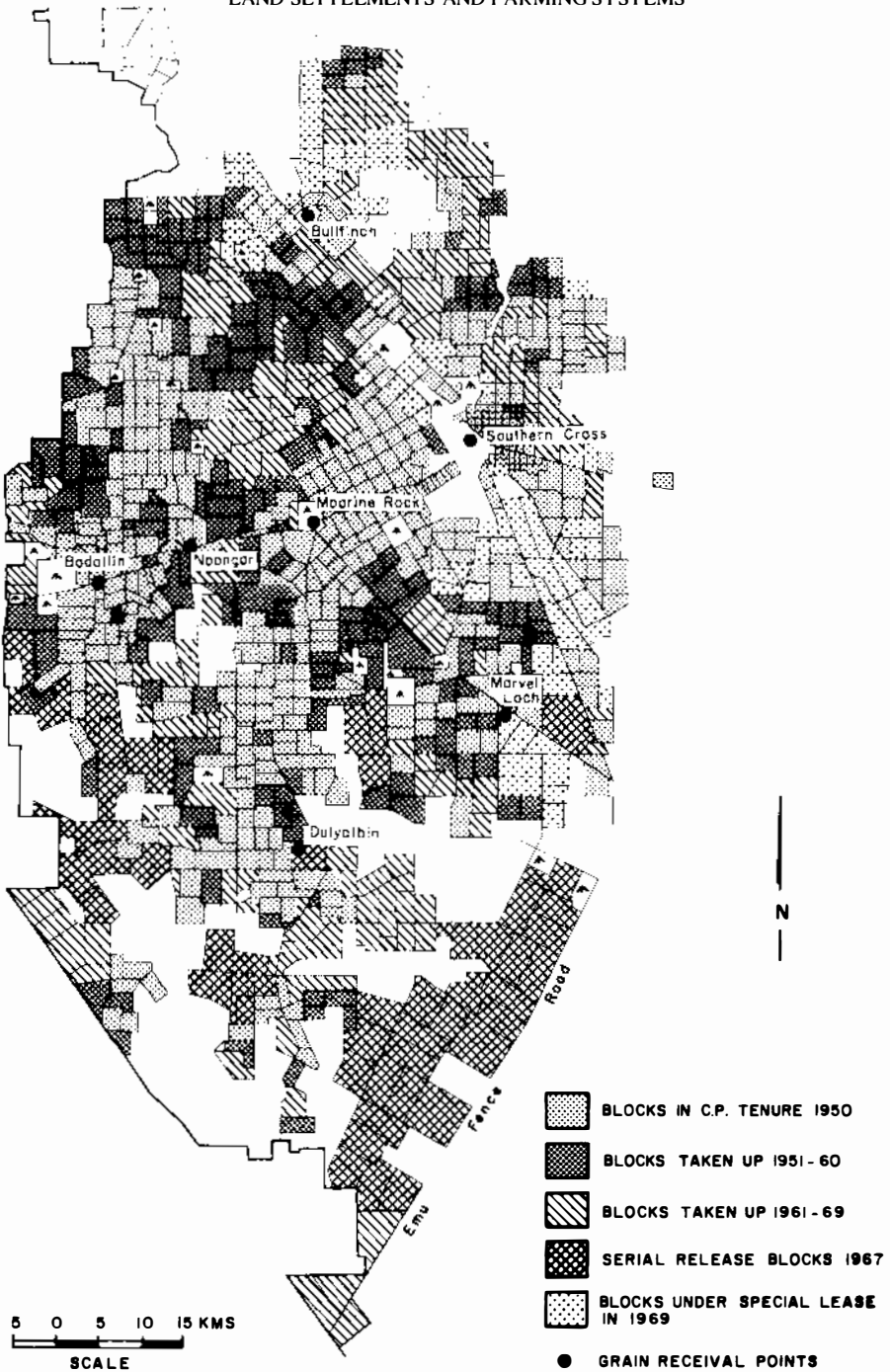


Fig. 18: Land settlement, 1950-1969.

Source: Department of Land Administration. Registration and Deeds records.

a flurry of applications for land, so much so that the Lands Department sensibly grouped blocks in the area north east of Bullfinch into six areas of between 1600 and 2400 hectares to be offered to competing applicants. P. Divitini, for example, sought land in the area. "I have some sheep and cattle and pigs. They are grazing on a friend's farm but he wants to put his own stock on it. I have a tractor and all farm machinery and a motor truck. We are only here temporary".¹³ By 1969, established farmers such as Roberts, Mengola and Marafioti in the Bullfinch area, Fragosa, Burro, Guadagnin and Forrester in the Turkey Hill district and Della Bosca, Wesley, Nunn, Guerini and Ivey in the Southern Cross-Wheatley area, all held large land areas. Moreover, in the Corinthia-Perilyia area and in the district north-east of Bullfinch, newcomers such as F. T., P. T. and R. T. Kings, Whitney, Parker, Taylor and Giles, Reid, Dixon, Pringle, Henderson, Whiley, Cox, Spicer and Caratti had managed to create quite large holdings of from 1600 to 5500 hectares.

In the south Ghooli and Miners' Settlement areas, the Panizza, Posa, Armanasco, Dunbar, Patroni, Unkovich, Pasini, Gobetti, Gianoncelli, Salvodelli, Divitini, Carnicelli, Blair and Bennett families occupied most of the land. The Grace, Harrison and Oetiker families were the only new comers to farming. The needs of some of these farmers for more land was quite pressing. For example, Fritz Oetiker who had previously been a mining engineer at Edwards' Find and stayed on when the mine closed, applied for C.P. land at Parker Range in 1964 "in order to have a safer future. At present I depend entirely on block 450 which is leased on a 10 year basis, to make a living for myself, my wife and three sons, so I certainly have to get more land".¹⁴ A year later, Paul Panizza, who had been sharefarming for some years, sought C.P. land in the same area, in order to establish a farm of his own.

For those who were expanding existing holdings, or for sons who could rely on support from the family farm nearby, the taking up of new land did not cause too many problems. For those with little capital or without a family backing, the same sort of financial hardship as experienced by the original settlers in the 1920s was common. For example, in 1968 the Lands Department sought information from Poleschutschuk, concerning the family's failure to reside on its block as part of the conditions of a C.P. lease. The struggles of such settlers are well summarised in the response, which is representative of the problems faced by such new land farmers in the Yilgarn and elsewhere in the period of major new land releases from 1956 to 1969:

We do live on the land 10 hours every day, we only sleep in Southern Cross. We are unable to build a home because all the money the farm earned us we used to clear more land, fencing and bought heavier machinery. It is essential for us to sow a bigger acreage as the farm is our only income for living, we are forced to fence every acre because the emus and kangaroos cause terrific damage to the crop. We had to get heavier machinery because clearing virgin land causes a terrific lot of damage to machinery and repairs are very costly.¹⁵

Much of this development was a process of consolidation and minor in-filling and it was not until the end of the period, in 1968, that a major assault was made on the vacant areas in the southern part of the shire. In that year, 45 blocks were opened up as part of the

State's "one million acres a year" land release programme for civilian settlers, which had commenced in 1956. These were located in two major concentrations south of Bodallin and along Emu Fence Road, with scattered locations elsewhere (see Figure 18). This not only filled in areas left vacant in the first settlement surge of the 1920s, but also extended the agricultural frontier on the shire's south-east agricultural margin. Blocks ranged in size from 1400 hectares to 1700 hectares. In all, an area of 72,000 hectares was released, consisting of sandplain supporting a wodgil, tamar and broombush scrub with some patches of mallee, interspersed with pockets of heavier brown loam salmon gum and gimlet country. Between 1968 and 1970, the number of farms in the shire increased by 27%, from 184 to 234. This represented the largest number of farms since the Depression, and a figure not achieved since. Some of these new releases were allocated to established farmers in need of more land to make their holdings into viable economic units, (for example to Syme and Patroni); some to local farming families (for example, Panizza and Guerini), but most went to newcomers to the district's land owning group and their problems with land development were to become very similar to those of Poleschuschuk.

In retrospect this brief period represented a high point in settlement expansion, but at the time, it was intended to be the forerunner to a more serious assault on the vast vacant

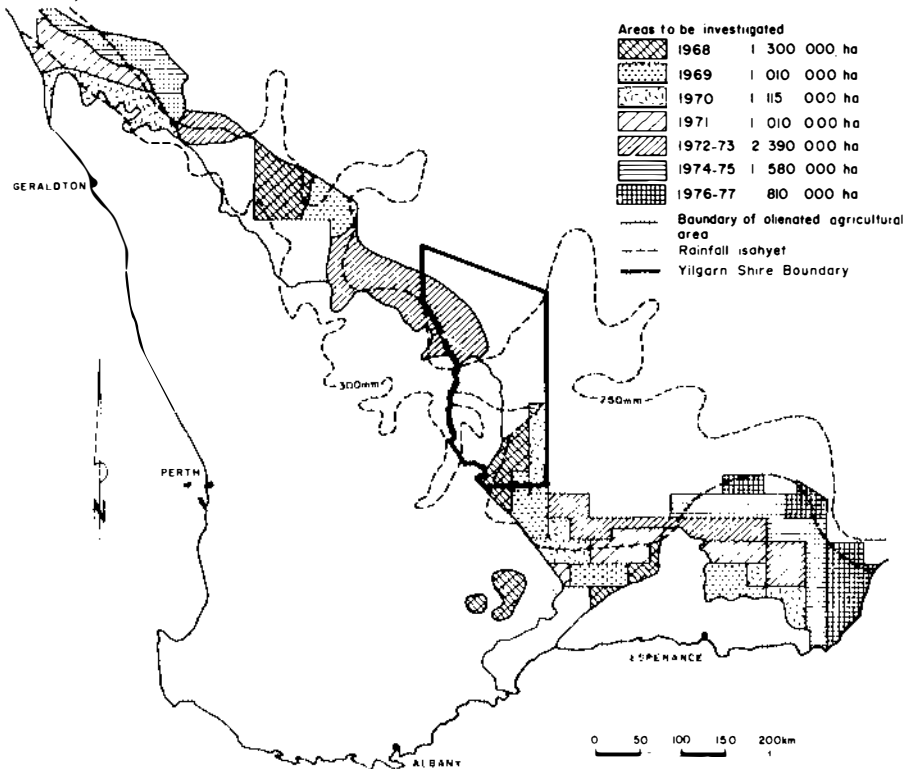


Fig. 19: Proposals for land settlement investigation, 1968.

Source: Murray, D., "Agricultural Settlement Experiments in Western Australia — The Esperance Sandplain, 1956-1975", *Rural Systems*, III, 1985, 60.

lands in the east and south of the shire. Encouraged by favourable seasons and wheat prices, and the apparent success of its settlement programme up to that time, the State planned massive farmland expansion on the wheatbelt margins. Large areas were to be systematically classified, surveyed and released between 1968 and 1977 (see Figure 19). However, in 1969, due to a fear of world over-production of wheat, quotas were introduced. Since wheat was the essential pioneer crop and income earner of the new land farmer, the settlement expansion programme was shelved. At the same time, there was a dramatic drop in wool prices. In a sense, history had repeated itself. Just as the initial agricultural expansion into the Yilgarn had occurred at the end of a favourable economic period, so too was further expansion stifled by an economic down turn at the end of the 1960s, with similar problems facing new settlers then as had faced the new farmers in the depression.

Water

Three sets of water supply problems faced the farmers in the Yilgarn in this period — the extension of reticulation; the maintenance of existing pipelines; and the provision of centralised off-farm water storage and on-farm facilities.

Pressure for extensions to the water reticulation network continued. In the 1960s different groups in the Turkey Hill, north Bodallin and west Bullfinch areas petitioned local parliamentarian Lionel Kelly, the Farmers' Union and the Liberal Party for extensions to satisfy their needs. In 1965, nine farmers were connected to the newly completed pipeline to the mining settlement of Koolyanobbing, thereby heightening the hopes of others. In 1966, various proposed schemes were jointly considered by the Public Works Department: to the west of Bullfinch, 81,000 hectares on 34 properties; to its south, 5300 hectares on seven properties; further east, 12,000 hectares on ten properties (see Figure 20). The total cost of all schemes was calculated to be \$870,000. The department was certainly sympathetic to the farmers' needs and engineer Parker observed that "Obtaining water for farm requirements... is most difficult in this area. Use is made of roof catchments for domestic purposes wherever possible, but many farmers have to cart water for their sheep each year. Very little suitable underground water exists, so that reliance is placed mainly on surface conservation".¹⁶ Yet with only 280mm of rainfall and 2100mm annual evaporation, such storage was difficult to maintain and lack of water was limiting the benefits of pasture improvement.

Although the department supported the scheme, it was not implemented; nor were proposals in 1955, 1959, 1961 and 1970 for a small scheme in the south Bodallin area. Because the area was considered as "marginal" it was not included in the Country Water Supply Schemes of 1945, 1960 or 1963. Nor was it placed on the list of additional desired extensions by the Rural Water Council in 1962, or the areas considered for possible future extensions in 1966.

Difficulties were also experienced with the maintenance of existing reticulation facilities, and a number of requests were made over the period for improvements to the water supply to the Miners' Settlement area, to the Wheatley tank and pipe and to the Bodallin stand pipe.

The need for rock catchment storage facilities was also felt. Even before the war, the Public Works Department had been involved in the construction of key dams throughout

the wheat-sheep belt and in the immediate post war years, with more effective earth moving equipment, old dams were enlarged and new ones excavated. In the Yilgarn, requests were made for improvements in rock catchment facilities at Dulyalbin and Mt Hampton. By 1963, requests from farmers were so numerous that an inter departmental Lighter Rainfall Areas Water Supply Investigation Committee was formed, with

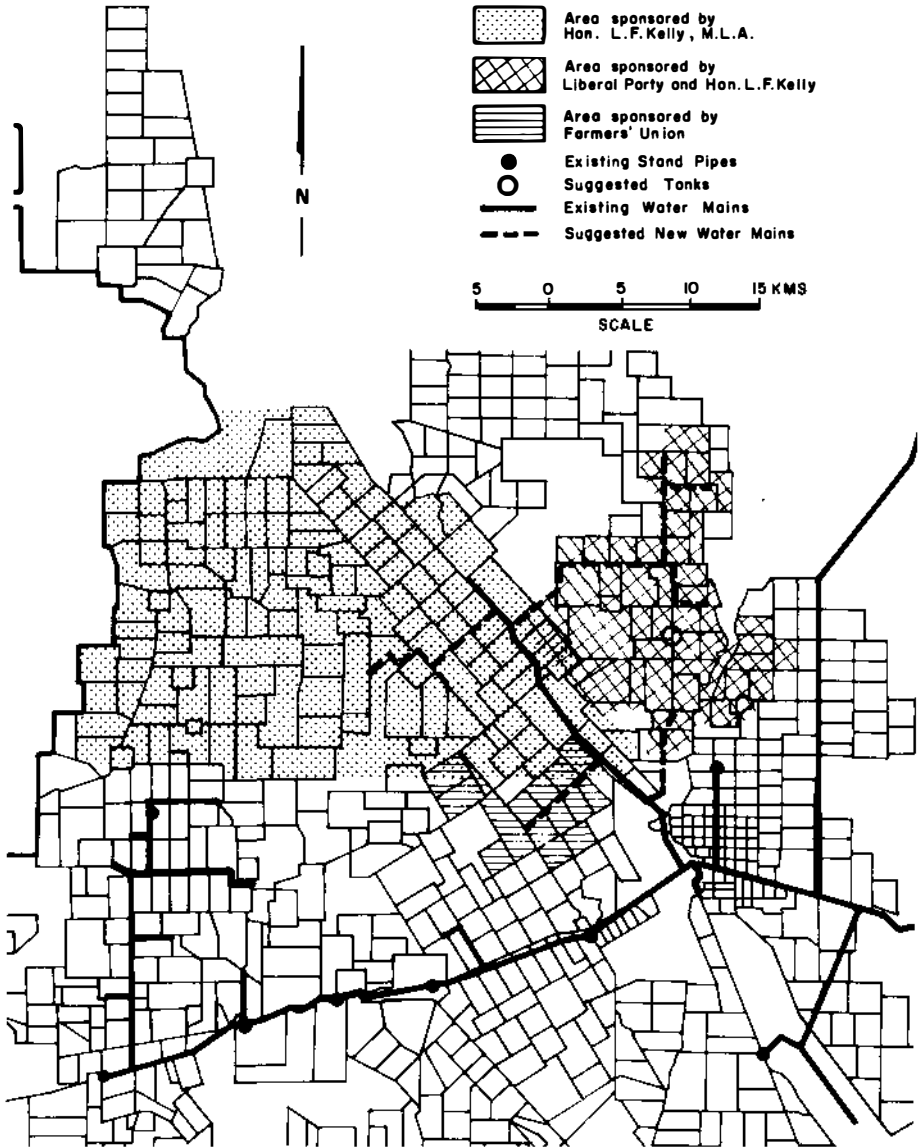


Fig. 20: Water reticulation proposals, 1966.

Source: Department of Public Works. Water Supply Section. File 34/54. G.W.S. Bullfinch Extension.

representatives of the Departments of Works and Agriculture, and the Rural and Industries Bank. Its aim was to investigate the water needs of farmers in the north-eastern wheatbelt and the Yilgarn south of the goldfields railway as far east as Moorine Rock. The committee contended that farm conservation had been “woefully neglected”, due to the possibility of piped extensions from the goldfields water supply main conduit, and favoured a solution involving governmental financial and technical encouragement to farmers to build their own dams. Thus, farmers at Mt Hampton had to settle for roaded catchments with large farm dams to solve the stock water problem. Elsewhere, nine large rock and earth dams with capacities of between one and three million gallons were built between 1964 and 1970. These included a 4545 cubic metre tank to collect rock catchment run-off built at Dulyalbin Rock in 1966-67. At the same time, the government promoted a scheme to grant loans for stock water provision, largely through the construction of key dams. Yet at first, this scheme too, was only available to the area west of Moorine Rock.

By the end of the period, then, the Yilgarn’s perceived need for water had not really been met — there had been no extensions to the piped water network, problems of supply continued for the existing network despite minor improvements, and the Dulyalbin Rock tank was to prove inadequate in drought years. Financial assistance was available, however, to help farmers build their own dams.

Pest and Vermin Control

In 1951, the Agriculture Protection Board was formed and took over responsibility for the organisation of the control of pests, vermin and weeds. The grasshopper menace continued to be ever-present and the Yilgarn, which acted as a buffer area preventing the spread of the pest south and west into the main agricultural districts, continued to be a focus of activity. Throughout the early 1950s an average of 8900 hectares were ploughed annually and, commencing in 1953, the board experimented with aerial spraying with the insecticide dieldrin, firstly concentrating on the Southern Cross and Bullfinch aerodromes and then on agricultural land in the Turkey Hill and Wheatley areas. The reoccupation and working of abandoned land greatly assisted in the control of the menace, as did the prolonged and severe heat wave in the summer of 1955-56. As a consequence, the level of control activity was reduced, although over one half the State’s total spraying and ploughing activity was in the Yilgarn still. For example, in 1958 there were only 25 ploughing contracts let of which 16 were in the Yilgarn, covering 4400 hectares of a total of 6400 hectares.

By 1959, however, more favourable seasonal conditions plus a decline in farmer vigilance and action lead to an increase in grasshopper numbers. The Yilgarn was the centre of attention in that and the following year, receiving 30% of all the dieldrin issued and 25 of the 40 ploughing contracts (7700 hectares of 10,700 hectares). Further plagues occurred in 1962 and 1965 but with continued vigilance, careful seasonal monitoring and improved spraying methods, the pest was kept under control. Contract ploughing ceased after 1962 and by 1966, the A.P.B was able to record that the continued expansion of cropping had restricted the grasshopper to pastoral areas. At its September 1968 meeting, the shire council congratulated the A.P.B. on the success of its grasshopper control measures. Improvement in aerial strip spraying and misting techniques, and changes from

the bran-benzine hexachloride mix to dieldrin in 1955 and to malathion in 1968 also improved the effectiveness of control measures.

Towards the end of the period however, a new pest emerged. The Australian plague locust, that had not previously been known to affect agriculture in Western Australia, although long a pest in the eastern states, made its first appearance in plague proportions in the areas to the west and south of the Yilgarn.

Meanwhile, emus continued to cause difficulties. The No. 1 Rabbit Proof Fence had been built in 1906, well beyond what was then the edge of settlement and well before farming in the Yilgarn commenced. Had settlement expansion continued, it is likely that a second fence would have been built to the east of Southern Cross in the 1930s, but the Depression and war intervened. By the 1950s, the need for a fence was pressing, particularly since the Yilgarn was the agricultural areas' first line of defence against emu invasions. In August 1957, the A.P.B. recommended that a fence be built, with the Yilgarn and Westonia each to pay 27% of the construction cost. Its proposed eastern location, along what is now called Emu Fence Road, was believed by the Yilgarn residents to be a potential constraint to further farmland expansion. As a consequence, construction did not commence until December 1962 and was not completed until 1965, at a cost of \$210,000. The final placement of the fence well to the east of the settled area reflects the arguments used successfully for its relocation. Even then, the vermin problem did not disappear and in 1967, for example, bounties were claimed for nearly 1700 emu beaks, 70 wild dogs and 28 eagles in the Yilgarn shire.

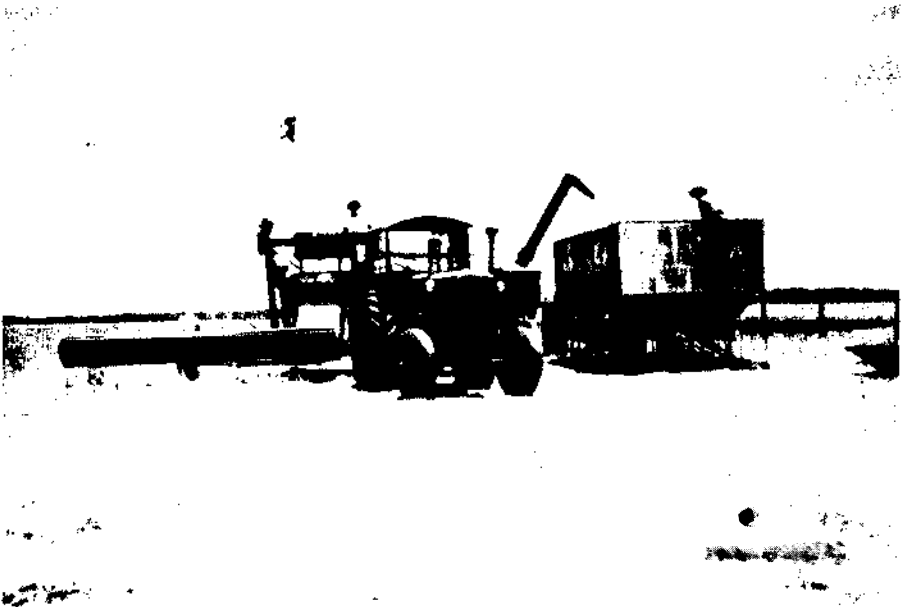
Changes to Farming Systems

Changes to the farming systems in the 1950s and 1960s can be grouped into agronomic, technologic and economic. The chief agronomic advances concerned the application and extension of knowledge already gained before the war on the use of trace elements on light land soils, combined with the development of subterranean clovers and barrel medics and the on-going development of new varieties of disease resistant wheats better suited to the short growing seasons and low rainfall of the Yilgarn. The use of trace elements allowed farming to expand into light land areas; clovers and medics assisted in the maintenance of soil fertility and provided more reliable sheep feed than the stubbles and volunteer grasses had previously; and changes in wheat varieties allowed for better yields over a wider range of seasonal conditions. In this period too, came the first widespread use of insecticides in crops, assisting in the changes to the crop-fallow system. On the heavier land, experimental work carried out by the Department of Agriculture at its Merredin and other research stations found on-farm application. So too did some of the work previously carried out on the Yilgarn Experiment Farm which was closed down in 1940.

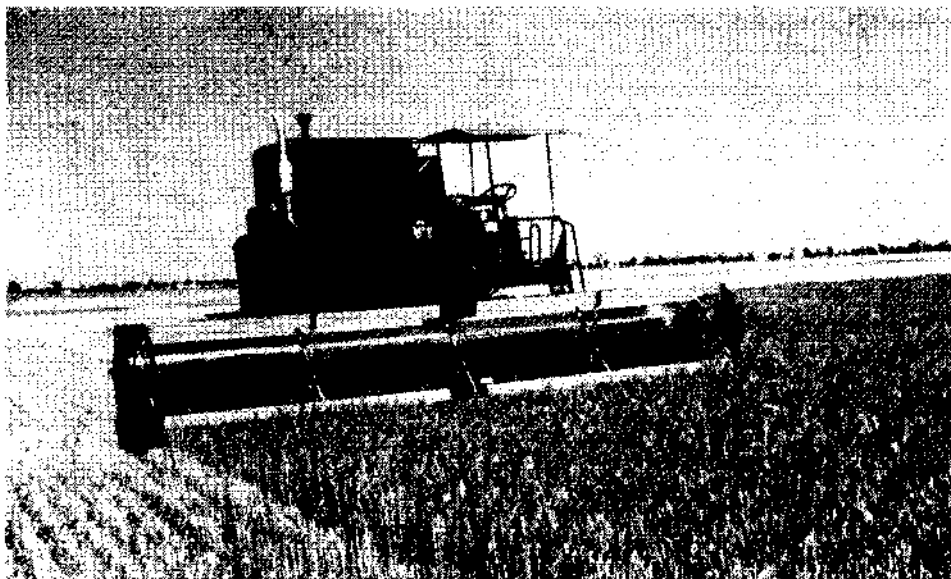
The major technologic advances of the period consisted of the development of medium sized machinery for virtually every phase of farming operations. The bulldozer and chain replaced the axe in land clearing (Plate 9). Tractors became larger and more powerful and as a consequence were able to pull larger implements such as ploughs, scarifiers, harrows, seeders and harvesters. As a result, clearing became quicker and cheaper, particularly in the Yilgarn where many of the scarce large trees had already been



*Plate 9: Land clearance with bulldozers, 1961.
(Courtesy Grace and Peter Michael Capito, Bodallin)*



*Plate 10: International WD9 tractor and A85 harvester, 1952.
(Courtesy Grace and Peter Michael Capito, Bodallin)*



*Plate 11: Massey 510 self propelled harvester, 1961.
(Courtesy Grace and Peter Michael Capito, Bodallin)*

felled for use in mines and pumping stations. It became possible to prepare larger areas for seeding more rapidly, thereby taking advantage of seasonal conditions such as the timing of the autumn rains. Twelve disc ploughs were progressively replaced with eighteen, twenty two and thirty disc ploughs by the mid-1960s. Larger harvesters too, meant that bigger areas could be covered in a shorter period. One farmer, Peter Capito, for example, changed from a Massey-Ferguson header with a twelve foot (3.6m) cut used in the early 1950s to a self-propelled Massey-Ferguson 510 with a twenty foot (6m) cut in the early 1960s (see Plates 10 and 11). In addition, the handling of wheat in bulk eliminated the time-consuming and back-breaking chore of bagging and man-handling the crop. Advances in the size and power of trucks also made it possible to move the larger wool clips and wheat crops off the farm more quickly and cheaply. Improvement in off-farm facilities also played their part. The period was one of considerable road building and road improvement, particularly along the major routes to the grain receival points.

Bulk handling of grain and its storage in cheap, efficient, horizontal storage facilities had been developed by Co-operative Bulk Handling, which took over the organization of handling the grain harvests in 1933. Until 1953, the easternmost grain bulk storage facility was at Moorine Rock. The gradual recovery of wheat growing in the western areas of the shire is reflected in the figures for the only two wheat receival points at Bodallin and Moorine Rock, shown in Figure 21. Given the wheat growing record of the eastern areas, there was little thought of placing facilities further east. However, in that year, a deputation consisting of R. G. C. Newbury, E. S. Beaton and R. B. Panizza presented a list of growers within a semi-circle from Bullfinch to Ghooli to Marvel Loch who would be producing 8165 tonnes in the following season. The official from C.B.H. who received the deputation was convinced, and recorded: "I must admit that before the deputation I

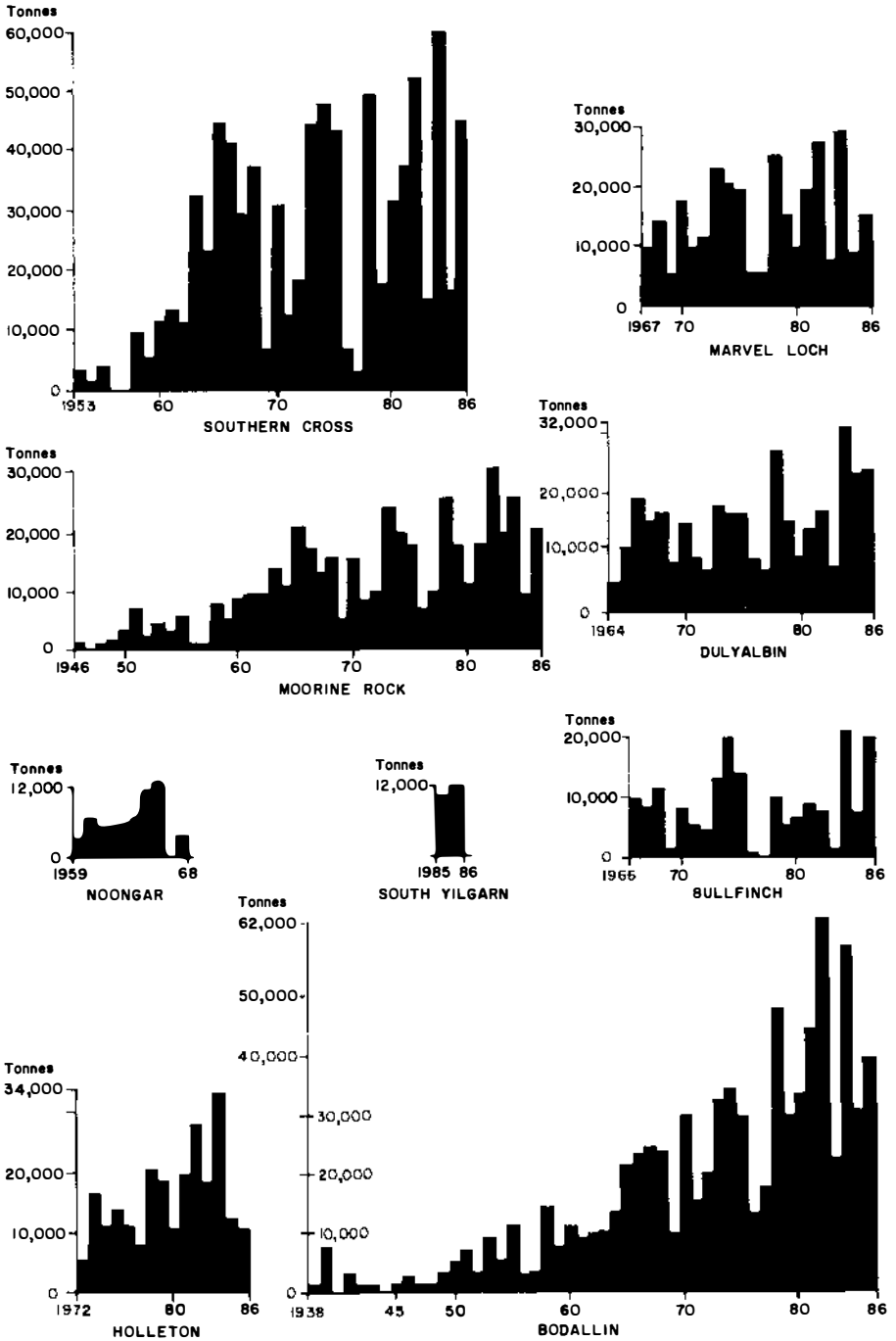


Fig. 21: Co-operative Bulk Handling wheat receivals, 1938/39-1986/87.
 Source: Co-operative Bulk Handling.

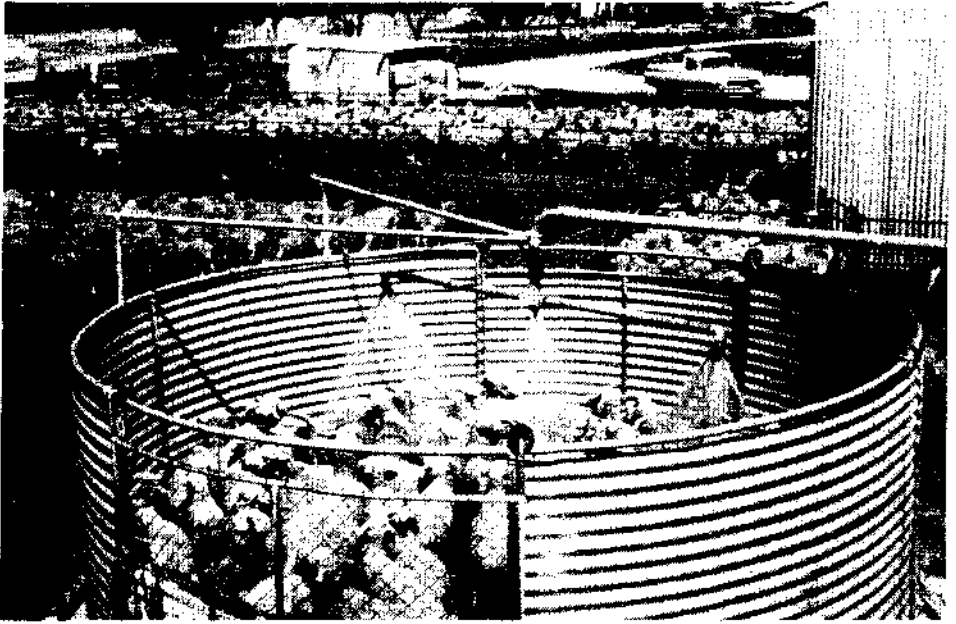
was prepared to resist any argument that may be advanced to move from Moorine Rock but I feel convinced after a good hour's discussion with these men, that we must consider Southern Cross as a siding from now on".¹⁷ From their own lists, C.B.H. anticipated 13,608 tonnes being put into Moorine Rock, which only had storage space for 4899 tonnes. Thus a temporary storage of at least 5443 tonnes at Southern Cross was recommended. This was only a beginning. As wheat growing increased, facilities were built at Noongar in 1959, Dulyalbin in 1964, Bullfinch in 1966 and south-west of Marvel Loch in 1967. For some farmers, the provision of such facilities cut their carting distance in half and provided additional incentives to concentrate on wheat cropping.

The speed of recovery of the wheat industry in the Yilgarn and the run of good seasons was reflected in the volume of wheat received at Southern Cross (See Plate 12). Up until the 1963-64 season, the record receipt at any installation in the State had been held by Morawa with 23,079 tonnes; from within the Yilgarn, the record shipment had been 16,286 tonnes from Moorine Rock in 1931. The 1963-1964 harvest however, saw a record 35,372 tonnes put into the Southern Cross bins. The flexibility of the C.B.H. system of cheap, flexible, temporary, horizontal storage was well proven. In 1966 an opportunity for further development occurred when the completion of the standard gauge railway line forced the re-location of bins along the new line. In the process, the Noongar bin was closed down and more modern facilities were built at the other locations.

Coupled with these advances were developments related to the use of chemicals. Although the community sheep dips at Bodallin and north Bodallin continued to be used throughout the 1950s, gradually farmers constructed their own plunge dips, which in turn were replaced by circular sheep showers in the early 1960s. Boom sprays were developed



*Plate 12: The boom times: A bumper crop in 1968.
(Courtesy Grace and Peter Michael Capito, Bodallin)*



*Plate 13: Sheep shower, 1964.
(Courtesy Grace and Peter Michael Capito, Bodallin)*

to cover large areas to eradicate weeds in crops. By the mid 1960s, some farmers could even afford to hire commercial aerial spraying firms for such purposes (Plates 13 and 14).

The economic climate of the period enabled the agronomic and technologic advances to be applied at the farm level. In 1950-51, wool averaged 144 pence per pound and the value of the State's wool clip was ten times that of the annual war-time average. In the same season, the wheat crop was between five and eight times the annual value for the period 1930-1944. The 1951 wool boom, in particular, provided the finance for farm development and mechanisation, assisted by the increasing availability of superphosphate, fuel, nails, fencing wire and galvanised iron, and the abolition of wheat growing restrictions. The economic buoyancy continued through the period until 1969 and was supported by a run of good seasons from 1958 to 1968.

The impact on the Yilgarn shire was quite dramatic. The steep increase in the area occupied partly shows this (Figure 1), although the inclusion of pastoral leasehold as well as agricultural land masks the trend for the main farming area. More revealing are the data for the area cleared and used shown in the same figure, for sheep numbers and the area sown to wheat shown in Figure 2, and the increase in farm numbers shown in Figure 3. Overall, between 1950 and 1969, the area cleared rose from 111,000 hectares to 355,000 hectares, the area sown to wheat from 12,000 hectares to 144,000 hectares and sheep numbers from 81,657 to 206,937. Although the area under sown pasture rose from less than 400 hectares to 29,000 hectares, the proportion of the cleared area that this represented in 1969 (8.2%) was relatively low and in part reflected the difficulties experienced in establishing pastures in such dry areas. The number of tractors also

increased from 126 to 589 (see Figure 4). Although some of these changes were due to a doubling in the number of farms from 111 to 234 over the period, others were brought about by developments on existing holdings.

Between 1950 and 1960, there was only a modest growth in the number of farms from 113 to 142 and the average area of cleared land that was used per farm rose from 970 hectares to 1380 hectares. Over the ten year period, the amount of land cleared each year rose from 800-1200 hectares at the beginning of the decade to 7000 at the end. At the same time, some smaller pockets of previously unsurveyed land between the settled areas were taken up. This trend became more pronounced in the 1960s (see Figure 18). As a consequence, the cleared area per farm rose more slowly to 1480 hectares in the 1968-69 season and clearing activities increased to a peak in 1969, when 29,100 hectares of land were brought into production.

The relative importance of wheat and sheep in the farm economy also changed during the twenty year period although increases in both were experienced. As figure 22 shows, in 1950 the sheep to wheat ratio clearly favoured the livestock aspect of the enterprise, which continued to maintain its importance up to the late 1950s. From then on, however, as wheat returns rose more rapidly and the profitability gap widened, the predominance of wheat cropping became more and more apparent, so much so that by the late 1960s most farms derived over three quarters of their income from cropping activities.

Thus, by 1969, farming had changed dramatically. Farms were larger. They concentrated on wheat growing and were increasingly reliant on large capital inputs in particular for fertiliser, chemicals and machinery. Although agronomic and technologic advances had made wheat growing more secure and farming families that had withstood depression and war had used this time to consolidate their position, the period after 1969 was to sorely test the viability of the farming systems that had evolved.

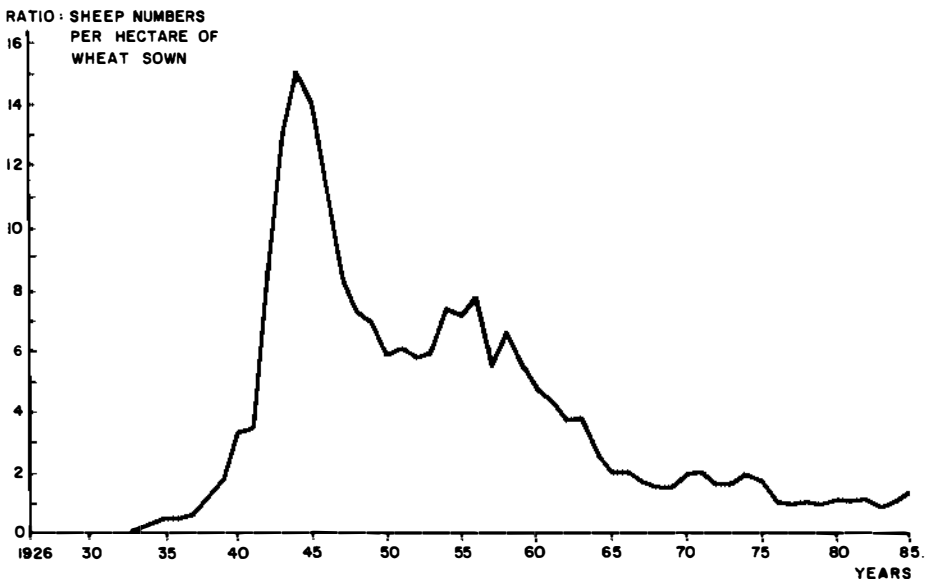


Fig. 22: Sheep/Wheat ratios, 1926/27-1985/86.

Source: Australian Bureau of Statistics. *Statistics of Western Australia*.



*Plate 14: Aerial spraying, 1968.
(Courtesy Grace and Peter Michael Capito, Bodallin)*

The Recent Period

Settlement Expansion — the End of an Era?

Although the fears of over-supply of wheat of the late 1960s were quite quickly found to be unwarranted, the grand expansion programme was not resumed. In the new areas, problems of appropriate farming techniques in such fragile environments, of inadequate infrastructure and isolation and of farm poverty had emerged. In addition, sections of the community were beginning to question the wisdom of further expansion into areas about which very little was known and sought consideration of alternative conservation orientated uses of these areas. As a consequence, in 1974, a much less ambitious policy of consolidation within or immediately adjacent to existing farming areas was adopted. Under this policy, a small number of blocks south of the railway line was opened between 1974 and 1977 (see Figure 23).

It was within this framework that, in November 1974, the premier was asked to give serious consideration to opening land for the expansion of existing family farms at east Yellowdine (41,000ha) and Skeleton Rock (79,000ha). In December 1975, the Yilgarn shire council showed considerable initiative in flying the ministers of mines, agriculture and lands over the areas. Subsequently, an inter-departmental committee was formed, but a soil survey of the Yellowdine area revealed large patches of sand and morrel country which, considering the low rainfall, were not worth developing. This, plus the area's isolation and lack of infrastructure, persuaded the committee to reject the proposal.

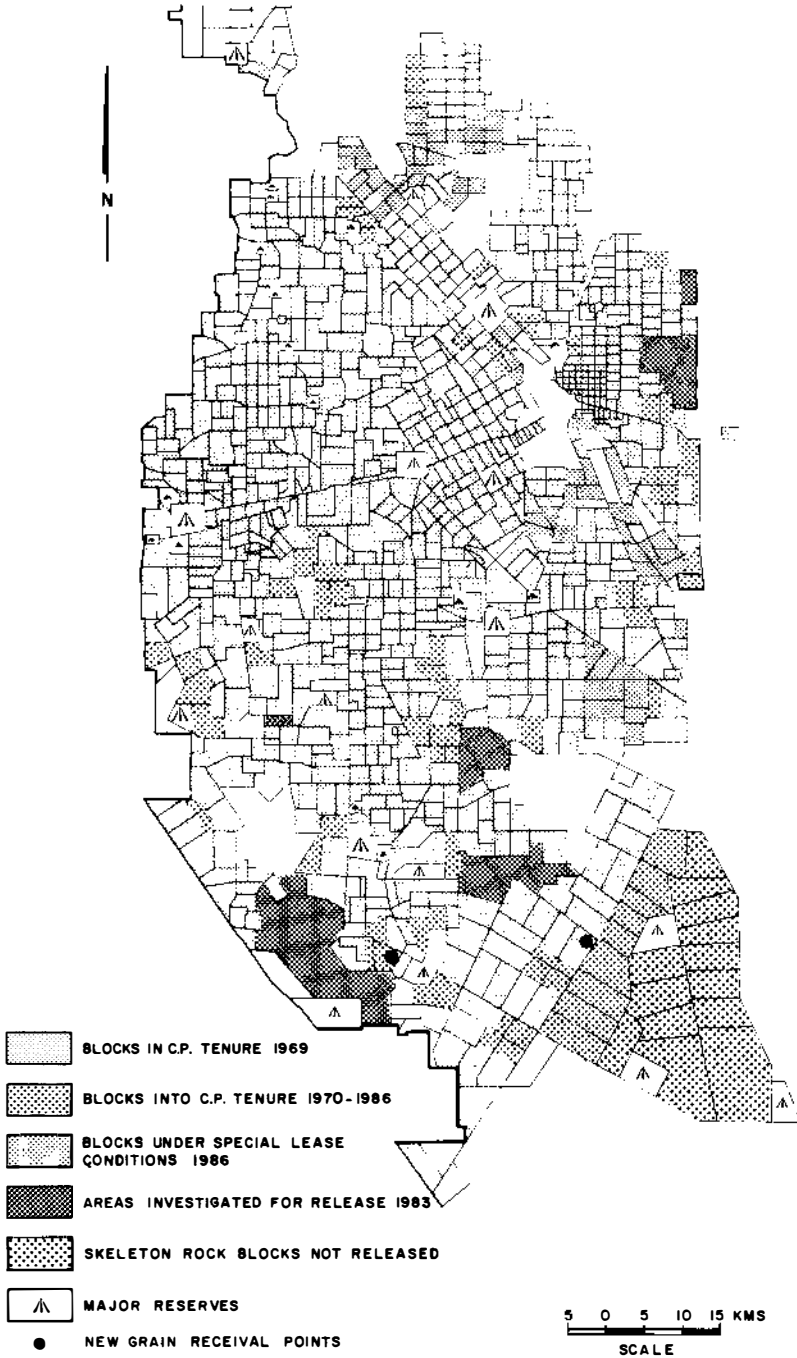


Fig. 23: Land settlement, 1970-1986.

Source: Department of Land Administration, Registration and Deeds records.

The Skeleton Rock area, however, did qualify and there, following a soil survey, a release of 24 blocks was proposed. Given the cautious approach being adopted at the time, only 9 blocks (19,850 hectares) were released, in August 1976. The pressure on government at the time is reflected in the 69 applications received from farmers and their sons and others in the Yilgarn and nearby shires. Because preference was given to farmers from the local area with less than 2800 hectares, or members of local farming families, few applicants from outside the Yilgarn were successful.

Following this release, two large areas south of Bodallin and near Sandalwood Rocks, and several scattered smaller blocks were opened for farm build up purposes, but by then there remained very few areas that fell within the consolidation guidelines. For this reason, pressure from the Yilgarn and other shires forced the government to review its policy in 1979. In its submission to the government's review committee, the Yilgarn shire supported the opening up of new areas both for farm build up and for new farms, as it had done previously. Two areas of relevance to the shire were investigated. The first was 50,000 hectares at west Mt Hampton straddling the Narembeen and Yilgarn shires. Parts of it had been sought for farm build up by local farmers, for example by M. G. Sloss in 1968 and R. R. Symes in 1978. The second area was the northern part of 2.6 million hectares stretching from Marvel Loch southward to Forrestania and the Johnson Lakes and including all of the shire between Emu Fence Road and the Jilbadji Nature Reserve. Although the committee's overall recommendations were that further land releases in suitable areas and under favourable economic conditions should occur, no land was released in the west Mt Hampton area, despite enquiries in 1981 and 1982 from the shire and local farmers Cox, Symes and others. In 1982-83, Department of Agriculture investigations revealed problems of an underlying lateritic hardpan in the area and concern over the likelihood of water erosion.

Despite these setbacks, in February 1983 the shire provided the under-secretary for lands with details of five areas under investigation for release and following an inspection by the Yilgarn Shire Soil Conservation Committee in March the same year, it recommended release of most of the proposed area for farm build up, subject to a number of conservation provisions.

However, before this could occur, a change in government had brought about a change in policy, and a moratorium was placed on the further alienation of land. In 1983, yet another land release review committee expressed concerns related to drought, wind and water erosion, salt encroachment and deterioration in soil structure, all of which had emerged as problems in new land farming areas. The principal recommendation in the committee's 1985 report was that no further land releases take place until more was known about the climate of the areas concerned. Caught up in this process, the shire's proposals for further farm expansion in its southern region were blocked and it may be some time (if ever) before further land release occurs. In the current (1987) economic climate, developed land is available at a price less than the cost of clearing virgin scrub. In the longer term, despite a not unnatural desire to see more of its land area used and its decline in population arrested, the shire may have to accept that the limits to expansion probably lie somewhere within its boundaries. Some may assert that they have already been exceeded. Certainly, arguments that more land is needed for farm expansion cannot continue indefinitely, as the land resource base is finite. Nor can the belief that farmers'

sons have a right of access to new farmlands be sustained where the risks involved in opening up new areas are high.

At least the immediate future will follow the suggestion of the soil surveyor in the Yellowdine area that "consolidation of existing holdings and gradual improving techniques should replace continual expansion".¹⁸ Also of relevance is a report by the Department of Agriculture's Dryland Research Institute in 1983 which concluded that the area east of Skeleton Rock was, "a high farming risk, though with development of lupin based farming systems, the area may be reliably farmed in a stable manner in the future".¹⁹

Special Leases

The special leases common in the eastern agricultural areas of the shire were introduced in the late 1930s for a specific purpose — to ensure that abandoned blocks continued to be used. As economic conditions improved after the war, farmers sought to convert these blocks to C.P. tenure because leasehold tenure was insecure and of little use as collateral against which to borrow.

In most cases, the departments of Public Works and Forests had no objections to alienation, but the same was not the case for the Mines Department. It had seen its land base dwindle as settlement expanded during the 1920s. Gold had been discovered on cleared farmland at Edwards' Find in the 1930s and it felt that any abandoned agricultural blocks with mineral potential should remain in leasehold tenure. Thus, as Figure 23 shows, although conversion occurred during the 1940s, 1950s and 1960s, two large areas of special leasehold in the Bullfinch and Marvel Loch areas remain. This presents a particular problem for the small number of farmers in whose hands these lease lands are concentrated and not unnaturally, over the years attempts have been made by this group for their release. Moves for change gathered momentum, with the Farmers' Union and the shire seeking a review in the early 1970s. Although the re-mapping of the geology of the area resulted in seven blocks being released for freeholding, the Mines Department rejected any thoughts of a broad scale conversion of tenure, a position which it confirmed in 1980. The shire continued to seek changes, and even suggested 99 year leases or even 21 year crown leases as more acceptable alternatives, but to no avail. In 1983, the issue came to a head and after a meeting between the shire and minister Jones, it was agreed that eighteen blocks would be released for freeholding immediately, provided that mining tenements were protected.

However, with an increase in the value of gold and a change in government in 1983 came a change in attitude. The new minister supported the view of his under-secretary that such lands should be retained under the crown's control and the position remains the same in 1987, with the problem unresolved.

This is one of a few examples of conflict between mining and agricultural interests in the shire, for in other ways the two have supported each other effectively over the past 60 years. The rail and piped water infrastructure built for the mining industry became of importance to farmers who sought markets for their produce amongst the mining population, particularly in the early 1920s and during the Depression. They also sought mining employment to supplement incomes in economically depressed times, or used mining income to get a start as farmers.

Water

With the onset of a series of drought years in 1969, the State felt the urgent need to improve water supplies. In 1970, it made a submission to the Commonwealth for the expenditure of \$2.5 million on water supplies in the wheat-sheep belt. In the Yilgarn, the plan included the improvement of the 130 kilometres of existing pipe extensions off the goldfields main at a cost of \$375,000 and the expenditure of \$500,000 on five key dams at Kerman and Nargalyerin Rocks, Mt Hampton, Skeleton Rock and at the 38 Mile Peg on the rabbit proof fence, north of Holleton. This bid was unsuccessful, but the State was asked to provide a list of projects which it wished to commence over a five year period and which might qualify for federal funds.

The first step was a review of farm water problems. In a report in 1973, the Department of Agriculture ranked the Mt Hampton area third in a list of sixteen areas most in need of water supplies. Independently, the Public Works Department prepared a comprehensive reticulation plan which included large areas in the Yilgarn (Figure 24). Yet the cost would have been high, and the area east of Merredin was not regarded as a "problem" one by the Department of Agriculture. It had been included because of its closeness to existing pipelines and because of the number of submissions that had been made over the years by local farmers.

In an evaluation of the proposal, the Department of Agriculture noted that farmers in the Yilgarn were all within 50 kilometres of a main conduit from which emergency supplies could be drawn. It preferred to assist drought-proofing through the provision of on-farm storage. Additional supplies in real emergencies would come from carted water, as occurred in 1969 and 1970 when the carting of 16.4 million litres of water to the shires of Mukinbudin, Mt Marshall, Yilgarn and Westonia had cost \$27,000. This was miniscule compared with the \$21 million capital cost of the proposed scheme. Thus, on economic grounds the department was not prepared to recommend the proposal. Although the State submitted the East Merredin Scheme to the Commonwealth late in 1975, without such support Canberra did not provide funds. In the same year, the Public Works Department concluded that, "under present day conditions, it has become very difficult to economically justify the construction of farmland reticulation ...".²⁰

Despite this assessment, hopes for further reticulation continued and a 1986 request for the further investigation of a scheme for the south Bodallin area was still under investigation in 1987. However, unless the farmers who will benefit are prepared to contribute to the capital costs, it seems unlikely that this proposal will fare any better than others of the past 50 years.

Further south, the possibility of providing key storage at Mt Hampton was investigated in the mid 1970s, at first as part of the East Merredin Scheme, and later as a possible State funded development. This was to consist of an earth tank storing run off from the rock surface and was to have cost between \$160,000 and \$220,000. A survey conducted by the Department of Agriculture in 1977 revealed that farmers in the district certainly did cart water in the summer — from the Marvel Loch, Ghooli and Moorine Rock stand pipes, from Dulyalbin, and from Mt Roe, South Burracoppin and Glenelg Hills to the west. In some cases the distance was up to 65 kilometres. However, the

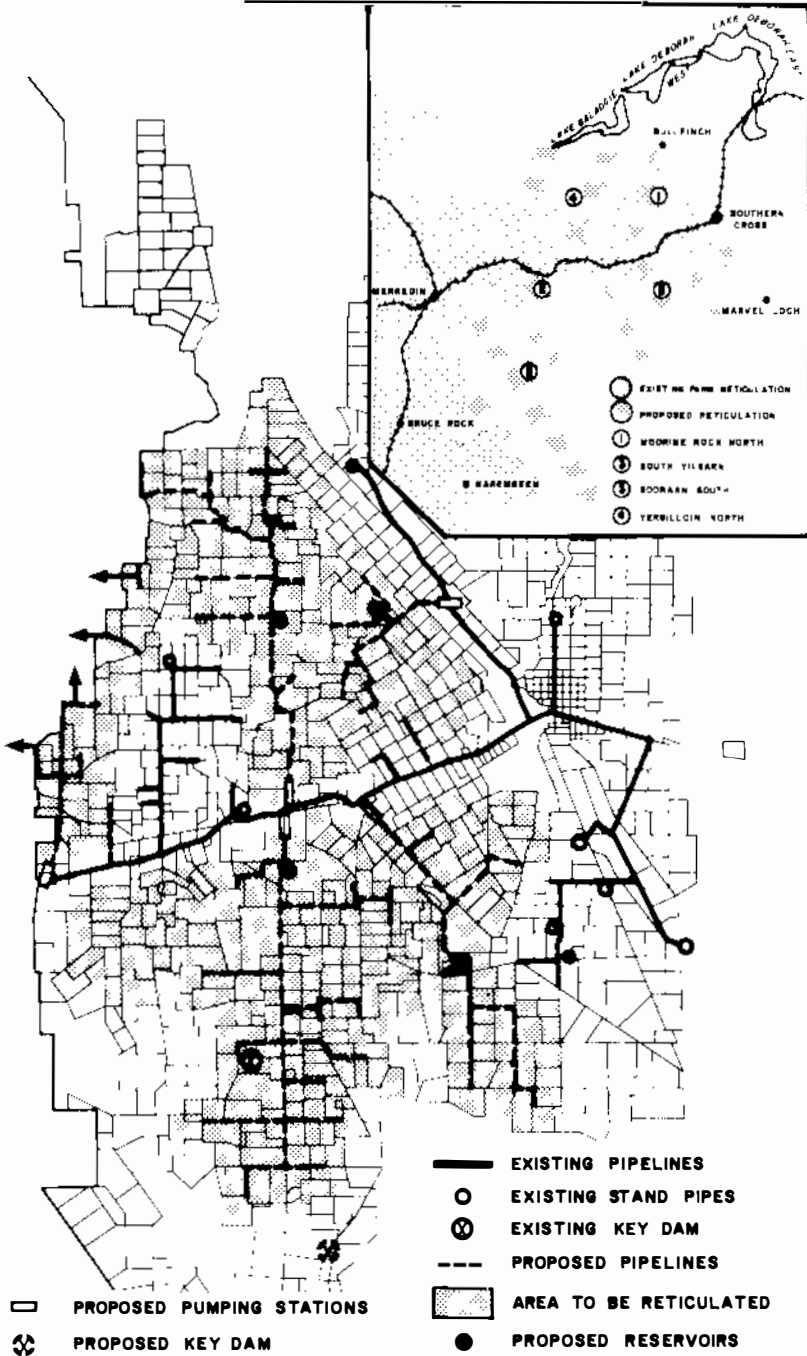


Fig. 24: East Merredin reticulation scheme, 1975.

Source: Department of Public Works. Water Supply Section. File 9/74. Feasibility Studies for Future Expansion.

department argued against the proposal on the basis that the cost of on-farm storage (using dams with roaded catchments) would be between one quarter and one tenth the cost of a large central rock-based facility. Thus, the Mt Hampton storage has never been built, despite attempts to re-open the debate periodically in recent years.

The water problem then, appears to be one for which an on-farm solution is preferred by government. Meanwhile, a number of farmers in the shire have availed themselves of the increasing governmental funds made available for key dam loans. Most recently (February 1987) the government has offered loans of up to \$60,000 at 3.5% below existing commercial interest rates to enable farmers to drought proof their properties.

Problems of Distance

In recent times there has been an increased concentration on wheat production in the Yilgarn, but in the face of rising costs and volume of inputs, attempts have been made to reduce expenditure. Not only has the Yilgarn's marginal location presented problems of climatic uncertainty and doubtful water supply, but distance has also affected transport costs for fertiliser inputs and the movement of the grain harvest to the port at Kwinana. The location of grain storage points has also created problems for some farmers on the eastern edge of the settled area.

The first distance-related issue is that of the an inland fertiliser works to be located at Merredin. Although the proposal for such a facility was first seriously investigated between 1965 and 1968, interest lessened when Esso Chemicals decided not to invest in such a proposition. Interest was revived in 1972 by the Country Regional Councils' Association and a government commissioned firm of consultants put the cost of such a facility at \$9 million. The State agreed to underwrite borrowings provided that \$1.5 million in share capital could be raised and a guarantee given for orders for 150,000 tonnes in the first year of production. A prospectus was issued, 1200 farmers subscribed to shares to a value of \$1.1 million and the government was asked to guarantee the balance. So important did the Yilgarn consider such a facility to be that its president, in his annual report for 1974, indicated that the shire was prepared to increase its contribution. Unfortunately, a second feasibility study put the cost at \$19 million, and since neither the State nor the Commonwealth governments was prepared to assist, the proposal lapsed. In early 1986 the proposal was yet again revived by the Merredin shire and the Yilgarn offered its support.

A related problem has been that of freight rates. Until 1979-80, rail grain freight rates had fallen over the years in real terms. The relative rates between different centres had been stable and, with a higher rate per kilometre, short haul areas subsidised more distant districts. In 1980, the government changed its policy in order to improve the competitiveness of rail grain transport on short haul routes. For example, in the 1978-79 season, the rate per tonne per kilometre for grain haulage from Mullewa to Geraldton (108 kilometres) was 7.2 cents, compared with 3.1 cents for the 437 kilometre haul from Southern Cross to Kwinana. In contrast, in the 1980-81 season the two charges were 5.1 cents and 3.7 cents respectively. Thus, although the gap had narrowed, the outer areas still received a more favourable rate.

The dissatisfaction felt in the outer areas was reflected in a submission prepared by Councillor Patroni in 1980, which showed that the average Yilgarn farm was making a

loss and could not absorb an increase in freight charges on grain and superphosphate. In 1984, a new agreement was made to use a radial basis for assessing haulage distance and setting out a timetable for the progressive alteration of rail rates to competitive parity with road rates by 1989. However, the new agreement did not satisfy farmers in the long haul areas and an enquiry into freight rates was instituted. The resulting report, published in October 1986, clearly outlined the disadvantageous position of the Yilgarn. Whereas short haul areas such as Avon and Three Springs had seen freight rate rises of 11.21% and 13.44% respectively between 1979-80 and 1986-87 (using the freight agreement formula), for Mukinbudin the increase was 70% and for Southern Cross, 93%. The latter centre suffered from the change in the relative price structure of long haul — short haul freight rates. It was also disadvantaged in comparison with centres such as Mukinbudin, where the radial distance from the port was significantly less than the actual rail distance. Grain rail costs from Southern Cross as a percentage of wheat payments rose from 8.7% in 1979/80 to 15.5% in 1985/86, with a projection of 18.6% for 1986/87 — compared with Avon's figures of 5.5%, 6.6%, and 7.9% respectively. Further, for the 1984-85 season it was calculated that freight costs were 16% of farm costs and 121% of net profit in the Yilgarn, compared with 9% and 28% for the Northam-York-Quairading area.

As a result of these and other arguments, recommendations to reduce the relative freight rates for long haul areas were made and implemented in a modified form whereby, in the 1986-87 season, grain freight rates from centres within the Yilgarn shire were reduced by between \$2.41 (Dulyalbin) and \$3.63 (Southern Cross) per tonne. Recent contract road haul rates have been lower than expected and, overall, rail rates should fall. The extent to which this saving is passed on to areas such as the Yilgarn will depend upon the extent to which the special difficulties of long haul areas are incorporated into the formula used to determine freight rates annually.

Recently, the provision of grain storage facilities has also become an issue. In the main agricultural area of the shire new storage points were built without controversy when the need arose. With the building of a facility at Holleton in 1971, virtually all farmers were within reasonable distance of a grain bin. However, with the opening of the Skeleton Rock area in 1976 and its subsequent development for wheat growing, a small pocket of farms emerged which were an unreasonable distance from a storage facility. In January 1981 the shire requested a new bin at Skeleton Rock. Unfortunately, being on the eastern edge of the settlement, the tributary area for such a bin is small. Although a temporary facility was built by C.B.H. at South Yilgarn for the 1985-86 season, its future will depend on the level of use that is made of it.

Vermin

In the last twenty-five years, the grasshopper and locust menace has been kept well under control. A minor outbreak of the small plague grasshopper in the shire in 1972-73 was in part caused by a reduction in cropping brought about by wheat quotas and droughts, but although there were outbreaks of the Australian plague locust elsewhere in 1976, 1982 and 1983, these had little effect on the Yilgarn. In late 1985 locusts were reported to be a problem in the area but the preventative measures employed were effective.

From time to time emus have reached temporary problem proportions. The

effectiveness of the emu fence was put to the test in 1976 when a huge build up in numbers along the fenceline resulted in the A.P.B. killing 90,000 for fear of the damage they might cause. In 1974 and 1975 rabbit numbers were of concern in the Bodallin area. In September 1983 it was announced that the number of doggers working in the area was to be reduced from three to two — a decision which the shire strongly resisted in representations to the minister for agriculture and the treasurer, but to no avail. However, although there was reported to be an increase in wild dog numbers in the south Yilgarn in June 1984, the main trapping activities were and still are in the pastoral rather than the agricultural areas.

Drought

Drought has been a problem in the Yilgarn since the days of first settlement. As is reflected in the figures for wheat yields over the years shown in Figure 25, the Yilgarn had a number of drought years in earlier periods, the most important of which were in 1928-1929, a string of years in the middle 1930s, in 1940 and in 1956-1957. However, in those times the farmer did not expect or receive special drought relief: In the 1920s excellent seasons preceded and followed the dry years, in the 1930s the overall problems of the depression precluded any thought of special assistance and in the boom-times of the 1950s, wool and wheat cheques were sufficiently fat for most farmers to absorb losses in the bad years.

The 1969 drought was different. Not only was it the worst since 1940, but wheat and wool prices were low and by that stage, farmers had capitalised to a greater extent in equipment and had larger debt burdens to carry. The Yilgarn shire was one of the worst hit and it, along with another 53 Western Australian shires were entirely drought affected, with a further 19 shires partly affected.

As a result, the first Drought Relief Advisory Committee was formed to identify ways in which to help the affected agricultural industries, and subsidies on freight for transport of stock feed and livestock returning from agistment plus low interest loans for the purchase of stock feed and stock for re-stocking were introduced. Through the Industries Assistance Board loans for carry-on finance were also available. In addition, in

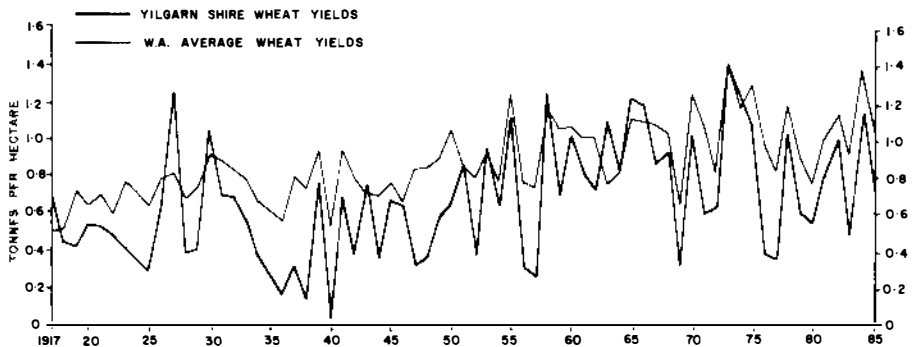


Fig. 25: Wheat yields, 1917/18-1985/86.

Source: Australian Bureau of Statistics. *Statistics of Western Australia*.

the Yilgarn, 24 applications from farmers to use vacant crown land and certain crown reserves for emergency grazing purposes were approved.

Fortunately, the 1969 drought was short lived, the advisory committee was soon abandoned and temporary grazing rights in the Yilgarn were revoked in August 1970. Although follow-up rains were disappointing in the 1971 season and the growing season broke late and finished early in 1972, yields were not sufficiently low for drought to be declared. The 1973 season produced bumper yields and was followed by good seasons in 1974 and 1975. In 1976 however, the season broke late. By July the shire was expressing concern over the dry conditions and in August the whole shire was declared drought affected. Farmers began quitting stock in June because of the poor pastures and the lack of on-farm grain supplies and, as in 1969, the use of selected parcels of vacant crown land and reserves for temporary grazing was approved, including such reserves as Cowine Soak, Corinthia Common and Baladjie Rock. In October, a survey showed there to be 256,700 sheep and 10,620 cattle in the shire, of which 91,000 sheep and 4000 cattle were in very poor condition. The Federal and State governments agreed to assist shires to organise the unpleasant task of disposal by slaughter and offered a contribution towards

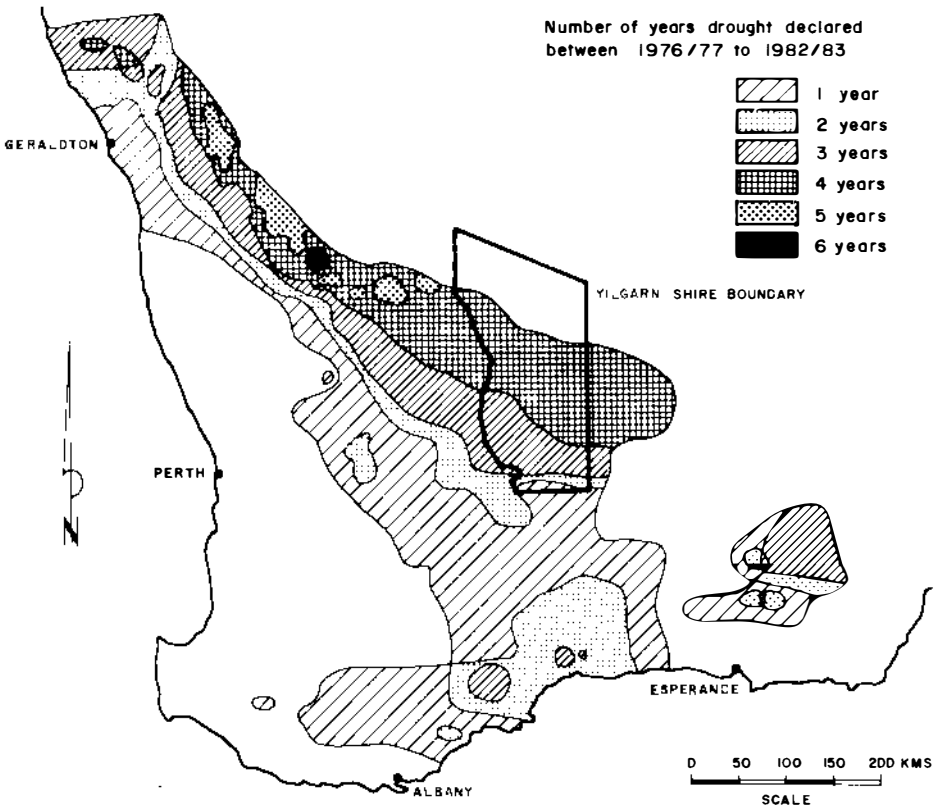


Fig. 26: Frequency of drought declarations, 1976/77-1982/83.

Source: Agricultural Land Release Review Committee, Report of the Working Party Assisting the Agricultural Land Release Review Committee, Perth, August 1984, p.7.

the cost of \$1.00 per head for cattle and \$0.15 for sheep which were helpless and unsalable. In addition, the key dam at Dulyalbin proved to be inadequate and summer water carting into it cost the state \$13,973.

The wide-spread nature of the 1976 drought, with eighteen shires being wholly and eight partly declared drought affected, brought about the re-formation of a Drought Consultative Committee which has remained in existence ever since. It realised that the freight subsidies and limited State-funded carry-on finance of the 1969 drought were not enough, and a Federal-State agreement was reached whereby the Commonwealth would contribute to loan monies from the National Disasters Relief Scheme. Over the years, the conditions of these loans have varied, but the essential features have remained the same — low interest long term loans to those drought affected farmers unable to secure carry-on finance from any other source. In addition, the pattern of subsidies on freight charges for the transport of fodder and livestock and assistance with the provision of water established in 1969 has continued and subsidies on agistment introduced.

Since then drought has been an unwelcome visitor to the shire all too often — to the whole shire in 1977-78 and 1980-81, to the eastern part of the shire in 1979-80, to the northern two-thirds of the shire in 1983-84, to a small area in the centre of the shire in 1985-86 and to a number of individual farms in 1978-79. As Figure 26 indicates, although the Yilgarn has not been the most hard-hit area in recent years, it is amongst those that have suffered most. Although the extent of assistance provided to farmers in the Yilgarn is unknown, the plight of some is illustrated by some examples selected from the 1976-80 period: L. C. and M. L. Wesley faced three successive drought years. A. Della Bosca and sons suffered total failures in 1976-77 and 1977-78, followed by a 1978-79 crop which barely covered costs. In the 1979-80 season, R. H. and M. J. Green's 1000 hectare crop only yielded 201 tonnes; P. J. E. Harvey's yield was 0.54 tonnes per hectare compared with 1.62 in the previous season; B. S. and D. G. Auld faced their third season in which yields were below 0.45 tonnes per hectare; R. W. Gill only managed 0.48 tonnes and had been carting stock water since December 1979, and V. E. and A. W. Symes, after four poor seasons, were "in desparate need of finance to carry on".²¹

No wonder, that, with nowhere else to turn, farmers in the Yilgarn in 1983 raised \$215,000 to employ a Tasmanian rainmaker, although eventually rothing came of the proposal.

The Development of Farming

Recent changes in Yilgarn farm ownership reflected three major trends. Firstly, a number of well established farming families took the opportunity to expand their holdings even further and to create new farms for their sons. In the north this was the case, for example: for the Guerini and Fragosa families in the Wheatley-Turkey Hill area; E. T. Della Bosca north of Bullfinch and south of Corinthia; R. G. Della Bosca at Kerman Rock; E. Della Bosca north of Corinthia and C. J. Della Bosca on the western edge of the shire; Booth west of Southern Cross; Saxby west of Moorine Rock; and Butcher and Crees north of Noongar. In addition to these established farmers, a relatively small number of newcomers entered the area, but given the relatively small size of their holdings (1600-2500 hectares), their future may be in doubt in some cases. The people they

replaced form two major groups. The first comprised a small number of established farming families who sold their reasonably large holdings, for example, Mengola at Kerman Rock; D. Marafioti and Eacott west of Bullfinch; and R. G. C. Newbury north of Garratt. The second much larger group consisted of 800-1600 hectare properties belonging to farmers who had taken up land in the 1950s and 1960s. Given the large number that changed hands in the 1970s and early 1980s, it is apparent that these holdings were too small and/or the owners were insufficiently established to withstand the drought years and deteriorating economic conditions.

A similar process occurred in the southern areas - the Robinson, Gill, Hale, Mackenzie and Sherar farms changed hands along with those of a number of later settlers, allowing for some expansion for other farmers, for example, branches of the Della Bosca and Harvey families, and the establishment of farms by newcomers (often farmers' sons from areas further west), such as Kretschner, Crook, Reynolds and Pringle.

In the Miners' Settlement and south Ghooli areas, the only major change was the selling up of three relatively large farms belonging to the Armanasco, Grace and N. Posa families. A small number of the blocks involved were purchased by new or established farmers, notably A. and E. Granich, Oetiker and R. B. Panizza, and a large number were taken over as part of the Caratti company property.

The biggest changes occurred in the new land farming districts, particularly amongst the large number of blocks released in 1968. There, a sorting out process common to all such areas has been witnessed. Some recipients of new blocks only stayed a short while, whilst others endured a decade or more of hardship before being beaten by lack of finance and poor seasons. The result was that, by 1987, of the 27 contiguous blocks released in 1968 in the South Yilgarn-Holleton area, 15 were still owned by original settlers, but three of these are leased out and a further three belong to farmers who live elsewhere. Where originally it had been intended that there would be 27 farms with families on them, only ten remained. As with the earlier periods in the history of the settlement of the Yilgarn, such changes provided opportunities for expansion for those who stayed and the area is in a position of consolidation, with the possibility of a small number of large family farms emerging. The process of settlement change described above was reflected in the increased in farm size. By 1985-86, farms in the Yilgarn were very large indeed and certainly much larger on average than farms to their west. There was a gradient of farm size, with over 80% of properties in the Yilgarn being 2000 hectares or larger, compared with 40% for Merredin, 31% for Kellerberrin and 28% for Cunderdin districts. Unfortunately, specific data for farm size from previous periods are unavailable, but since there was a 29% decrease in the number of farms since 1969-70, it is reasonable to assume that farms had increased in size by at least that amount over the period.

The same gradient appears for the mix of cereal grain (wheat) and cereal grain-sheep farms. In the Yilgarn, over 90% of farms were classified in 1985-86 as cereal grain growing properties, compared with 80% for Merredin, 55% for Kellerberrin and 36% for Cunderdin districts. Clearly then, climate has an influence on the size of property and the emphasis on wheat growing, with the largest farm size and wheat concentration being found in climatically marginal areas such as the Yilgarn.

The emphasis on wheat cropping in recent years is well illustrated by the recommendations made in 1976 for the use of the new farms in the proposed Skeleton Rock release. When fully developed, it was envisaged that farmers would crop 40% of their area each year and that the whole system should be heavily based on wheat growing, with sheep only being introduced to clean up the fallow and to graze the non-cropped area. Although it was also recognised that pastures should be established on the light land soils, their function was to increase crop yields and ground cover, with provision of fodder a secondary consideration.²²

Over the seventeen year period between 1969 and 1986, the average area per farm sown to wheat more than doubled to 1325 hectares and sheep numbers rose by 78% to 1676. The increase in the amount of cleared land from 1482 hectares to 2929 hectares was partially a reflection of an increase in farm size, but also a result of the clearing of new land released in 1968 and 1975 and the on-going process of clearing on longer-established properties. Unfortunately, recent information on the number of tractors is unavailable, but between 1969 and 1975 the continuation of the mechanisation process was reflected in an increase in the number of tractors per farm from 2.5 to 3.2.

While the area sown to pasture had increased substantially, the actual pasture area per farm remained small, averaging only 214 hectares. This was a reflection of the difficulties encountered in establishing pastures in such a dry environment, particularly under conditions of very short rotations. Research into Cyprus barrel medics for heavy land commenced in the 1950s and into subterranean clovers for light lands in the 1970s. However, because of the close cropping rotations, sub-clovers were found not to persist on light lands and by 1987 research was looking towards medics for those areas as well. Yet even on farms on heavier land, sown pasture areas were still small.

Economics also played a part. With the relative attractiveness of wheat prices up to the mid-1980s, farmers were encouraged to invest heavily in large machinery. Such machinery was not only capable of covering a larger area in a shorter time, but also was able to continue under wet soil conditions which previously would have caused delays. For example, in the late 1960s, Peter Capito normally employed up to seven men in the four week period in which 2000 hectares were seeded. By 1974, with the aid of larger tractors and air seeders, he had reduced his staff to two men to sow 3000 hectares. By the mid-1980s he was able to sow 400 hectares per day with two tractors working from four in the morning to nine at night and was planting 4000 hectares of crop (see Plates 15 and 16). The more powerful tractors enabled larger implements to be pulled, with scarifiers increasing in width from 4 to 10 metres and ploughs from 6 to 11.6 metres. In addition, harvesters not only increased their width of cut from a 7.6 metre front in the early 1970s to a 9 metre front by the mid-1980s, but the speed at which they handled even the heaviest crops increased by one third.

Linked to this process was the development of opportunistic cropping, particularly on heavier soils. Instead of following a set rotation pattern as had been common in areas of higher, more reliable rainfall, many farmers in the Yilgarn adapted their cropping strategies to the weather patterns. Thus, in seasons when the rains break late, some



*Plate 15: Versatile 900 and 935 in tandem with air seeder, 1984.
(Courtesy Grace and Peter Michael Capito, Bodallin)*



*Plate 16: New Holland TR85 series 2 header, 1986.
(Courtesy Grace and Peter Michael Capito, Bodallin)*

farmers reduce substantially the area sown, but expect to compensate for such poor seasons with large cropped areas in years when the rainfall pattern is favourable. Such flexibility also involves stocking strategies, with sheep being agisted elsewhere or sold in times when feed and water are scarce.

On light soils, some farmers benefitted from experimental work on lupins conducted by the Department of Agriculture at its research stations and in farm trials particularly on the Ivey and Crosthwaite farms at Bodallin and Holleton. However, with less than 4000 hectares of lupins sown in the 1985-86 season, it is clear that widespread adoption had not occurred, with most farmers alternating wheat crops with pastures.

Overall, perhaps the most important changes were brought about by the technologic advances in the development of large machinery. The main agronomic developments involved a refinement of the farming system and a more concerted effort to transfer to the Yilgarn techniques and plant species developed in wetter areas. On the heavier soils, research into fallowing and cropping systems continued, along with trials on direct drilling and the use of gypsum. For all soil types, the process of cereal variety trials was on-going, with new wheats such as Gutha, Bodallin and Eradu all introduced in the 1980s. The establishment of a research station on the shire's western border in 1982 gave added emphasis to research into the use of light land soils and the potential use of wodjil soils with their high sub-surface saline content.

During this most recent period, both the farmer and the Department of Agriculture became more conservation-minded in their approach to farming. This was particularly apparent in the approach to fallowing and cultivation methods, with farmers being encouraged to work the land as little as possible in order not to destroy soil structure. This led some farmers to adopt a variety of minimum tillage and spray seeding techniques. In contrast, an equally strong group continued to adhere to the conventional fallowing and ploughing approach.

The formation of a Soil Conservation District within the shire in 1983 was a reflection of this concern. Whereas the road board's response to the State's soil conservation committee in 1941 was that "we have no marked erosions and no particular steps are being taken", with greater experience and the extension of clearing and intensification of cultivation from the early 1950s, came the increasing realisation that more careful management techniques were required. By 1974 the shire was asking for control over clearing. In 1981 it asked the Department of Lands to classify all land in the shire to ensure that areas useless for agriculture were not released and, after an unsuccessful attempt to create an eastern wheatbelt soil conservation district in mid-1983, the shire formed its own. To date this body has been directly involved in two projects. The first was the development of guidelines to control clearing and the second was to prepare a catchment-based strategy to control excess water run-off. The committee also encouraged farmers to incorporate conservation considerations into their management strategies. Through heightened awareness, some farmers have invested in contour and interceptor banks and undertaken tree planting programmes to the extent that, in December 1986, the South Yilgarn Progress Association requested the purchase of a tree planter to be hired out to farmers, a submission that the shire agreed to consider in its 1987-88 budget.

The Pastoral Areas

In most districts that are climatically marginal for agriculture, there is no clear dividing line between those areas only suitable for pastoral activities and those where crop cultivation is possible. The Yilgarn is no exception, as the advance, retreat, reoccupation and further advance of the agricultural frontier demonstrated. To the north and east of the present agricultural area, the annual rainfall gradient gradually drops away, but in places heavy soils and well timbered salmon gum and gimlet country are to be found, along with blackbutt woodlands on the greenstone hills between Bullfinch and Woongaring Hills. In the main, however, the countryside varies from salt lake flats to ironstone hill ridges such as Mt Jackson, with large areas of open parkland studded with wattle and acacia scrub, and wide expanses of sand plain scrub with some saltbush and spinifex and occasional rock outcrops.

Such country has its uses for pastoral purposes, but such uses are variable according to the quality of the natural vegetation as feed, the presence of water for livestock and the difficulties in running sheep in areas where they are in danger of attack from dogs and dingoes. Natural grasses, saltbush, bluebush and spinifex form the basis of fodder and a combination of bores, wells and dams provides the water source.

The eight pastoral leases in the shire (Figure 27) took their present shape from the 1950s and 1960s and are located in the areas where feed and water are available. These were the core areas for other pastoral properties in previous periods. The earliest major pastoral property was put together by the Clarkson brothers, who transferred their operations from near Cue to the Yilgarn. As well as owning and leasing land in the immediate vicinity of Southern Cross, they amassed the large Lake Barlee station of over 400,000 hectares in the areas occupied by Mt Jackson and Diemals today.

The late 1920s appear to have been the hey day of pastoralism in the shire, with 20,000 and 40,000 hectare leases in the Jaurdi-Lake Seabrook area, and in now vacant areas north of Lake Deborah and west of the Mt Jackson lease. However, in the period up to 1930, leases changed hands frequently and were only used very extensively. In the period between 1930 and the mid 1950s, there was considerable contraction in the area of leases, and it was only in the present area of the Kawana property that land was consistently occupied in leases which changed somewhat in shape and size over the years.

As the map shows, some of the present leases are quite small by pastoral standards and these are run as adjuncts to farming properties further south. This in itself is a reflection of the marginal location of some of the properties, in that distances are sufficiently short for stock movements from pastoral to agricultural land and vice versa to be possible. In all, the pastoral properties extend over an area of 991,000 hectares, but in 1987 were only stocked with a total of 1200 cattle and 800 sheep, with a further 4000 sheep from wheat-sheep farms occasionally using the leasehold area. This indicates the extensive nature of land use. Also, as the recent history of the leases shows, some have been used as little more than "hobby" properties.

Of the four properties that have been run as full time pastoral leases, three are the largest and most remote — Diemals and Jaurdi straddling the borders between the Yilgarn and Menzies, and Yilgarn and Coolgardie shires respectively and the Mt Jackson station immediately to the south of Diemals. The somewhat smaller Ennuin station north of Lake

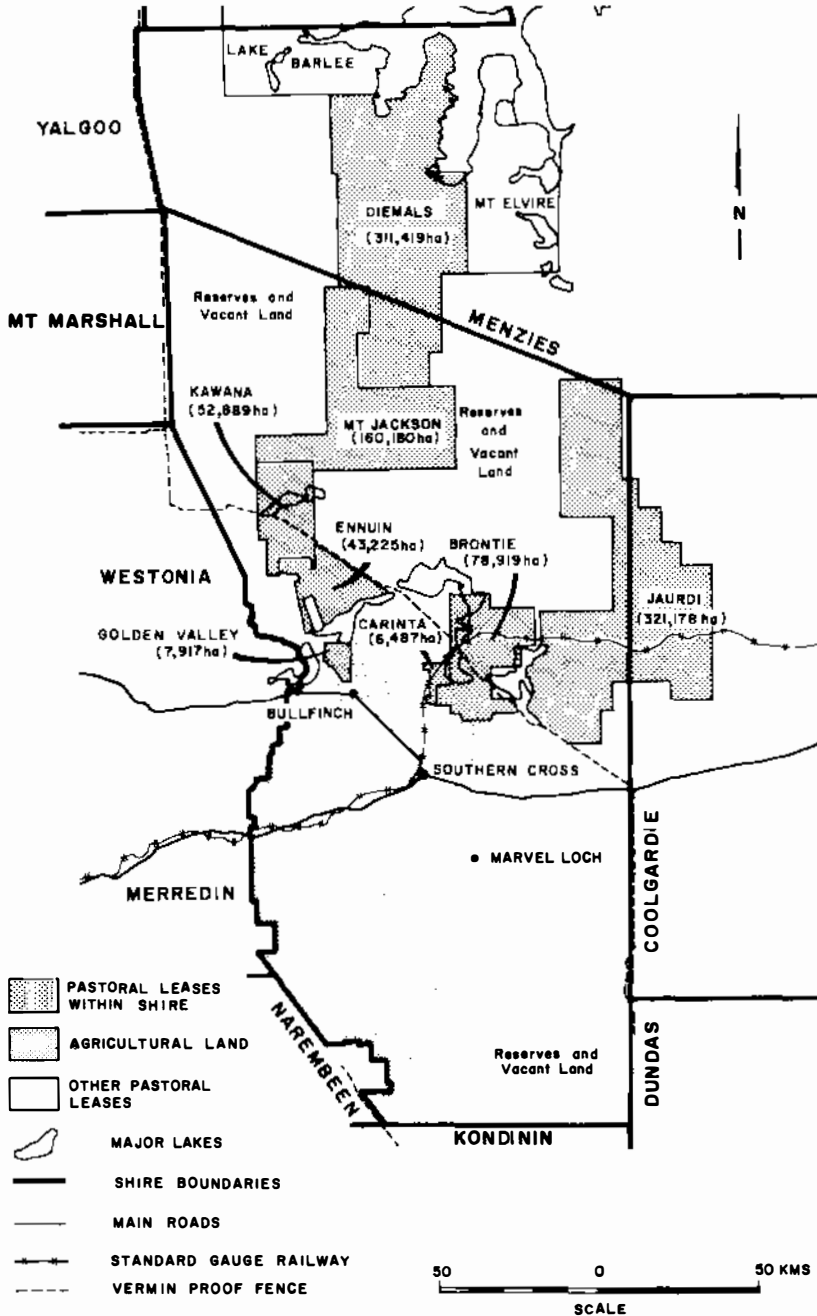


Fig. 27: Pastoral Leases, 1987.

Source: Department of Lands and Surveys. Western Australia- Pastoral Edition South Sheet, 1:2,000,000. 1982.

Deborah has also been run as a full time pastoral station in the past. The core areas of Diemals were taken up as separate leases in 1955, 1961 and 1970, and brought together under one management in 1974. After being vacant for some time, Mt Jackson was reoccupied in 1956 by the present owner who has added to the lease over the years. Jaurdi was regarded as "virgin" when a lease was taken out in 1960, (although a number of leases had covered the area in the 1920s) and similarly, Ennuin was regarded as previously untouched when taken up in 1966.

Of these, only Mt Jackson has remained consistently under the same ownership, with the lessee, Joe Truran and his family, running 350-400 Aberdeen Angus in 1987. Until 1976, Jaurdi was also run as a resident-lessee pastoral property by Peter Cullen and his wife, with a flock of up to 4100 sheep. Diemals also had a period of stable resident ownership under the Smith family between 1970 and 1977 and from 1966 to 1980 Ennuin was run by resident owner Dave Norrie as a sheep property with pigs as a sideline. Under such lessee conditions, a considerable amount of developmental work was undertaken in the construction of fences, dams, bores, wells, stock yards, shearing sheds and houses. With changes in lesseeship however, the rate of development slowed. In the case of Diemals, a series of absentee lessees allowed improvements to deteriorate between 1978 and 1986; Jaurdi was run for a period as a pastoral concern by two absentee lessees, then by a Merredin farmer before becoming a resident lessee operated concern again in 1985; Ennuin followed a similar path of ownership changes. Its current lessee, Aub. Green, is a wheat-sheep farmer from further west. In 1987, Jaurdi's name was changed to Timberfield, to avoid confusion with the mining settlement of Jaurdi Hills to its east.

The four most southerly leases are all being run in conjunction with agricultural land further west or south. The Kawana lease is an amalgamation of two smaller leases (Kuy Kara and Woongaring Hills) that were run on a part-time basis as offshoots of farming properties in the past and stocked with cattle at well below their capacity. The Bayly family, lessees from 1986, have an 8000 hectare farming property on the borders of the Westonia, Mukinbudin and Yilgarn shires, and once fencing and watering improvements are completed on Kawana, it is intended that it be used for sheep grazing during the winter and spring months.

The Golden Valley lease of 7900 hectares held by C. C. Roberts of Bullfinch is used to run wethers, although in the early 1980s it was stocked with 350 cattle; the Guerini family's Carinta lease of 6500 hectares has 130 head of cattle periodically grazing on it, although previously it had supported up to 450 cattle; and in 1987, the larger Brontie lease of 79,000 hectares was not stocked at all, although it had been used previously for cattle by lessees R. L. and L. P. Della Bosca. In all cases, restricted watering points, the lack of plentiful feed, and the tendency for saltbush to be eaten out quickly were limiting environmental factors.

Overall then, there have been two types of leases — the relatively large, full time pastoral properties and the smaller units used as a complementary part of a separate cropping farm. There have been several types of lessees — the genuine pastoralist; the foreign investor and the local farmer. Within the latter group there have been those who have done very little with the leased land and others who have affected improvements and used their pastoral land as an integral part of a larger farming operation. Surrounding many of the leases is vacant crown land with lower grazing potential: so much so that

there were no applicants for 172,300 hectares of crown land south of Mt Jackson offered for leasing by the Lands Department in 1978.

By 1987, some lessees were looking towards the possibilities of intensification, with proposed legislative relaxation of some of the restrictions on the clearing and cultivation of pastoral leasehold land. Particularly in the southern area there were perceived possibilities of land clearing, pasture improvement and a consequent increase in stocking rates. Also, the threat of dog attacks, particularly inside the area of the vermin fence, had been dramatically reduced over the previous few years by the concerted combined efforts of the A.P.B. doggers and the lessees themselves in laying poisoned baits.

The possibility of such future developments will depend largely on the economics of the day and the nature of any legal restraints. With cleared land in 1987 being offered for sale at a price lower than the cost of clearing, it is evident that no such activities will be economically sensible for the farmer-pastoralist group until there is a recovery in wheat prices and associated increase in the value of land.

Land Settlement and Farming Systems Retrospect and Prospect

The key to an understanding of the course of land settlement and farming systems in the Yilgarn is its marginal location. This has shaped the Yilgarn's development, within the broader economic framework of the State and the nation. Marginality and distance factors caused the area to be settled late, saw it suffer more than others in the Depression and war and delayed its recovery in the post-war era. Many of this chapter's themes reflect this marginality — the debates over appropriate forms of land tenure, the special reconstruction schemes of the 1930s and 1940s, the numerous plans to provide reticulated water supplies, the problems of vermin, drought and rail freights, and the difficulties in determining sustainable farming systems.

Yet marginality has contributed to a more positive characteristic of the Yilgarn — the stability and commitment of a core of farming families who have survived past adversities through hard work and frugal living. Their conservative approach has helped them not only to survive, but to prosper. The emergence of large family farms and the relative absence of large company properties are striking features of the contemporary agricultural settlement pattern of the Yilgarn. Thus, although the economic uncertainties of the late 1980s are present in the Yilgarn as elsewhere, the district has a solid base of established family farming concerns in a better position than many to withstand times of economic hardship.

Sixty years is not a long time in which to establish appropriate farming systems in an area of unreliable rainfall, yet sixty years is all that much of the Yilgarn has had. Although mistakes have been made in the past, the present attention being paid to taking care of the land resource base augurs well for the future.

Future developments will be determined by agronomic and technological advances, within the framework of a better understanding of environmental and economic possibilities and constraints. In the medium term, greater refinement of the existing wheat-sheep system can be expected, with agronomic advances in the spheres of pasture

establishment and fodder cropping. The present trend towards larger properties is likely to continue, permitting a broader acceptance of opportunistic cropping. A greater sensitivity to environmental parameters should lead to the more specifically different treatment of different soil types. Some areas may even be withdrawn from cropping. For land beyond the current agricultural areas, it is to be hoped that unreasonable political pressures will not bring about a wave of expansion resulting in failure, retreat and an economic and social cost not only to the farmers and their families, but also to the community at large.

For the longer-term future, who knows? It is unlikely that "miracle" crops (or animals) that would be suited to the Yilgarn would not also be suited to other areas, particularly in other countries with lower standards of living and costs of production. Thus, although some may look to the pastoral zone beyond the fringe as future farming areas, it is unlikely that major developments will be possible there.

David Murray

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NIGHT, YILGARN AND A SOUTH WIND

Across old bricks I hear a rustling sound
As of dry scales of some python immense,
Shifting its croissant coils on pavement.
And the leaves, with husks like copper foil,
Slide past. At dusk the evening wind is stirred,
Full of lost scents, its breath is warm,
And grates the recollections of misdeeds
Across soft-fluttering of quiescent brain.

Heavy with leaf, the leaning eucalyptus trees
Wind and unwind to the shove of striving air;
And in events outpouring through
The shrubbery of memory, part of the litter
I had thought swept-up and buried
Intrudes — like these spent leaves,
Detached and scurrying over stones —
Stubborn husks of the stumbling past.

South wind, still rising till you shake the blinds,
Disembowel rubbish bins, chatter at doors,
At first you twitched these leaves across my mind
But now you storm with stinging sand,
Hollowing the softnesses of inner caves,
Exposing nerve-roots to assaults of pain,
Showing me, as at boundaries of rubbish pyres,
My documents of failure flattened on the wires.

Glen Phillips

Chapter 9

Women

Yilgarn life is a mosaic. The pieces which make up the picture include an arid bush environment, a local primary industry base of farming and mining, a male dominant population structure, and an ethnic mix of people who have been subject to international economic and political forces over which they have had no control. These forces have etched definable epochs into the memories of local residents: the pioneering years of the gold-rushes and land settlement; the devastating depression of the 1930s, which caused many Yilgarn families to walk off their farms; two world wars; post-war migration; the wool and wheat prosperity of the 1950s and 1960s; and the contemporary mining boom. While cognizant of these wider forces, women in the Yilgarn pattern a different mosaic in their recollections. Their lives have been defined by the more immediate circumstances of isolation, poverty, loneliness and inadequate resources for running homes and rearing children. These circumstances know no boundaries of chronology. Women view the Yilgarn not in terms of neat profiles of the economic evolution of the district, rather their's is a dual response: a negative attitude towards the arid environment and a positive reaction to the community spirit which prevails in the district.

This dual response is illustrated in some of the earliest written accounts of Yilgarn life. Arriving in Southern Cross in 1900 a nun of the Presentation Order observed: "The sun shone in full golden splendour, but nothing else in or around the primitive station or dingy little town betokened so far, that this desert looking place had any indication of deserving its name — the Golden West". However, she soon came to understand a new meaning: "During all this time, the 'Golden West' was earning its name: the hearts of the people were truly golden, kindly, generous and hospitable."

Time, it seems, has caused other women to experience a similar shift in attitude. Ester Carnicelli (nee Tiberi) arrived in 1932, aged 28, to join her husband, who had migrated to Australia six years before. She saw her new home, outside Marvel Loch, as deserted, bare and lonely. "It looked like I was coming from the sun to the dark moon. My teenage life in Italy was like a really bright sun, but here it was different altogether". Now she thinks differently: "Nowadays Australia is a paradise compared to many other parts of the world. Between the first and second world wars, however, then someone has a right to say it was not so great".

Women in the Yilgarn Enviroment

Women arriving in the Yilgarn have been consistently taken aback by the harshness of the environment. Olive Last (nee Dalley) took one look at her future residence in the Miners' Settlement and said: "Well, I was absolutely bewildered, I'd never seen such a dump in all my life. It was an awful looking place". Ester Carnicelli cried so much that a neighbour cautioned her husband to send her back to her father. While such reactions may have merely reflected the difficulty of adjusting to a move from a town, or even from another country, to life on isolated farms and mines, in general women were making a realistic appraisal of the inhospitable environment which faced them in the Yilgarn.

That the bush was an alien environment is evidenced by the many newspaper accounts of lost women and children. The *Southern Cross Times*, February 1920, reported that Norman Madigan, aged four, had been found after wandering in the bush for 24 hours. On 4 February, 1928, the same paper told the story of Mrs Hahnel of the Miners' Settlement who had been "bushed for several hours", after leaving the family camp to take lunch to her husband who was clearing fields only 600 metres away. She was eventually found when her husband sought the help of a tracker from Southern Cross. In August 1929 Lily Miller, aged 18, described as "slightly demented", went missing for two days wearing only one piece of underclothing. She survived. Not so lucky was Mrs Peters of Bodallin, aged 80, who was found dead after being missing for 30 hours in the bush. She was over nine kilometres from home. There was a happier ending in 1938 when the *Southern Cross News* noted a big search at Marvel Loch from 6.00pm Sunday to 1.00pm Monday when a child of only 22 months was found alive five kilometres from home.

The bush was not only alien, it could be positively threatening. Florence Hollis (nee Brown) recalled that her mother's fears led her father to suggest that their farm "Why Worry", at the Miners' Settlement, should be renamed "Mum's Worry". In her book, *Hark, Hark My Soul*, Vera Shipley noted her parents' concern about the threat of bushfires: "With the coming summer Dad and Mum anxiously watched the north and the east for smoke from the bushfires which seemed to start from nowhere". However, fires always had an origin. Sometimes they spread when burning-off got out of control; sometimes from lightning strikes; often from an unlucky spark from a domestic fire. A typical instance was reported by the *Southern Cross Times*, 5 May 1934, when Mrs T. Egan's home at Yellowdine was completely destroyed by fire. Here, as always, people relied on the generous community spirit of local residents, for they carried no insurance. A collection, a fund-raising dance, a raffle would quickly fund a new bush timber and hessian dwelling.

In contrast to the summer heat, winter temperatures often fall below freezing in the Yilgarn. The young Doreen Holt, who arrived at the Miners' Settlement in a spirit of adventure, remembered: "It was fascinating you know, we'd never travelled . . . but it was freezing". Rose Brown noted that in her Mt Palmer home "it used to be very cold in the winter mornings and the water in the tap in the kitchen would get frozen and I would get embers from the kitchen stove and shovel them under the tap to melt the ice".

Many women in the Yilgarn might have considered Rose lucky to have had a tap in her home. Water was scarce and the Yilgarn's aridity forced women to run homes and to

rear children with only limited supplies. In Southern Cross in 1890 water sold for one cent per litre or \$5 for 475 litres. The local water was described in 1900 by the Presentation sisters as “a brackish kind of bluish-white colour that made washing next to impossible . . . and the tea it made was almost undrinkable”. In 1911 at Marvel Loch water was so precious that “the dam was guarded and the water strictly rationed according to the number in the family. Our ration was 100 gallons every seventh day, and one of our friends with their 18 month old baby got 100 gallons every tenth day. Our family consisted of seven members. Any amount of money could not buy more”.²

When Williamina Stokes (nee Douglas) lived at Mt Rankin, the nearest water was seven kilometres away. After the children had gone to bed she and her husband walked to the standpipe and filled kerosene tins attached to wooden yokes which they then carried home. With water in such short supply most people took weekly baths, often with family members taking turns in the same bath water which, even then, was put to further use. “What was left in the tub we used to put out on the garden that we were trying to grow”, recalled Olive Last, adding that the garden “didn’t thrive very well on soapy water”. Routine water conservation techniques were elevated to the level of a fine art in Clara Pittaway’s family on the Miners’ Settlement as her son Bill recalled: “It was a case of Mum first, myself second, and Dad third, and, you can believe it or not, we didn’t even waste that water. It was taken outside and put into four gallon kerosene tins and the old chap would sprinkle the ashes on top . . . it would soak through and take the soap and dirt down to the bottom of the tin. Gently, next morning, that would be poured off into handbasins for . . . washing our face and hands”.

Another feature of the environment with which women had to contend was the wildlife. Their reactions ranged from the obvious interest of Flo Anderson, to the pragmatism of Rosalie Budge and the sheer terror of Mary Casey. Florence Anderson, a teacher at Ghooli in 1934-1939, understood the balance of nature. She and her school children rescued some baby birds and fostered them out to a surrogate Willy Wagtail mother. “We had to watch them as they had an enemy . . . a large race horse goanna . . . we chased him off but didn’t kill him as I knew he’d protect me from any snakes”. Protection was needed. When they cleared in preparation for the school garden, they killed two snakes. Rosalie Budge’s efforts to rid her home at Nulla Nulla of an unwelcome snake are remembered by her daughter: “Then the snake appeared, but Mum missed with the brick. It hit the ground just past his head and he darted back inside again. This was repeated several times till at last, with great precision, Mum dropped the brick onto the snake’s head”.³ Mary Casey was simply terrified, her daughter Thelma recalled: “Mum was frightened of her shadow . . . I have never seen such a sook in my life — anything creepy or crawly — you wouldn’t get her near anything like that”. Flies and spiders were particular pests. Florence Rose (nee Cooke), who arrived in the district in 1930, reported escaping from swarms of sandflies by standing in the smoke of a fire bucket “until the smoke made my eyes water”. The blowflies would be so bad, according to Carmel Hughes (nee Anderson) “you just had to put up with them”. The ubiquitous redback spiders were a hazard and the *Southern Cross News*, January, 1938, reported the death of Mrs S. W. Guy, aged 25, who had been bitten by a redback. She was a widow with four children.



*Plate 1: Evelyn Faul with wildlife on the Davey Farm, 1932.
(Courtesy Evelyn Rose Lehman)*

Women at Home in the Yilgarn

While broader environmental influences set the parameters to the lives of Yilgarn women, their daily round was shaped by conditions in the home. In the early 1890s, when the population was predominantly male, home usually meant a tent or a bough shed. Even in 1911 there were 2968 men but only 982 women in the district. One prospecting camp was called the "Eveless Eden Estate" as its owners lamented the absence of women. Some women lived in tents for many years. Martha Smith, for example, whose husband worked on the water pipeline, lived in a tent, cooked on an open fire, did her laundry under the trees and moved with the men from site to site. At the time she was carrying the second of her 13 children. She lived under these circumstances for the two years it took to complete the pipeline. Conditions changed slowly over the years. As late as 1939 the *Southern Cross News* (20th January) carried stories about the disgraceful conditions in government construction camps in which women and children were obliged to live in tents in all seasons.

Housing styles in the early days of the Yilgarn were influenced by transportation costs. Corrugated iron roofing and hessian for walls were easy to transport. Gimlet, a common timber in the Yilgarn, was used for supports from which the hessian was suspended. For the uninitiated the reaction to living in a hessian house proved amusing. One woman mentioned that when she first went into her home she thought she was ill because the walls moved. She had not been told that they were made of white-washed hessian which breathed — moving in and out with gusts of wind. In this style of house termites were a problem as they attacked both the timber frame and the walls. Most houses had no flooring other than compacted earth or perhaps fine grained ants' nest. Dirt floors facilitated the entry of ants which were kept at bay by pouring kerosene at the base of wooden uprights and by wrapping kerosene rags around table legs or by putting furniture legs into small tins of water. Later, sheep dip was used to repel ants.

Ester Carnicelli and her family lived in many localities in the district before settling near Marvel Loch. Their house was a prototype of what is now known as a transportable home. Sections of wall were bolted together so that they could be easily dismantled and transferred to a new location. Superior homes were made of mudbricks and even these could be transported. The *Yilgarn Citizen*, 8 June 1962, noted that Mrs Sorenson, who lived in Doolette Street, Bullfinch, for 30 years, made her own mudbricks and built a house at Boodarockin. She dismantled this building, cleaned the bricks, railed them to Bullfinch, wheeled them in a barrow to the new site and built herself another house.

The labour was justified for the insulation qualities of mudbrick were good. By contrast, hessian or iron had poor insulating qualities as Catherine Irving (nee Blackburn) found when she arrived at Townsfoot farm south of Moorine Rock in 1928. Her

home consisted of two rooms — a kitchen and a bedroom. George had made it of corrugated iron, and each room had a window made of Celluloid about two feet square. The floor was of anthill which made quite good flooring. . . . George had put in a fly proof door as it was so hot when he arrived, but in the winter, with a south wind blowing, sitting in front of the fire you would be too warm facing the heat, while your back was cold.

Open fires and wood fuelled stoves provided cooking facilities and heating. They could be dangerous both for women and their children. The *Southern Cross News*, 24 December 1936, reported the death of Mrs Leggett, aged 75, who died from severe burns received when her clothes caught fire while she was working at a stove. In a less serious accident, which nevertheless caused severe pain, the infant son of Rose Brown of Mt Palmer was burned in front of a fire: "When I heard his screams I flew out of bed. The left sleeve of his woollen jumper had caught alight at the wrist and burnt his wrist and some fingers of his left hand". More tragic was the case in Bodallin of a small crippled girl who was set alight by sparks when sitting by a fire. She was unable to move to save herself.

Sanitation was primitive in virtually all Yilgarn homes at least until the 1950s. There were few bathrooms and only outside toilets. Carmel Hughes remembers that the bush dunny "was a big hole dug in the ground with a frame and a big long seat, and you had to trust to luck you didn't fall down the bottom". In the towns the night cart dealt with the disposal problem. In the bush the problem was your own. From a hygiene point of view these sanitary conditions were far from perfect for it was impossible to flyproof the outhouses and infection spread rapidly. As Vera Ivey recalled, "If one person in the town got diarrhoea everyone got it".

At first much of the furniture was home made. Florence Rose remembered: "Although we had only a table made from a packing case, and green painted kerosene boxes to sit on, I managed to grow a few cornflowers and marigolds for table decoration, and when my husband dressed for dinner on special occasions — well! I wouldn't have changed places with anyone". Wheat bags sewn together were known as waggas and Olive Last recalled that they had a variety of applications in home furnishing. "They were really good blinds, you know. And 'course they were used on top of the beds as well, and as mats on the floor". At Townsfoot, Catherine Irving decorated a settee made from kerosene boxes: "I stuffed the seats — they were still pretty hard to sit on, and covered the seats with cretonne". The hallmark of respectability was often the parlour: "The living-room was the best room, with an upright black piano along the east wall and piles of music on the little piano stool beside it. A gramophone and square case of records stood on a table in the corner; several pictures adorned the rough, bag walls".⁴

Housekeeping was heavy work and tiring in the heat of summer. There were few labour saving devices in the home: A scrubbing board and a tin tub represented the best available technology in the laundry. Even this compares favourably with the lengths to which Williamina Stokes had to go when she settled on Jilbadji, Location 212.

Monday was washing day — and what a day! We got up early in the morning so that my husband and brother could carry all the clothes to be washed, plus soap, scrubbing board, tub and kerosene tins to . . . Kodjernerj well, over seven miles away . . . Here they would light a fire and fill the kerosene tins with water . . . and put them on the fire to get hot. They would then return to the farm to do their day's work.

When I had done my jobs at home I would take the two children (aged one and two) and we would set off on foot for Kodjernerj well. I would carry the baby in my arms and when the two year old got tired I would wrap a shawl across his back and carry him . . . the little chap would be firmly and comfortably

tucked in. We would follow a track through the bush which we had made . . . If it had not taken me too long to get to the hole, there would be plenty of hot water in the tins to start my washing . . . When washed, the clothes would be spread on the nearby bushes to dry and then we would wait till night time, when the men had finished their day's work and come to take us home. Then came the . . . drive home (by dray) and tea to prepare.⁵

Tradition dies hard and for many contemporary Yilgarn women Monday is still the unquestioned laundry day. Modern electrical appliances have removed much of the drudgery from this chore. However, washing machines are a comparatively recent innovation. Mrs Meharry, who lived in the district between 1930 and 1960, remembered that she had the first washing machine in Bullfinch — a Bendix Automatic, although, as she recalled, this early model spent most of its time at the mine engineer's shop being repaired. In the league of firsts, though, Ester Carnicelli must surely win. As she recalled, not only did she have the first washing machine in Marvel Loch, but also one of the first radios, the first kerosene refrigerator in 1942, and later the first television set.

In most homes an outside laundry would include a wood fuelled copper for boiling whites and heavily soiled clothes. Often the copper stood alone in the back yard, away from buildings, to reduce the chance of fire spreading to the house. Mrs Scott, of Bullfinch (1920-30) prepared her washing the night before and then got up at 4.00am to light the copper. For women without a copper it was a question of boiling the clothes in a kerosene tin on an open fire. This could be a dangerous practice and the *Southern Cross Times*, 24 March 1934, reported that Mrs Melrose of Kennyville had been admitted to Southern Cross Hospital with burns incurred while washing clothes.

After rinsing, clothes would be put into blue water and then into starch, not only to make them look neat but also to help keep out the dust. Once the clothes were hung on the line women would keep an eye out for willy-willies and dust storms. If they were unlucky enough not to spot one coming the laundry would have to be re-done.

Ironing was a daunting task and doubly so in the summer, working in front of a hot stove with flat irons. Mary Smith (nee Kelly) remembered:

I've seen Mum, ironing, and the sweat pouring off her — with this fire going on ironing day; and if the iron had a bit of black on, and she happened to be ironing something white — 'Oh Heavens!' Mum'd say, 'it'll have to be re-washed'.

Irons which held hot coals and featured a chimney were some improvement as were Mrs Potts' irons with their detachable handles. Pressurized petrol irons were an alternative but potentially dangerous since they had to be kept clean to prevent a build up of carbon which could cause the iron to blow up. They were just one of a considerable number of occupational health and safety hazards for the housekeeper.

Drycleaning was done at home. Flo Anderson recalled that in the 1930s "we'd buy our own dry cleaning fluid and do clothes in that — the lightest ones first and then, when finished, pour the cleaning fluids into bottles and let the dirt settle at the bottom and then pour it off very carefully into another bottle for later use".

The weekly wash was back-breaking work and it is small wonder that women took satisfaction in the results: "She took pride in her washing and always walked along the line

feeling and shifting or turning as they dried".⁶ Since keeping the family clean involved such hard work it is easy to understand the restrictions on behaviour which were designed to protect clothes, particularly when wearing Sunday best. In 1950 the R.S.L. Ladies' Auxiliary had occasion to write to the men reminding them of this principle in connection with the arrangements for ANZAC day. The women requested that seats be provided "as the children are usually dressed in their best; it does not improve their clothes to sit on the ground".

Sewing and mending were duties which contributed to the family economy. Olive Last remembered that her mother "sewed, yes, and mended, turning sheets into the middles, or the side; and patches upon patches to make do". Many women had treadle or hand turned sewing machines but few could boast the sewing room which Nell Forrester built for herself which "was complete with windows, doors, shelves and a pot bellied stove, and a floor of tamped ash and sump oil, covered with ruberoid". Nellie had married into an established farming family in Southern Cross but privilege seems not to have inhibited her do-it-yourself approach to life.

Cooking wasn't fancy. "We didn't live high but we didn't go hungry either" is a common recollection. A typical day's menu would be "porridge, scratch and a hot meal at night". Many women made their own bread, often with a potato yeast. Self-sufficiency was the order of the day until after the World War. Nell Forrester, who arrived in Southern Cross as a bride in 1905, epitomized the self-sufficient housewife. Her daughter-in-law, Erna Forrester (nee McCrea) wrote: "Thanks to Nell's diligence, 'Minburra' farm was practically self-supporting. She made butter and cheese and during a shipping strike about 1919 was able to keep Premier James Mitchell . . . supplied with 'Minburra' butter".⁷ She also made a range of toilet and household soaps, including sand soap which was used for scrubbing. She baked bread, cured bacon and made bovril, jams, preserves, pickles, chutney and wine as well as rearing hens and growing fruit and vegetables.

The family chooks provided the eggs and, when old, the meat for Sunday lunch. Many households butchered their own sheep and pigs, as well as buying in supplies. Bought meat was also supplemented with parrot, rabbit, pigeon and wild turkey. Olive Last recalled that in the 1930s her family became somewhat over zealous in its efforts at self-sufficiency. "We used to grist up the wheat for porridge. Yes, I remember the boys tried to make coffee out of it once — ugh! — baked it and cooked it and ground it up. It was like drinking mud, or burnt mud or something. It was terrible".

It was clearly understood by the women that their self-sufficiency contributed to family survival, and indirectly to the national economy. In July 1931 Mrs H. M. Fisher, president of the Country Women's Association, wrote to the Farmer's Debts Commission arguing the case that: "the very existence of Australia depended on the women on the land". The report in the *Western Mail*, 16 July 1931, continued,

In the development of the land the woman played an equal part with the man, and her hours were even longer and her work even harder than those of the farmer. In addition to cooking, washing, housework, making and mending, bearing and caring for her children, she had to store the larder for the year with every kind of home-made preserve. She had to attend to bacon-curing,

growing of vegetables, fruit-drying, milking and separating, butter making, care of poultry, collecting and packing eggs for sale . . . These women were a vital factor and one of the biggest assets Australia possessed, and should be cared for by the State to the same extent as their town sisters . . . Country women did more to develop national life than any other group of citizens, and received little recognition for their services.

Birthday parties were rare but most women made an effort for Christmas, especially if there were young children in the family. Cakes and puddings were made, often with dripping; and jellies, if they would set in the heat. Bill Pittaway struck a sad note as he remembered one Christmas for his family on the Miners' Settlement: "We had a tin of sardines to see us through for Christmas Day, and my parents gave me the tin of sardines and they ate bread and butter for Christmas dinner". Even poignant memories cannot obscure for Bill the memory of tinned meat. "The old tinned dog, we had plenty of it. I can still this day see it oozing out on the plate with all that horrible greasy fat still running off it".

Food storage was a real challenge when access to shops was restricted because of wet roads. Women had to stock up because they could not depend upon regular deliveries of food. Thelma Graves (nee Casey) observed that "you'd never run from week to week. You always carried a surplus . . . because you would possibly go hungry if you didn't". Most people stored perishable food in a Coolgardie Safe which relied for its cooling on water evaporating from a hessian cover. Nothing seemed to come without drawbacks though, and Doris Ivey in Bodallin discovered, to her horror, that her Coolgardie Safe attracted bee swarms.

The Pittaway family had another method of storing food which involved sinking an earthenware pot into the ground in a bough shed. The ground around it was kept damp: "Butter came out of there and it was nearly not spreadable it was that hard". Mrs Pittaway had another "contrivance that was made out of a big pillow case with a board in the bottom and the meat that we didn't use immediately was stored in the pillow case in the bough shed". Gradually the Coolgardie Safe gave way to the ice box for more affluent townspeople. Then followed the kerosene fridge and the electrical models which are now in almost every home.

Shopping was a problem for people who lived out of town. For example, when Maria Capito arrived from Italy to join her husband north of Bodallin in 1932, she had to drive a horse and sulky 36 kilometres into Bullfinch for stores. In Southern Cross, shops opened all day Saturday for the convenience of people arriving from out of town to purchase goods, to talk with friends and to see a film or go to a hotel in the evening.

Saturdays saw such crowds as are experienced in the city and one had to walk off the footpath on the road if one were in a hurry to pass other pedestrians . . . After night entertainments people would crowd into cafes for supper, and it was not unusual to hear the voices of these crowds singing to the tune of someone's accordion. ⁸

While for most people shopping was the big day out, for Florence Rose it became a major expedition:

I remember in the summer months soaking the wooden spokes in the wheels

of our T model Ford truck to make them swell and tighten before we went on our fortnightly trip to Muntadgin for stores. Often we took our camping gear in case we couldn't make the trip in one day.

The alternative to travelling into the shops was to have food delivered. At the Miners' Settlement, Wally "Spot" Leggett, the local cartage contractor, would deliver vegetables, fruit and meat once a week: "The meat was pretty hard to take . . . nowadays you wouldn't even pick it up", recalled Doreen Odgers (nee Holt). Ken Lehman's memories were similar: "We've had it green and had to wash it in vinegar; and maggots in it and we'd have to wash them out. But we still ate the meat. Just a case of have to". People living along the railway line had their goods delivered by train. In Bullfinch customers would order through the shops — Scott's, Kelly's and Firman's, and collect their goods when they arrived from Perth once a week. Townspeople in Southern Cross had their goods delivered to the door. Talking of the early 1950s Peggy Guerini reflected that:

Shopping was made easy as the grocer, butcher and baker called at home . . . The grocer would come Monday morning, get the order and then bring it back Monday afternoon. The baker and butcher called every day in a horse and cart. We even had a fishman . . . who used to come around once a week. It was terrific! If I had all those babies now I don't know how I'd get on having to go to the supermarket to do all my shopping. I don't think I would.

Not all change is progress. While there may now be more choice on the supermarket shelves than in days gone by, the price which women have had to pay is in having the inconvenience of going to the shops, often with children, during limited shopping hours.

The price of goods in rural areas has long been a source of complaint for Yilgarn women. Speaking on behalf of all country women, the vice-president of the women's section of the Primary Producers' Association presented her case to the Farmers' Debts Commission on 9 July, 1931. *The Western Mail* 16 July, 1931, reported her estimate that: "Groceries were 25 per cent dearer than in Perth — 50 per cent in many cases. Country people suffered from high railway freight and handling charges (and) lack of competition in many country districts tended to high prices".

The relationship between shopkeeper and customer has become more contractual as shopping styles have changed to reflect urban rather than rural patterns. In the past bilateral arrangements existed whereby women sold to the shops as well as buying from them. Butter, eggs, poultry and wheat from the farm formed part of the barter system which was used to settle accounts. Mary Smith could not recall money being used in the 1930s: "I don't know whether Mum ever had any money to spare . . . I think we'd get our groceries and they'd . . . exchange with wheat". Credit arrangements were liberal. Doris Ivey remembers that her husband used to cycle to the Bodallin store and put the goods on an account which he paid annually with the wheat cheque. In this way many storekeepers, themselves in debt to the bank, managed to keep the local economy responsive to the cash flow of farming families. The introduction of self-service has done much to break up this mutually dependent pattern. However, Mrs R. M. Johnson felt that credit was a double edged sword. Whilst it tided families over lean patches, it also served to increase costs: "Credit meant increased prices", she said, when giving evidence before the Farmers'

Debts Commission on 9 July, 1931. "While she appreciated the way in which the country storekeeper stood to the farmer, she thought the great amount of credit given by the storekeeper was one of the factors in the farmer's present parlous position".

Perth's universal providers, Foy and Gibson, Boans and Bairds used to issue catalogues offering a wide range of household goods and clothing, but money had to be sent with the order which was not always possible. Many women saw the catalogues as a life-line to civilization. Doris Ivey commented that when she was feeling down she would open the mail order catalogue and dream of things she would like to have. Other women would use their sewing skills to copy the styles they could not afford to buy.

Clothes shopping seems not to have been a problem in what most remember as being a fashion conscious society. Elsie Hawkins (nee Tipler) recalled a number of drapers shops in Southern Cross in the late 1920s and early 30s, including Flohm's, Styles', Murphy's, Cook's and Hewitt's. When these services were supplemented by catalogues and hawkers there seems to have been few complaints about choice. Mrs Birtles, the first woman settler at Noongar, remembered Afghans on camels calling to sell haberdashery; and Dorothy Pollard (nee Nunn) recalled:

Occasionally a hawker used to come along. He was a Mr Dean, an Indian, and he used to come with his pack and get off the train, and the kids used to say: 'Oh! Mr Dean's in town'. Great excitement! Mr Dean — and he'd come to your house and he'd open his big pack. He carried drapery and odds and ends like that.

In addition, a clothing company called Pilpels used to travel in the Yilgarn selling in hotels, hospitals and private homes.

Fashion is more than a reflection of personal taste, it shows a sense of occasion and reflects social status and ideas about proper moral standards, all of which made little concession to the climate of the Yilgarn as exemplified in the following extract from an 1893 newspaper:

For the perfect business dress, for the ordinary climate the garments worn should be as follows: Next to the body, a ribbed, woollen, uncoloured garment, high necked, long-sleeved with legs reaching the ankles. Second, a well-fitted boned waist. Third, equestrienne trousers ending at the knees where they should meet the outside gaiters, made from the same material as the dress.

But Yilgarn women were destined to move with the times as motor vehicles increased in number between the wars.

The development of motoring has had a distinct effect upon the clothes of the modern woman. It has led to the abandonment of many useless frills . . . in favour of simple and business-like habiliments that will not hamper the wearer when seated at the wheel or in getting in or out of her car . . . I have come to the conclusion that the best headgear for summer wear, more particularly in a closed car, when the sun cannot beat down directly on the head, is a sports net with a dark shaded peak to protect the eyes . . . I might mention that a loose scarf, whether worn by the driver or the passenger by her side, should be avoided. At a critical moment it may catch the wind and blow across the

driver's vision, with possibly tragic results . . . Even so simple an adornment as a string of pearls is better either not worn or safely tucked out of the way, as it is very liable to become entangled in the control levers on the steering wheel. I do not care about wearing anything but the most simple of rings, as, apart from the fact that they may interfere in the control of the car, it is difficult to avoid chipping the stones through an accidental knock on the gear or brake lever. ⁹

Erna Forrester commented on the fashion trends which prevailed when she was a teenager in the late 1920s.

In those days you had to look pale, wan and enigmatic! Everything was plastered on — not quite the thing to have sunburnt shoulders; then just a little bit of rouge on the cheeks and chin. Lipstick had to be very subdued if you used it at all. It was considered a bit vulgar; and eye make-up was not even thought about. ¹⁰

Florence Anderson recalled that they made their own brassieres — “the idea was to flatten not uplift”, to conform with the contemporary waif-like image. Yilgarn women always dressed up for special social events. “Silk or crepe de chine frocks with a rose at the shoulder or the hip, button-up shoes of patent leather with straps at the side, and, of course, white stockings; cotton first, and later silk”. ¹¹ The 1930s fashion was pretty rather than plain, particularly for special events such as dances. Pictures of the Debs Ball in 1959 showed that a sense of occasion in fashion had continued. But not every woman and girl was interested in frills and flounces. Mrs Scott of Bullfinch said, “My daughter hated wearing dresses, so she wore trousers and tops. She also wore boys’ boots”.

The war years made a difference not only to the way women saw themselves but also in the way they dressed. “Bare Knees to Help Australia”, read the headline to a fashion article in the *Southern Cross News*, 27 March, 1942: “Despite a certain reluctance to uncover their knees, many women are ready to sacrifice up to 4 inches of skirt length for national economy”. The reported saving on 100,000 frocks was \$10,000. One businessman showed the pragmatism of which morals are made when he said: “What’s all this fuss about knees, anyway? Why should women cover their knees any more than their noses?” Edna Meharry indicated the genuine economies which women could make for the war effort: “I had my little girl . . . I even made her a pinafore out of three flour bags; but I suppose I did it to show what could be done — and you made your skirts out of your husband’s trousers. A friend of mine made a coat out of a blanket”. In the main, though, such measures were unnecessary for most women agreed that, in consumer terms, Australia suffered less than many other countries. The debate on skirt length does, however, indicate the manner in which cultural values about respectability are conveyed through fashion.

Women have commonly been cast into the “God’s Police” role in Australian history. Certainly their homemaking skills and family leadership etched a veneer of civilization over the harsh conditions which prevailed in the Yilgarn in the early years. Wartime changes served to highlight the expectation that women’s moral standards should be higher than those of men. The *Southern Cross News*, 8 May 1942, featured an angry criticism of women who chose to imitate the opposite sex by wearing trousers, drinking



Plate 2: C.W.A. Debutantes' Ball, 28th August, 1959, Southern Cross.

Back: Thelma Donnelly, Catherine Nunn, Elaine Randall, Janice Roberts.

Middle: Isobel Stevens, Faye Coward, Patricia Loveridge, Dorothy Ivey, Coralie Price.

*Front: Dawn Boothey, Myfanwy Brown, Ruth Wesley, Lorraine Price, Jacqueline Sharp,
Frances O'Callaghan.*

(Courtesy Yilgarn History Museum, Southern Cross)

booze and smoking. The use of women in war was seen: "as the most horrible lapse into pre-historic animal savagery we have yet suffered". That the ownership of women was at stake was revealed in the observation that women who went out with Yankee soldiers demonstrated themselves to be "fickle flappers". But values lagged behind reality. It did not take a war to put a gun in women's hands nor to make them wear trousers. Long before, Olive Last had started shooting for sport: "I had a small shotgun and we'd go out in the evening to the dams and there'd be bronze-wing pigeons". Mavis Taylor (nee Stacey) also disregarded convention as she cut a dash riding around town on a motorcycle: "I used to go up the main street, defying the police sergeant". He was never able to stop her.

As "God's Police" women have also carried the responsibility for sexual morality. In particular, women were expected to remain virgins before marriage and to control the sex drives of men upon whom very different restraints were set. After marriage women were still seen as the managers of sexual relationships as they attempted to limit conception. In view of these expectations it is surprising that they were so ill prepared for their prescribed role as the moral guardians of society.

Sex education in the pioneering days and inter-war years was non-existent and women's knowledge of their own bodies was limited: "My mother never mentioned sex to me. When I had my first period she gave me some pads to wear and just said that this would happen to me once a month. I never questioned it", wrote one woman. Many attitudes reflected a notion that women's reproductive life was something unclean which had to be endured and certainly not discussed openly. Another woman wrote that at menarche her mother gave her a pad "and said you had to wear this and you had to wash them out. It just happens to women at this time of the month dear . . . It's something women just have to put up with". One woman, now in her seventies, recalled, with some amusement, the onset of puberty. She had been travelling the rough road between Southern Cross and Kalgoorlie all day. When she arrived and found she was bleeding she thought "My God, we must have gone over one hell of a bump". Later her mother explained that the bleeding was normal but still failed to make the connection between menstruation and the reproductive functions of a woman's body. Elsie Hawkins (nee Tipler) recalled that "sex was barely spoken of; girls talked together but with little knowledge . . . Parents didn't enlighten us on these matters".

By today's standards such ignorance may be seen as unforgivable but set in the context of the prevailing attitudes of the day it can at least be understood. In 1924 the Western Australian government saw fit to gazette a law which threatened prosecution if owners allowed their animals to be seen copulating in public. Even on private property the animal was to be kept from public view while being serviced. This law typified the attitudes which provide the context in which women were expected to uphold social standards.

The combination of ignorance and strict moral codes of behaviour proved disastrous for some women. The social pressures on the unmarried mother were unbearable and women were driven to desperate lengths. The *Merredin Mercury*, 22 January, 1925, reported an abandoned new born child near No. 5 pumping station; and in September that year another baby was found buried in ashes. The child's mother admitted burying the child and said it was stillborn. A post mortem revealed that the child had been born alive and that its skull was fractured. These incidents show that there can be a darker side to the apparent warmth of small communities. Differences and deviation are often not well tolerated and social control, which derives from everyone knowing everyone's business, can become oppressive.

Erna Forrester, who boarded at the Palace Hotel during the first year of her teaching life in Southern Cross in 1930, found that the prevailing code of conduct kept her isolated in her cold room: "You didn't use the commercial room much, where the fire was in the winter, because of all these commercial travellers there . . . so that most of my time, ordinarily, I just spent in my room". When her future husband, William Forrester, came courting the door to her room was left open: "You conformed — you always did". There was no joy in courtship for Maria Carotzi, who arrived in the Yilgarn in 1958. Aged 42 she married, almost sight unseen, a man with three sons from a previous marriage who had sent back to Italy for a new wife.

Drinking alcohol was taboo for women. In 1931 "Disgusted" wrote to the *Southern Cross Times* complaining of the evils of liquor at social functions: "When the two sexes are in closer contact, excited by the dance, the consumption of liquor by one of the pair

only leads to the fall of the weaker". Within a week "Antiwowser" wrote a reply to "Disgusted" who, it was claimed "has no faith in young people. . . (it is) not the drinking of beer that degrades (but) . . . the lack of clean thinking on the nature of social evils". Syd Carlson recalled the prevailing attitude that "for a woman, breasting up to the bar, was not done". Peggy Guerini felt that even in the 1960s drinking was out for women: "No women I knew went to the hotel. No-one. There were always a couple of loose women of the time that would go. Apart from the girls that were barmaids or the publican's wife I didn't know of any woman that was ever in the hotel". Peggy's impression is that things changed in the 1970s: "The alcohol began with the cabarets in the seventies".

In the 1930s there were increasing numbers of women taking up smoking in spite of the fact that some local men held the view that women who smoked "were just no good". The *Southern Cross News*, 4 March 1938, carried an article on women smokers which could as easily be published in the 1980s with the current prediction that soon more women will be dying of lung cancer than from breast cancer. Headed "Independence. or what?" the newspaper report documented the changes in women's smoking habits:

Before 1914 smoking by women was a smart set, suffragette kind of practice — a prank for the frivolous, and a solemn secretly-disliked symbol of independence for the avowed feminist . . . The medical profession as a whole says little to indicate its views on the subject, though occasionally one meets a woman doctor who, lighting her own cigarette, says to a friend who declines to share one with her: 'You are better off without it'.

Changing attitudes to women's role in society can be seen in etiquette at dances. Before the World War and even into the 1950s women were not expected to refuse to dance when asked. Flo Anderson recalled a strict master of ceremonies who would merely say, "You dance, or if you refuse a fellow, then you don't accept the next one". On one occasion, when she was approached by a shabbily dressed man, Flo did challenge the master of ceremonies, Mr Len Carlson, saying she would rather go home than dance with him and spoil her dress. The fellow was sent home. Such expectations stand in stark contrast to today's guidelines on sexual harrassment which focus on a woman's right to say no to all unwanted advances.

The notion that women be available on a compulsory basis for dances had been longstanding. Margaret Cousins, said to have been the fifth woman to arrive in Southern Cross, remarked: "In those days (1894) at the hotels all the servants had to go into the ballroom at night to dance with the men." One woman objected saying: "Do you want me to be a carthorse all day and a circus horse at night?" Values, attitudes and ideas about proper conduct are often shaped by the realities of the day. In the Yilgarn there have always been more men than women and the insistence on accepting all requests to dance probably kept the peace by sharing the women around. However, such an explanation couches women's role in terms of their function for men, which is unacceptable in terms of contemporary ideologies but does reflect the view of women which has traditionally prevailed in Australia. The saccharine tones of the following extract from a poem published in the *Southern Cross Times*, 14 August, 1920, illustrates this attitude:

Her Glory

'Tis woman's glory to be kind,
 To fault in men be gen'rous blind,
 In stress of stories of black despondency
 Man's anchor be — a woman's sympathy.

Today, attitudes towards women in the Yilgarn are very different. Local standards now tolerate women mud wrestling at the Southern Cross Recreation Complex and, before a change in the law in 1987, working bare breasted behind the bar at the Club Hotel. However, the apparent liberation which permits this behaviour needs to be questioned for another interpretation would see that women's bodies are still being objectified in terms of their sexual function and their bodies exploited for profit.

Publicly stated standards have traditionally confined sexuality to marriage but double standards often prevailed. Brothels were known in the Yilgarn before the Great War. They were often called cool drink shops. However in the 1920s and 30s there was little evidence of prostitution in the Yilgarn, even among the more transient mining populations. Generally marriage was the order of the day, particularly in the more settled farming communities, though de facto relationships were not uncommon among the shifting working class populations of the mining centres.

For Catherine Irving, who had met her husband in Scotland five years before, propriety required that she be married as soon as she arrived in Perth. She left Scotland on the 14 April, 1928, and arrived in Albany on the 24 May:

I went by train that evening in the company of two nuns, who had been fellow passengers, arriving in Perth about 10am. George was at the station to meet me and we were so happy to see each other again, though both rather shy, as it was five years since we parted, although, of course we had written regularly . . . We were married that afternoon in a Perth registry office and had two clerks as witnesses.

The next day they set off for their lonely farm in the Yilgarn.

Most weddings were church weddings. Mr and Mrs Douglas Davey were the first to be married in the new Southern Cross Methodist church on 3 June, 1939. Elsie Hawkins (nee Tipler) ran into complications with her nuptial arrangements. She was the church organist and had to prevail on the organist from the Roman Catholic church to come and play for her wedding. In those days Roman Catholics rarely entered other churches. "It was more or less not allowed, I understood, but this lass got permission from the priest to come and did the job very whole-heartedly". The *Southern Cross News*, 18 November, 1938, in an article entitled "The Second Marriage" discussed suitable arrangements when a widow remarries explaining that the event should be simple and informal with no bridesmaids, no wedding cake and no orange blossom. Evidently some discretion was deemed appropriate for remarriage, perhaps because the woman was no longer a virgin and, therefore, not considered a true bride.

Marriages were stable. This reflected the general pattern for Australia until the 1970s when divorce rates began to rise sharply. The close community life of a rural shire contributed to keeping marriages intact, but, more importantly, marriages in farming

communities have been based on joint endeavour as well as romantic love. Working together provided wives and husbands with a common ground and concern which would be difficult to sustain in a society in which expectations and interests are traditionally divided by gender. Recent golden wedding celebrations in Southern Cross bear testimony to the strength of marital relationships in the district. Olandina and Benedetto Panizza were married in Italy in 1934 and celebrated 50 years of married life with a family gathering at their son's home. Doris and Arthur Ivey, a well known Bodallin couple, have been married since April, 1930. Myrtle and Bob Liddle were both born in Southern Cross but their wedding, in 1927, took place in Perth. Other golden wedding couples in the district include Angelina and Leo Della Bosca (both now deceased), Amelia and Lawrence Borona, Queenie and Herbert Illig, Ethel and Harry Kent and Florence and Eric Ivey (both now deceased).

Some marriages did fall by the wayside as witnessed in newspaper accounts. On 10 February, 1934, the *Southern Cross Times* reported that Terence Charles Hill had been sued for maintenance by his wife. They had separated after three months of marriage and had lived apart for two years but she had received no money since June, 1933. The defendant earned \$8.50 a week but the Bench decided not to make an order against him. In 1935 the same newspaper reported that Mrs Trinidad of Marvel Loch was awarded \$1.50 a week maintenance under the Married Woman's Protection Act. Later in 1935 Lillian Biddle, who had been married since 1922, was awarded \$2 a week for herself and two children.

Newspaper accounts were not without an element of romance and adventure, for the *Southern Cross Times* on 9 November, 1935, recorded that an order for defensive arrest had been placed against George Brown who had left to join the circus. The *Southern Cross Times*, 11 August, 1934, reported that Ruth was re-applying for maintenance from her husband John, having been refused in a previous application in 1929. It seems that her husband had turned her out in 1928. However the case was dismissed on the grounds of her desertion. Behind some of the court cases, though, lay the more sinister story of domestic violence. Ruby had married Hubert in 1933 but by 7 December, 1935, she found herself in court telling the story of how her husband had strapped her and thrown her to the ground. She and her 16 month old child were to receive \$6 per fortnight under the separation order, and the father was given access to the child. Another incident was reported in the *Times*, 16 December, 1933. Agnes had been assaulted by her husband James, who had attempted to strike her with an axe. However, violence against women was not confined to marriage. Earlier, on 6 July, 1929, it was reported that Ivan Perko had assaulted a Southern Cross woman. Another elderly woman told of how she had been raped in her youth, but such was her ignorance of life that she did not realise what had happened to her.

The backdrop to success or failure in marriage lies not only in personal compatibility but also in social expectations of the proper relationship between the sexes. Judging from media images in the Yilgarn press, women and men were seen to stand in an interdependent relationship caricatured as the battle between the sexes. This assumption was enshrined in the Married Woman's Protection Act which victimized men and patronized women. The Maintenance Reform Association for Men syndicated an article to

the *Southern Cross News*, 25 November, 1938, which identified the worst features of the Act and its interpretation. For one thing costs were usually awarded against the husband even when the wife lost the case. The men felt that: "This custom makes the court a happy hunting ground for solicitors, women temporarily deranged in mind and women with no grounds for relief at all". It is a short step from this statement to the assumption that women seeking separation from their husbands are mentally deranged; and the harshness of the men's judgement is all the more severe when it is analysed in the context of women's economic dependency. They simply did not have the ability to raise families without maintenance; nor could they pay for the costs incurred during court applications to make their husbands pay.

The Maintenance Reform Association for Men went beyond a concern with costs to a consideration of the more general cultural values embodied in the Married Woman's Protection Act. These are interesting to examine for what they reveal about the expected roles of women and men in the inter-war years. For example, a woman could get a separation from a husband carrying venereal disease if he continued to insist upon sexual intercourse but, the newspaper report commented, "men will note that they cannot get a separation on similar grounds". Under the Act men had to pay maintenance pending a court decision and lapses in payment could result in seizure of property or even gaol, which, in turn, could affect a man's employment prospects. While some of this may seem hard on the men, the women did not always emerge unscathed — the same newspaper report quoted the opinion of a Supreme Court judge, which, while it favours women, does so on patronizing premises: "The Court . . . does not treat men and women on the same footing, but regards woman as the weaker vessel, as her habits of thought and feminine weaknesses are different from those of a man, and what may perhaps be excusable in the case of a woman may not be so in the case of man". The tautologies of such thinking reached a zenith in judgements which found it meritorious for a woman to continue to cohabit with a man so long as she considered that there was a chance of reclaiming him, while asserting that, "when a husband is once in possession of the fact of adultery and he still continues cohabitation, his conduct shows connivance as well as collusion and condonation — enough to prevent him from obtaining a separation or divorce".

The Married Woman's Protection Act was a mirror on a society which, in spite of the obvious mutual dependency between pioneering women and their men, sought to caricature their behaviour in a manner which was removed from reality. Yilgarn newspapers abound with commentary, cartoons and poems which illustrate the stereotyping of sex roles such as the verse printed in the *Southern Cross News*, 1 October, 1937.

The Master Male

I've a varied lot of chickens in a pen
 And they used to raise the dickens, now and then.
 Every rooster in the flock —
 Brahama, Leghorn, Plymouth Rock,
 Barnyard strain and blooded stock —
 Loved one hen.

She was fickle and flirtatious, gay and sly,
 Coy, uncertain, fresh, audacious, likewise shy.
 When a valiant chanticler
 Tried to whisper in her ear,
 He received a vicious spear
 In his eye.

But one day a scrawny fellow, old and tough,
 Bandy-legged, dingy yellow, called her bluff.
 Female feathers filled the air,
 Blood was spattered everywhere,
 But he licked her then and there
 Sure enough.

From that very day and hour, she was meek,
 Mistress Hen was in his power, so to speak,
 Followed him across the lot,
 Saved him all the worms she got,
 Fed 'em to him, like as not,
 With her beak.

This is just a homely tale, but it's true;
 Hens prefer a master male — yes, they do.
 He who hesitates is lost,
 Stand your ground at any cost,
 Hens delight in being bossed —
 Women too.

This kind of humour was not uncommon, and, whilst the jocular intentions are apparent to all, the hidden agenda of defining women's role in society becomes increasingly evident with the cumulative effect of such comments over the years. Ten years after the publication of "The Master Male", the *Southern Cross News*, 24 January, 1947, printed:

Ode to a Wife

Your voice is like the babbling brook
 As meaningless you chatter
 Murmuring in an endless stream
 Of things that do not matter.
 But at this point all resemblance ends
 In dry and droughty weather
 The brook sometimes dries up, my dear
 But you go on for ever.

On down the years, in the 1960s, the *Yilgarn Citizen* took up the theme with considerable alacrity: "Of all the skills a girl should know, the first is how to knot a beau". However, having knotted her beau the girl was to learn in a later edition that she could

easily be replaced: “If they’d had electric blankets and sliced bread when I was a lad, I’d never have got married”. Humour entertains, it also functions to release social tensions and in a world which structured family life in terms of male providers and female dependents, there were bound to be economic tensions as the *Yilgarn Citizen*, No. 62 noted:

Workers earn it, spendthrifts burn it,
Bankers lend it, women spend it.

Local media often cast women in a manipulative role: “It’s all right to tell a little boy not to cry because crying won’t help — but that’s not really honest advice to give a little girl”. Manipulation is not a good basis for any relationship, particularly marriage. It is possible to hypothesize, however, that most conjugal unions had more with which to contend than interpersonal relationships founded on manipulation and economic dependency. This century has witnessed a dramatic decline in family size which began in an era characterized by poor sex education and minimal availability of contraceptives. Sexual tensions in marriage were inevitable: As one man commented: “You were too frightened to have sex”. The *Southern Cross News* did carry advertisements for birth control in the 30s which offered “interesting and reliable” information in Dr S. Warren’s book *The Wife’s Guide and Friend*. Worthy of note here is the fact that birth control is seen as the responsibility of the wife and that the book was offered for 15 cents, post free, in a plain sealed wrapper, giving something of a pornographic flavour to what must have been important information for women. The religion of many Yilgarn residents would, in any case, have obliged them to eschew such knowledge.

Whilst Yilgarn women and their menfolk largely lived together in harmony they did so within the framework of social attitudes which sought to divide them into separate, distinct and even antagonistic sex roles. Such values were not unique to the Yilgarn, nor have they proved to be enduring. The move to create a more egalitarian script for women’s and men’s roles gained momentum in the 70s and 80s but could be seen to be starting during the war years when the *Southern Cross News*, 28 May, 1943, reported the latest craze: wedding rings for husbands!

Children were welcomed as the normal consequence of married life and there are many instances of large families in the Yilgarn. Alice Harper had twelve children, the Colgans thirteen, the Teales ten; and, on the Miners’ Settlement, the Holt family had eleven while the Dalleys and Kellys each had nine. Pregnant women received little ante natal care. Erna Forrester reported: “You thought nothing about it really, you did the best you could and carried on”. One woman remembered being prescribed sleeping tablets during her first pregnancy. In the post thalidomide era medical attitudes have changed considerably and today pregnant women can expect minimal use of prescribed drugs, particularly in the first tri-mester. Pregnancy was not flaunted, as Erna Forrester observed: “It was just the general impression that when you were obviously pregnant, you didn’t present yourself to the public”.

In the early days in the Yilgarn, children were born at home. The first white child was born in the Yilgarn in 1888 when Mrs Flint gave birth to a daughter, who, by popular consent, was christened “Golden Valley Quartz”. The first child born in Bullfinch, John Edmund Daniel Bell, was born on 22 February, 1911, followed by the first girl, Kathleen



*"My husband is just the same, dear. You should have a baby —
I always do."*

Fig. 1:

(Originally published in The Bulletin — owner unknown)

Sylvia Miles, on 16 November, 1911. She was presented with a gold bracelet valued then at \$50.

Mrs Hay, a nurse, arrived in Southern Cross in 1894 and opened a private maternity home, continuing the age old midwifery tradition in which women have helped each other through childbirth. However, as late as 1923 there was still little provision for maternity patients in the Yilgarn. Florence Della Bosca (nee Northey) began her family of seven children at this time. Only three of her children were born in hospital, the others were delivered at home with the help of a midwife. In August, 1923, the *Southern Cross Times* reported that Dr Margaret Clark and the hospital matron had approached Colonial Secretary, R. Sampson, proposing that maternity cases be admitted to hospital and outlining the requirements of obstetric cases. Eventually the Southern Cross hospital, which from 1924 was run as a private, subsidized hospital by Matron McLaren, became the place of birth of many Yilgarn residents. Gwendoline Coward (nee Mitchell) worked there as a ward maid in the late thirties after it had regained its status as a government hospital. Matron Finey was in charge. There were few facilities.

The babies all slept in the kitchen before the maternity section was put on. We'd have eight babies on the table where we had the trays to serve the meals . . . There was no hot water system. Any water the nurses needed had to come from the stove. We had to keep the kettle boiling all the time and the instruments were sterilized on the stove.

If a baby were born prematurely incubators were available. These were closed cots warmed by power or hot water bottles and the babe was dressed in special clothes made from cotton wool. In spite of these facilities, the *Southern Cross News*, 2 December, 1938, reported a bush birth and the efforts of the Westonia matron "fighting a lone battle for two lives" on an isolated farm 50 kilometres from town. She won and later that day a St John's Ambulance brought mother and child to hospital.

Some women by-passed Southern Cross hospital and went, instead, to Kalgoorlie. Potentially difficult births or possible caesarian patients were sent to Perth. Perhaps if more women had sought the better medical facilities of the city, more lives would have been saved. Infant and perinatal mortality were higher than they are today. At the turn of the century Mrs Praetz had eight stillborn babies in ten years and four live children of whom one died aged four months (buried 1896). Some babies survived the ordeal of birth against all odds: Nellie May Hoare gave birth in winter in the back of a truck on her way to the Southern Cross hospital 18 kilometres from her farm on the Koolyanobbing road. When she eventually reached hospital the child was found to have a frost bitten stomach but managed to live. Elsie Hawkins (nee Tipler), who lost her first child and had a difficult second confinement when her twins were born two and a half hours apart, commented: "In those days there were quite a few ladies who lost babies". Her comment reflects a philosophical acceptance of life as it was, but the pain lingers over the years. Many Yilgarn women, now in their seventies, made unsolicited reference to stillborn and dead children.

While recognizing the importance of the modern view that the natural processes of pregnancy and childbirth have been over-medicalized, it is hard to avoid the conclusion that better ante natal care and medical facilities might have saved some of the heartbreak

of coping with the death of a baby. At a minimum, better preparation for parenthood might have improved women's ability to help themselves. Ignorance of their own bodies was such that, in retrospect, many women suspected they had miscarriages but were not sure.

The 1930s marked the beginning of an era which has been called the great health robbery. In the interests of profit, baby food companies persuaded women that manufactured products were best for baby. Yilgarn women, like their sisters across the western world, bought the sales pitch and many became persuaded that they were unable to feed their babies. They were encouraged by newspaper articles extolling the virtues of bottle feeding. For example, an article entitled "Teaching the Baby Right Habits", *Southern Cross News*, 18 February, 1938, assumed bottle feeding: "Unfortunately, it is not always recognized that the teat may be the cause of the trouble in an artificially fed baby, and a baby may be partly starved while new foods are being tried". With no support services such as an infant health clinic, or a nursing mothers' association, mothers began to bottle feed their babies. In an age when gastroenteritis was a killer and in conditions where it was difficult to keep equipment sterile, this was a potentially lethal practice, yet the mothers thought they were doing the best for their babies. Deaths due to parental ignorance about diet and nutrition did occur. In a particularly sad case, the *Southern Cross Times* reported the death on 5 July, 1934, of Edwin James, baby son and third child of Caroline and Edwin Madigan. Born a healthy 3700 grams on 16 May, 1934, the child was weaned on 20 June, because the mother thought she had insufficient milk. She sent a friend to obtain advice from the local pharmacist who suggested feeding the child equal parts of water and cow's milk. Instead the child was fed two parts water to one part of cow's milk. Weeks later the baby died of malnutrition, weighing only 2600 grams. Dr Hodby informed the coroner that he had not seen the baby after its birth in May and the local pharmacist, Evelyn Harris, explained that "it was not a usual thing for mothers to consult her as to food for their infants". The real problem was that advice on child rearing was not readily available to any mother.

Ill health among children was a constant source of anxiety. Dorothy Pollard (nee Nunn) recalled the death of her infant son:

It was a sad time. I stayed in Perth a little while with my other sister and when I brought my little girl back she was sick. She had scarlet fever. So we had to quarantine the house here in Southern Cross for about six weeks. Eventually she was alright but I had to get a trained sister up from Perth to look after her. We had a yellow flag flying at the door.

The impact of childhood death and disease on the community can be seen in the following extract from the *Yilgarn Citizen*, 20 December, 1963:

Do you remember that pretty little golden-haired thing you used to play with just after you began going to school? What was her name? . . . Margaret, Margaret . . . something or other. She died, just caught a cold, developed pneumonia and died. Your mother used to talk about it. How she stayed up all night with the child's mother waiting for the crisis to come and how there was nothing the doctor could do about it and what a dreadful thing this pneumonia was. Died of pneumonia! Seems hard to credit. Oh yes, then there was that

boy who lived over near the park. The tall lad with the curly hair and crinkly smile, played a good bat at cricket and could run like the wind. He caught diphtheria and died. About eight years of age wasn't he? That's right. He was complaining about a sore throat at school and then they had his house quarantined and he went to hospital and never came out. Nothing much they could do about it, of course, once he had it. And what about that crippled boy that used to come to school sometimes? Infantile paralysis, the other kids used to say. Heard a lot about paralysis then. Tragic, when you come to think about it, how many kids would just disappear from school. Sometimes they would return after months, pale, thin and wasted. More often they would just fade from life. They died. From pneumonia, scarlet fever, diphtheria, whooping cough, polio, mastoiditis and septicaemia. Adults died too, from diseases that today are curable.

Some of the patterns of recording the cause of infant death reveal as much about the personal predilection of the resident doctor in the Yilgarn as they do about the real nature of the child's illness. Clearly gastroenteritis was lethal as were epidemics such as typhoid. However, it is hard to believe that "asthma" killed a five day old baby or that "teething" caused death.

In the face of illness, women had to cope alone or rely on each other. Doctors were few and they did not come cheap: "A charge of twelve pounds was made by the Southern Cross doctor to visit Bullfinch",¹² before the Great War. This would have been the equivalent of two or three weeks' wages and would have placed doctors beyond the reach of all except the richest. Ester Carnicelli recalls that a doctor travelled to Marvel Loch once a fortnight. Unless the locals could organize to be ill on that day there was little alternative to self-health remedies and neighbourly assistance.

Edith Bestwick who, with her husband, opened the first shop and post office in Bodallin, is reputed to have always been willing to come to the aid of anyone who was ill by helping to look after their children, or by going out to their homes to cook and clean and to look after sick people. Thelma Graves recalled that on the Miners' Settlement when "Mum was sick Mrs Trembath would always come down . . . well, she was like my second mother". Mrs Zappa had a big doctor's book called *Vitality*; but Mrs Anderson didn't give the doctors much credit: "My mother didn't believe in doctors, so she fixed me up herself". The same mistrust of doctors can be seen in Mabel Brown's comment:

On the occasion of Bill Pittaway's tragic accident (his leg was amputated after it had been trapped in farm machinery) my mother was instrumental in getting him cleaned up and wrapped up and taken into Southern Cross. And then, of course, the old doctor dithered and . . . bugged about and got nothing done. So she was instrumental in getting the taxi . . . and took him to Northam.

In another accident case, Teresa Gianoncelli showed remarkable physical strength in carrying her husband several kilometres to get help after he cut his foot with an axe. She later showed another kind of strength, when, as a non-English speaking migrant, she supported her husband through a nervous breakdown.

Many home remedies elicit adverse reactions even fifty years later: "That terrible licorice we had to take — because we couldn't get much fruit". The weekly dose of castor

oil still makes many shudder at the memory. Mothers blew powdered sulphur down children's throats to ward off influenza in the great epidemic of 1919. There was picric acid, for scales, de Witt's and Beecham's pills, anti-phlogestine poultice, Friar's Balsam, Lysol and Sloane's liniment, Zambuck, Goanna Salve, Warne's Wonder Wool for bad backs, and mustard plasters. The Dalley family "always had a bottle of eucalyptus. A drop of that on some sugar was the best cure of the lot for coughs and colds and stuffy noses". A few drops of kerosene swallowed on sugar was another cure for the common cold relying, it seems, on the philosophy that if it didn't kill you it would cure you. Cough syrup was made from a mixture of lemon or vinegar and licorice. Diarrhoea was cured by chewing on camel bush leaves or with a cornflour and water mixture. Bill Pittaway recounted another cure for diarrhoea which involved abstracting a live coal from the fire and dropping it into a mug of water. "When the ember, the coal, had stopped sizzling, pour the water off gently and drink, that . . . was instant relief". Wounds were packed with cobwebs to stop bleeding. Some put sugar on the cuts to achieve the same end. The local pharmacists provided many of the home remedies and their role as de facto doctors was important. Mrs Scarlet of Bodallin used to ring the Southern Cross chemist who would advise her and send the appropriate medicine down on the goods train.

Child rearing, of course, extended beyond health care. There was little advice for women other than the informal help of one mother to another. Winifred Hall, whose first child was born in 1942, noted the absence of a baby clinic: "I was quite an inexperienced mother and, if I wanted any information, I would have to write down to the Infant Health Centre in Perth". The local newspaper often featured articles on child care and child rearing practices. For example the *Southern Cross News*, 15 January, 1943, carried a column which vilified the use of babies dummies, making a connection between oral and moral behaviour: "Endless sucking is the first step in uncontrollable self-indulgence and self-soothing, leading to loss of self control and self reliance". It should be understood that at that time there was a nationwide drive to collect rubber.

Child rearing has largely been seen as women's business, but despite this expectation, husbands have always played a part in bringing up the kids. The war years were, of course, an enormous disruption to family life and many men did not see their wives and children for years at a time. Edna Meharry, of Bullfinch, tried to stay close to her husband and followed him to Perth, Bunbury and Geraldton. She then returned to Kalgoorlie to stay with her parents. Their daughter was seven months old before her father saw her:

He had to go through Kalgoorlie on the troop train . . . a policeman went out to Parkeston where the train used to stop for watering and he took my husband off the train under police escort, so he could come home and see his daughter and then he took him back to the train and he went off to Perth and came back again and he had a few days' leave.

In some cases child rearing became unusually demanding as mothers turned educators and supervised their children's correspondence lessons. Catherine Irving remembered this in connection with the vicissitudes of life at Moorine Rock school: "There was a lady there who had five children. She was a bit temperamental and used to take the huff at the teacher, take her children away, and then the school would be closed and we would be on correspondence which I found, with housework and all the extra

chores really a bit much". For non-English speaking women the problems of distance education were compounded. Molly Coolahan, who taught at Corinthia school in the 1933-1936, found that three of the children in her class, aged 11, 13 and 15 had received virtually no schooling. They had been on correspondence courses but their migrant mother had been unable to help them. Parental support is important in a child's development at school, but it sometimes came in unusual guise. Mrs Lavery, a woman remembered for her Amazonian proportions, marched into Southern Cross school to cuff the ears of the headmaster who had had the temerity to discipline her son. The headmaster should have known better for Mrs Lavery was renowned in the district as a woman prepared to quell her husband's drunken street brawling.

For most women the time spent on household chores must have resulted in less time for the children, yet they were never excluded, indeed they were taken along, even to dances. Paid childcare was unheard of and even in the 40s and 50s Peggy Guerini noted the impact that children can have on a woman's life when there is no alternative care:

I had my first child in 1945 at the age of twenty. By the end of 1947 I had three children. Having so many babies made having a social life very difficult. I didn't have anyone to look after my children and in fact couldn't go anywhere . . . Even to go to something as simple as the C.W.A. was a hassle because you had to get your babies ready and go off with them.

The lack of alternative care was a problem when parents died. Ester Carnicelli took in Kathy Thompson when her mother was killed in a car accident in 1935. Kathy entered the Carnicelli family when she was only about five years old and stayed until she married.

While, in theory, child rearing was gender based, in that everyone had a fixed idea of appropriate female and male behaviour, in reality girls and boys were often required to do similar work on pioneering farms. The amount of work to be done left little room for child rearing philosophies; and children were brought up in the school of hard knocks as they quit formal education on their fourteenth birthday to help their families.

Olive Dalley and her sister used to help in clearing the bush: "Our hands would be that sore and blistered. My poor sister and I, we could hardly walk home". Dorothy Pollard (nee Nunn) used to get up at 3.00am to milk the cows on the family farm and she listed her other duties as: separating the milk; making the butter and scalded cream; feeding the calves; cleaning out the cow-yards and, finally, cutting and stooking the hay. Alan Brown described the life led by his sister, Thelma: "She worked like a man in those times". Whilst this might be intended as a compliment, the evidence suggests that she was actually working like a woman. Thelma Graves reported that "I had to work in the paddocks just the same as the boys did. Oh Yes! I was driving tractors when I was 14 years of age . . . no, it wasn't an easy life by any means. No girl's life". Ethel Webb emphasized the role of a dutiful daughter when asked to recall her life in the Yilgarn:

I was never keen on farm life. I went with the family because it was my duty to do so. I didn't have the independence that they have today, you know, branch out for yourself . . . They were wasted years as far as I was concerned. I was buried out there for ten years or more.

Ethel's comments sit uncomfortably with the dutiful tones of a poem published in the *Southern Cross Times*. 26 January, 1924, and written by a man, "O.K." of Marvel Loch:

The Settler's Daughter

Now Mother mine I've done with school,
 And, tho' at homework quite a fool,
 I'm well and strong and downright willing,
 To do the chores you've long been doing.
 Year in, year out you've borne the brunt
 And now it's me to do my stunt;
 Just sit you down and tell me plain
 About the things I now must learn.
 I'll scrub the floors, the windows clean,
 Wash the dishes, churn the cream.
 The clothes I'll wash and careful mend,
 The chicks I'll feed, the garden tend,
 The beds I'll make, the sheets I'll air,
 I'll put a shine on couch and chair,
 The tables shall be free from stain,
 I'll love to keep them sweet and clean.
 Each nook and corner I'll explore,
 No dust shall lurk behind the door,
 To keep our house right spick and span,
 I'll do the very best I can.
 I'll learn to cook, won't it be fun
 To show your girlie how its done.
 At first I guess I'll sure be clumsy,
 But you'll be patient won't you Mummy.
 At night when all the work is done,
 We'll sit around and have some fun;
 I'll play and sing and read you books
 And you shall knit, while Daddy smokes.
 And when its time to go to bed,
 When Dad our evening prayer has said;
 What wage I earn God grant me this —
 My loved one's blessing and their "well done" kiss.

For women at home in the Yilgarn life was tough. An analysis of their marital life and domestic labour becomes a reality testing exercise in which many myths are destroyed. The romantic account of the "Settlers Daughter" does not admit of the possibility that dutiful daughters saw their lives sacrificed, like those of their mothers, to the heavy work of cooking, washing, cleaning and childbearing in a world of dust, heat, flies, extremes of temperature and poverty. The myth of a romantic and adventurous pioneering life is reduced to the futility of battling for nothing, as Olive Last recalled: "See, it did open the country up, but not for the ones that did all the hard work".

Women were not sorry to leave when it came to walking off their farms during the depression years. Ernie Zappa said of his mother: "I know that she'd really had it in the

finish, because she wanted to get away". Carmel Hughes (nee Anderson) blamed the circumstances of the Miners' Settlement for her mother's untimely death; "She worked day and night, and that's why she didn't live to a very long age". However, not all women died young as a consequence of hard work. Martha Smith, who camped along the pipeline as it was being built, eventually reared 13 children to maturity and died at the age of 96. Mary Davis died in 1955 aged 99, a longevity which was not equalled in the Yilgarn until 1975 when Ellen Webb died at the same age. Esther Williams (died 1945) and Bridget Bennett (died 1971) both lived to 95 years of age. Other female nonagenarians in the district included: Domenica Armanasco (died 1970); Hanora Ward (died 1969), Frances Liddle (died 1967) and Ann Contessi (died 1964). Maria Della Bosca, 91 years old, lived in the Yilgarn for about 50 years and is now being cared for in a nursing home in Wanneroo. Gertrude Birtles celebrated her 92nd birthday in January, 1987; she has lived at Noongar for over 60 years.

It is hard to evaluate the consequences for women of their years battling in the Yilgarn. Some did not wait for nature to take its course, preferring to escape from the problems of life by committing suicide. The *Yilgarn Merredin Times*, 7 January, 1922, reported the death by hanging of Mrs Hall, mother of four young children. In 1924, the *Southern Cross Times* carried the story of Mrs Burns of Bullfinch who was found hanged in her chaff house. Her two sons had been killed in the Great War, she had been ill and complained of being lonely. Another hanging was reported by the *Southern Cross News* in March, 1937: a Mrs Archibald was found dead in her kitchen, with a cord tight around her neck.

While some women gave up in the face of adversity, others drew strength from the years of hard work. Florence Rose is proud of the work she did in the Yilgarn: "I have thoroughly enjoyed all the pioneering years and feel it a great privilege to have participated in the development of our wonderful State". The efforts of women are clearly recognized by the men in their lives. Arthur Stubbs wrote: "Without the love and attention of our wives, I doubt if many of us would have persevered so long and obtained even the modicum of success that attended our efforts". Jack Hunt remembered that: "A lot of the men were getting to the stage of being burnt out, you know, being dusted and one thing and another. But the women were always a very bright lot and would do anything for you".

The source of Florence Rose's pride is the work ethic which was and is strong among Yilgarn residents. Work has been so much of a virtue that on 28 February, 1938, one woman wrote to the *Southern Cross News*: "Fed up, Need for a Rest: A Woman's Letter": In an impassioned plea for a holiday she wrote:

Nobody thinks that it is really very necessary to have a holiday from washing, sweeping, darning, trying to turn tough mutton into tender lamb, and keep little children out of dangerous mischief. Nobody realizes that the reason a mother slacks down in her work and gets snappy is because she is fed up with domesticity and needs a change.

Domestic life today is easier. Assured power and water and modern household appliances have released women from the sheer drudgery of daily chores. It has been suggested, however, that work expands to fill the time available and that new and

demanding standards, particularly those pertaining to motherhood, have arisen to fill the days of women supposedly left idle by labour saving devices. The fact is that any simple notion of a natural progression from the bad old days to the ease of modern life simply is inaccurate. A number of features of development and progress have not resulted in a life of ease. Rural depopulation and government expenditure directed towards development rather than family welfare mean that increasingly, health, welfare and education facilities are being centralized thus diminishing everyday family access to services. The high cost of technology has also contributed to this process, particularly in the medical field, necessitating inconvenient trips by some Yilgarn patients to facilities as far distant as Perth. The flies, extremes of temperature and the dust have not gone away. Nor is it true to suggest that all families today live in adequate housing. Transportable houses and caravans accommodate the influx of people into the mining districts which were re-opened in the 1980s. Once again women are establishing and running homes in pioneering conditions. They are more fortunate than their sisters who lived in the Yilgarn in earlier times, for they do, at least, have power and water. Moreover, the problems of isolation are diminished since the pattern today is to settle the families together obliging the men to travel to work. Nonetheless, nobody would pretend that rearing a family in a caravan is easy. Bearing in mind these qualifications it is probably reasonable to suggest, however, that life is easier today in the Yilgarn. Most women are well housed, most drive family cars and have access to telephones. Family size is smaller and labour saving devices leave women, for the first time, with a choice between staying at home to work or going out to seek paid employment.

Yilgarn Women in Paid Employment

For women the choice to work in the home or to enter paid employment is constrained by both attitudes and circumstance. In Australia, jobs deemed appropriate for men and women are delineated in what has been called the dual labour market. Women generally work in the service industries of retailing, catering, office work, nursing and teaching while men dominate in primary industries such as mining and farming. The occupational structure of the Yilgarn, based as it is on mining and agriculture, provides few opportunities for women. Consequently there are, proportionally, more women in the Yilgarn who are economically dependent than in Western Australia as a whole: The 1981 census showed that women comprised 76% of adult dependents in the Yilgarn as compared to 71% for Western Australia as a whole; and that 31% of the Yilgarn workforce was female, which was lower than the figure for Western Australia which was 37%.

Attitudes about women's role in society influence their entry into paid employment. A survey conducted in Southern Cross in 1981 revealed a range of opinion among the women who responded. Some supported absolutely the right of women to work: "It is their right to be independent and to remain so. Women also have much to offer in regard to the workforce and therefore should not be held back". Others felt very strongly that mothers should stay home with their children. By contrast one woman felt that children in fact created the economic need to work: "My position is to help give our four children a reasonable, decent life. On one wage this is impossible, especially here, where shops have

no opposition . . . and charge the earth. If I lived in the city or nearby, work would not be essential for me”.

There was a fear that older women might be keeping jobs from younger, single women: “Once a woman’s children have grown independent of her and she is only working to further the bank account of her husband and herself she should stand aside her job for women who are single and willing to do her job or a married woman with young children”. There was no mention of the common assumption that working women might keep jobs from unemployed men. Rather, women expressed concern about the rural depopulation caused by young girls being obliged to move from the area in search of employment. Implicit in the belief that older and younger women compete for employment, and that older women should sacrifice their job for the young, is the reserve army notion of women’s involvement in the workforce. This condones female employment in times of need but encourages a return to the house when unemployment rises.

Opinion among men surveyed was equally varied, with one exception — many more men than women saw a woman’s right to work as a non-issue: “I do not really consider it to be an important issue. They have the same rights as men”. Some were strongly supportive of women’s entry into the workforce: “The right to work is a universal right and should never be confined to either sex or for any stipulated period”. However, many men were opposed to double income families and described working wives as “greedy not needy”. Others saw women’s primary responsibility lying in the home: “Providing no children suffer without motherly guidance, love and care, then if they wish to work by all means work”. Once again the view emerged that older women keep jobs from the young. Indeed, one male respondent suggested a retirement date from the workforce with alarming specificity: “I feel that at the age of 30 women should retire and give young girls a chance of employment”. Only one man understood the realities of a job market which forces different sectors of the workforce to compete against each other: “The fallacy of unemployment being solved by not having married women in the workforce *is* a fallacy”.

Attitudes before the 1960s dictated that women’s primary role was in the home. This view led to policies of downright discrimination such as the dismissal of female teachers by the Western Australian Education Department when they married. It was not to be until 1969 that married women teachers could be employed on permanent staff. In Bullfinch, Edna Meharry was devastated when she was unable to return to work after her marriage: “I hadn’t been teaching long enough to satisfy me and I would have loved to have gone on. When the bell rang that first morning in February I was very sad”. She had one friend who taught for six months after she married without telling the Education Department. “She was dismissed immediately when they found out”.

Male teachers were given considerable advantage as Erna Forrester remembered:

Actually we used to feel a bit cross because in those days there weren’t very many males applying to be teachers, and they could get into training college after one year (of monitoring) while we had to do two years. I suppose, too, it was viewed that men were the permanent bread-winners but a lot of women that I trained with never married: they looked after mothers and kept homes going as well as working. But that’s the way it was. ¹³

Today, affirmative action policies apply to redress some of the injustices of the past

and, in the Education Department at least, to place women in the senior positions for which they have worked.

The fluctuating attitudes about women's involvement in paid employment was nowhere more clearly illustrated than during the World War. The reserve army of female labour was desperately needed as men entered the armed services. The *Southern Cross News*, 1 August, 1941, reported that "unemployment is decreasing so rapidly that the reservoir of manpower will dry up . . . large scale employment of women is daily becoming more urgent and imminent". A Western Australian historian, Gail Reekie, wrote:

Between March and December 1943, every major Western Australian newspaper carried regular advertisements begging women to volunteer for essential industry, the women's services or the Australian Women's Land Army. Housewives were urged to 'take a victory job' in a factory which, it was claimed, was 'more fun to work in than any house'.

After years of induction into the role of housewife it is small wonder that women were less responsive to the call to work than the manpower directorate had hoped. Persuasion turned to attack and women's reluctance to join the workforce was identified as "little short of a betrayal of the men at the fighting fronts".¹⁴

Attitudes about working women began to change. Although there was some media concern that women were becoming too self assured and cocky, giving cheek to their factory bosses, the *Southern Cross News*, 27 November, 1942, observed that:

Women have invaded almost every sphere of activity once the exclusive hunting ground of the mere male. Here we see women busily engaged in riveting in a factory engaged in war work. If they are not the equals of men after this war has concluded, it will not be for the want of trying.

The reality was that most of the war jobs in which women became involved required little skill and even less pay: The *Southern Cross News* reported that in 1942 the average weekly pay for women's war work was \$8.20. Boring, low paid jobs meant that there was no need for a systematic campaign to get women to return to their homes when peace returned, rather: "The public image of the working woman simply slipped back into pre-war invisibility".¹⁵ The messages were more subtle by 1945, when the local paper was beginning to convey to women a heroic notion of housekeeping as an art: "There is a great task before women. The building of real homes is the most inspiring and worthwhile of jobs".

Yilgarn women who enlisted in the armed services included Marg Dunshea, Pauline Brand, Nellie Wilkinson, Ethel Smith, Joyce Ivey, Kath Sweeney, Muriel Page and Evelyn Wesley. The latter reported of basic training: "We did everything the men did . . . up early in the morning exercising and doing sports and everything . . . and, of course, quite a bit of study". In an article entitled "Being a Lady in the Army", (*Southern Cross News*, 4 July, 1941,) such young women were discouraged from wartime "abandon" and constrained to their traditional God's Police role by the exhortation to "attract as little attention to themselves as possible". The onus was on the young women not to attract the men rather than asking the men to accept responsibility for their own actions.



*Plate 3: Private Shirley Brand, AWAS, HQ, 3 Aust Corps.
(Courtesy Yilgarn History Museum, Southern Cross)*

In general, women in government service, public utilities and rural industries could not enlist in the armed services. Those Yilgarn women, whose families had survived the depression and not walked off the land, remained at home largely detached from the war. As Ethel Webb reported, it “really all went over my head”. Women worked hard on their farms not only in their homes but out in the fields, yet this work, like domestic labour, was seen as non-work and women were not perceived as farmers. “My Lady’s Page”, *Southern Cross News*, 2 December, 1938, clearly understood that women’s role at harvest time was in the kitchen. With detailed advice on how to plan ahead, the article suggested meals, first aid tips and stress management strategies for the harvest period: “Mrs Wheatgrower, take care of yourself in order that you may do full justice to your job of taking care of others”. In July 1963, the *Yilgarn Citizen*, reflected a continuing community belief that women were the support and back up rather than farm workers in their own right: “Farmers’ wives are found behind farmers — they keep the farmers’ books and records, households, poultry and tempers”. The writer would have been surprised by the work of Margot Steel driving a giant New Holland harvester in the south Yilgarn in 1988. Yet, as early as 1903, Golden Valley station had been run by five young women. According to McMahon¹⁶ they handled the cattle and broke in the horses on their own; and on 12 June, 1936, the *Southern Cross News* noted that Mrs Mann of Bullfinch had taken up farming in 1918. Later, Mrs Lavery also farmed in the district. Nevertheless, in 1926 farming women were still newsworthy. The *Southern Cross Times*, 27 November, 1926, lauded the efforts of a Mrs M. M. Stopher of Corinthia who ran her farm and large family with only the help of two teenage sons. In 1926 they cropped 150 acres: “The way in which this woman has battled . . . for herself and children is a shining example of grit and maternal love. Australia should be proud of women of this type”. She was perhaps less unusual than the article suggests for out on the Miners’ Settlement many women helped their sons and daughters develop farms in the face of the absence or ill health of their mining husbands and fathers. Mrs Holt helped with burning off; Mrs Davey cleared land by hand raking; Mrs Anderson “used to go up the paddock and sew bags of wheat, pushing the baby in the pram . . . and came home to milk the cows and cook tea”. At Bodallin, Margaret Ivey worked on her farm carting wheat and truck driving, tasks for which, in the 1960s she “took a lot of flack”. Yet women’s perceptions of themselves are changing. Increasingly women have shown a willingness to describe their occupation in the census as farming, though this may reflect the income splitting imperatives of taxation law as much as it does a new consciousness of their work on the farm.

The Number of Women Describing Themselves as Working in Agriculture In the Yilgarn 1891-1976 (abstracted from A.B.S. data)

1891 - 0	1933 - 9	1966 - 54
1901 - 1	1947 - 7	1971 - 41
1911 - 2	1954 - 11	1976 - 132
1921 - 1	1961 - 16	

Even though much of women’s work on the farm was seen as little more than “helping out” there was still opposition to it. The *Southern Cross News*, 1 May, 1937, carried an item called “Should women milk? A man’s point of view”. Whilst the article did at least consider women’s role in the house as real work, it was based on the

assumption that this should be their only work. The argument for keeping women in the home was that they already had a "man-sized job" and that further involvement on the farm would lead to stress which would affect their health; in any case "which is the nicer, for a man to come in tired and dirty at night and find his wife cheerful and everything spick and span, or to come in with his wife, both dog-tired and dirty, with the last meal's dirty dishes on the table?"

Any analysis of women's working life must include some discussion of the interdependent relationship between paid employment and domestic duties. Not only have women been discouraged from entering the workforce because of their child rearing responsibilities but this expected maternal role has been institutionalized in the workforce, shaping the opportunities available to women. For example, the Education Department of Western Australia required women to teach sewing. Female teachers were paid an extra \$40 a year for this task in the 1930s. Where there were no female teachers either the wife of the teacher or a local woman was asked to conduct the sewing classes. Marjorie Basell (nee Barger) proudly remembers the local acclaim she achieved when her sewing class in Marvel Loch displayed its work at the Southern Cross Agricultural Show in the late 1930s.

Career opportunities for young girls were shaped by a school curriculum which anticipated a domestic life. The *Southern Cross News*, 22 January, 1937, featured an article entitled "Educating the Growing Girl". It noted that:

There are schools and colleges whose principals fully realize the need for training future women in the arts and crafts of the home". Changing directions in education for girls still related to an inevitable future as wife and mother. "The man on the land today is as much a business man as the owner of a city store. He needs a wife who can converse without restraint on topics of the day, who understands something of world politics and their effects on markets, and who can, at a pinch, take over the complicated business of running a farm successfully in the event of temporary or total incapacitation of her husband.

Twenty five years later these assumptions about girls' education were unchanged. The *Yilgarn Citizen*, May 1962, reported:

A unique system of domestic science instruction is working successfully at Bullfinch. Six local women residents are instructing two girls each in practical cookery, in their own homes. The work is done purely on a voluntary basis and much credit is due to those ladies who are giving their time and effort. The theoretical section of the subject is taught at the school, and in this way domestic science is brought into the girls' curriculum as an extra subject.

This was a praiseworthy attempt to expand the curriculum in a country school but, as an experiment, it failed to recognize that boys, too, need basic cooking skills and that it was gearing young girls for limited job opportunities and a life based in the home.

Having acquired different skills, girls and boys entered different sectors of the workforce creating the dual labour market. The domestic skills of women were often exploited in cooking and cleaning jobs. Betty Teale cooked at the hospital for more than 20 years, living in the superseded, nurses' quarters. Lizzy Oxenham also worked at the

hospital for many years as a laundress. As often happens, long-term, unskilled workers frequently knew more about the running of the workplace than the more transient professionals. Mary Clarke, a former nurse, said of Lizzy: "She knew more about the hospital than anybody else did". Erna Forrester wrote of the school cleaners: "Some of these women did a wonderful job for many years and were highly respected". Special mention should be made of school cleaners, Lila Coward and Mrs Dunshea, who was later succeeded by her daughter, Dulcie. Marjorie, the older Dunshea daughter, also followed in her mother's footsteps and became a domestic help to the local doctor. Williamina Stokes survived the battling years as a farming pioneer and later worked as a cleaner in government offices. One of the notable features of the working life of these women was their job stability. For example, in May 1963, the *Yilgarn Citizen* reported a school presentation to Mrs Keeler "who, for eight years, has served the school faithfully as cleaner". On that day, Mrs Middelmass took over her job. While some women took their domestic skills into the market place others worked from home. Both Mrs Archibald and Mrs Teale, for example, took in washing and ironing.

The blurred distinction between unpaid domestic labour and paid employment is clearly illustrated in the work of Aboriginal women, who, in the 1930s, often worked in white homes for half the usual pay, earning only \$1 a week plus keep. Erna Forrester remembered giving presents to the Aboriginal women who worked for her. Many such women had been taken to missions in their youth and those who worked in the Yilgarn in their adulthood often came from elsewhere, using the skills they had been taught on the missions. Lena worked in the house on Minburra farm and Erna Forrester recalled:

She came from a station north of Kalgoorlie. She used to bemoan the fact that the police rounded up a lot of the children to send them to mission schools to educate and train them. She hid in a hollow log and they missed her. She was a lovely girl and very dress conscious, and she used to say to me that she was very sorry the police hadn't caught her because she would have learned to read and write. It was very sad that with all the housework she and I had to do there wasn't ever enough time to teach her.

Nena also worked at Minburra, but on the farm not in the house:

Nena's job was to look after the pigs. We had a hundred or so at the time, and in those days we had a fair amount of timber not far from the homestead and the idea was that she take them out and shepherd them during the day and bring them home at night. She'd set off bareback on her horse with the broken clay pipe usually hanging upside down in her mouth, and if it wasn't she'd be singing away as happy as a lark. She had a name for each one of those pigs and off she'd go with her crib and spend the day out in the scrub. If it was cold, you'd see little fires here and there where she'd comfort herself. If Norman was doing fencing, he'd generally see that she did most of the work and she always got a straighter line than he did, I might add. ¹⁷

Another Aboriginal woman, Lizzie, used to help Erna Forrester with chaff cutting: "We used to pray that the tractor would break down so that we could stop and have a little rest because the worst part was keeping the sheaves of hay up to the one who was feeding it in. If you didn't, you were in trouble!" ¹⁸

The tendency to treat notable people as characters and stereotypes is typical of Australians and, to a large degree, of rural people. With regard to Aborigines, the habit was extended to seeing them almost as caricatures rather than individuals, each with personal dignity. Their human right to receive standard rates of pay was probably more easily denied if they were seen as characters who were part of the family. In any case the concepts of award rates of pay and recognized conditions of service could not be established in a district where many farmers were barely scratching a subsistence from their land and where prospectors relied on a very uncertain income. Furthermore, Aborigines were not citizens and were therefore outside wages law. They were not permitted in towns. Indeed, the Forresters had to receive permission to take their Aboriginal employees out of the district on holidays.

Even when women were paid at the correct rates their salaries were always lower than men's, even for the same work, as in the case of teachers. To add insult to injury all wages, including those of teachers, were cut during the depression years and from their meagre earnings they also had to pay back the \$2 a month which they had been paid during their training. Often pay packets looked more like pocket money, for the young women were paid partly in kind through the board and lodging which was provided by the employer. Arriving in Southern Cross in December 1937, Gwendoline Coward (nee Mitchell) worked in tea rooms earning \$2 a week plus board and lodging. Later she worked as a ward maid at the hospital. Starting at 7.00am she worked through for 12 hours with only a short period of time off after lunch. For this she received \$3 per week plus keep. Erna Forrester, as a teacher, was paid in cash rather than in kind but she remembers having to pay over \$6 a week for board and lodging at a hotel out of a weekly income of \$9. Relationships between employee and worker seem to have been generally harmonious, but the *Southern Cross News*, 8 January, 1937, reported a court case in which a girl was awarded the full amount of her claim. She had been obliged to leave her job because of her employer's familiarity. It was noted that there was no cause for dissatisfaction with her work. It is interesting that the case was concluded successfully because in 1937 it was still a commonly held assumption that women were responsible for the behaviour of men. The *Southern Cross News*, 15 January, 1937, carried an article, "Beauty May be a Handicap", which reflected this attitude: "Any prospective employer casts a doubting glance at the too-pretty candidate. Ten to one she won't be able to cope with her work. Also she will give his wife ideas, take the male staff from its work and antagonise the female side".

Boarding was a way of life for many women working away from home, particularly for teachers. One female teacher is reported to have boarded with a non-English speaking Yugoslav family in an iron and hessian shack, sharing a room with four children whom she taught all day. In towns there were hotels and boarding houses available but these were often seen as insufficiently genteel. When Miss Houston arrived to teach in Bullfinch in the 1930s she refused to stay at the hotel because of the rough men there and decided instead to convert one of the school rooms into accommodation for herself and her assistant, Edna Meharry. The school had two rooms:

We lived in one and we even polished the floor with milk because we were told it made the floor shine. The teaching platform was our lounge room, the rest was curtained off between the two of them. She was in her 50s and I was

20. So I had my little bedroom and she hers with the curtain between and the vestibule part was our kitchen.

The provision of board and lodging was an important service for the transient mining populations of the Yilgarn and such work allowed women to extend their domestic skills into the field of paid employment. The work was a hard slog. When Florence Tuckey ran her hostel in Southern Cross she worked seven days a week starting with breakfast at 6.30am. Having provided cut lunches she worked on to prepare the evening meal. For her efforts she was often rewarded with bad debts. In the mid 1930s Ester Carnicelli prepared three meals a day for as many as 27 men at her Mt Palmer boarding house. The men lived in their own tents but paid Mrs Carnicelli \$2.50 a week for their meals.

The Saturday night shopping crowds and train passengers were catered for in tea rooms — the railway refreshment rooms being the most popular. Gwendoline Coward (nee Mitchell) explained that: “We made pies during the day time and served them to three trains coming through. Two at night time and one in the morning”. It was far from gourmet tucker: “We only sold pies and tea and coffee”, she said. A number of women combined home duties with money earning ventures by baking and selling food to the railway gangs. Mrs Stallard ran the Yilgarn Dining Rooms which were burnt out in 1932. She went on to become the proprietress of the Grand Central Coffee Palace on Antares Street, Southern Cross. Nearby, Molly Taylor also ran tea rooms between 1951 and 1973 assisted by her brother Jack. In Marvel Loch, in 1935, Clara Airey (nee Saunders) ran the cafe and dining room. As a little girl in 1892 she had lived in Southern Cross. This was when Coolgardie gold was discovered and she had the privilege of being given a small nugget by Paddy Hannan.



Photo., P. 200.

Commonwealth Dining Rooms Mrs McGrath's Proprietress.



*Plate 5: Alice Kennedy (right) outside her Club Hotel, Southern Cross.
(Courtesy Mrs Melba O'Brien, North Perth)*

The licensed hotel trade has been more the domain of men but in the 1930s Eileen Lee was licensee of the Club Hotel and Elsie Williams ran the Karalee Hotel. Alice Kennedy (nee Henry) was, at various times, licensee of the Railway, Southern Cross and Club Hotels. She had arrived in Western Australia in 1897. After conducting a private hospital in the residential portion of Southern Cross known as "The Hill", she proved herself to be an excellent businesswoman. She invested in farms, one on Wheatley Road and the other at Hill Farm on Hope's Hill Road. According to her niece, Melba O'Brien, she showed considerable prowess at playing the stock market and also involved herself in several mining ventures in the 1920s. Her strategy was to put up grub stakes for miners and by so doing to acquire an interest in any gold found. Dunstan's store made up batches of provisions for penniless prospectors. Mrs Kennedy footed the bill and if the prospectors found anything she would have a claim pegged. She must have done well for in the mid 1920s she bought the freehold of the Club Hotel.

Typically, women have not been involved in mining, although the *Southern Cross Times*, 26 August, 1922, made reference to a Miss Bonham, a prospector at Forrestania: "A courageous girl supervised the working of her property and also drove a couple of brumbies to and from the Cross and supplied her employees with provisions". The road she travelled was described as lonely and inhospitable. Six decades later women were still rare in mining. A notable exception was Joan Bath a mining engineer who in 1988 was appointed mine superintendent of a large open cut development at Hope's Hill.

Retailing is an area in which women have worked in large numbers. It is, perhaps, symbolic that the first white women to arrive in Southern Cross were the two daughters of Felix Murphy who left his daughters to set up shop. In Bodallin one of the first shops to be established was run by "Grandma" Angelina Biggins. She ran a store from her home near



*Plate 6: Joan Bath, mine superintendent, Hopes Hill, 1988.
(Photo: The West Australian)*

the railway siding, obtaining her supplies from the Kalgoorlie bound Friday shopper train. She daily baked 40-50 loaves of bread in an ingenious oven — a 400 gallon water tank dug down cornerways into the soil with the wide part upwards. It was covered with mud from a salt lake. A fire was lit inside the oven and when it was judged hot enough it was raked out and the dough placed in it to cook. She kept chickens, turkeys and goats, employing a shepherd to watch the goats and to butcher them for fresh meat. In addition she bought a 250 egg incubator and hatched chickens to sell.

Trade was less lively for Edna Meharry when she returned to Bullfinch in 1943 to run the general store: “I used to do my ironing on the counter — we only had a customer every four hours because it was such a small population”. Women who ran stores often became something of a focus of local life since they had occasion to meet and speak with most nearby residents. Indeed, Kathleen Barger, who ran a haberdashery shop in the late 1930s, was known as the Mayoress of Marvel Loch, because she was so closely involved in the local community. Mrs Mann, storekeeper in Bullfinch, Marda and Mt Jackson, who arrived in Bullfinch in 1910, became so popular that she was known as the “Mother of Bullfinch”.

Before the World War, Stella Scott ran a store in Bullfinch in which she also conducted an unofficial post office. She exemplified the role of Yilgarn women in keeping open lines of communication in the district. In the 1920s Mrs Winner became the first postmistress in Bodallin; her post box was a chaff bag hung on the front door. Mrs Massey ran the tiny post office at Yellowdine siding for many years until she was nearly 90.



*Plate 7: "Grandma" Angelina Biggins.
(Courtesy Yilgarn History Museum, Southern Cross)*

Women also worked as telephonists and operators. Patricia Blair was the last telephone operator in Southern Cross; and Mary Hockley achieved passing fame as Bullfinch's last telephone operator before the exchange was automated in October 1984.

One of the earliest ladies' hairdressers in the district was Marjorie Basell who improved on her natural talent by training as a hairdresser at the Hollywood Hairdressing College in Perth. The fee for the course was \$200. When she was 19 she opened her salon, the "Marjorie-Daw", adjacent to her mother's haberdashery shop in Marvel Loch. She started work at 9.00am when the power was switched on and would frequently have to run to the generator at the garage to have the power boosted to ensure the success of hot clip perms. On two days a week she travelled to Southern Cross where she worked in the back of a shop aided by Jesse Dyer, daughter of an American mine manager. Jesse, it seems, is remembered as much for her American twang and "Lucky Strike" and "Camel" cigarettes as for her work at the salon. Of necessity there was a unisex element in the hairdressing trade. Marj cut men's hair, while Erna Forrester recalled that she went to Murphy, the Southern Cross barber, for her haircuts.

Nursing has traditionally been women's work. It is a field of employment which flows naturally from the health care role which women perform in the home and accords with the service orientation which has characterized female employment opportunities. One of the first nurses in the Yilgarn was Sister Laurie of the Sisters of the People, a Methodist group providing welfare and nursing services in the community. Her contemporary in the mid 1890s, Nurse Penglase, travelled around the district in a covered wagon. Some of the early hospitals in the Yilgarn were developed and run by nurses. Harriet Doran nursed in a tent hospital in Southern Cross during the typhoid epidemic in the mid 1890s. At that time Mrs Ward ran a hospital; and Mrs Hay and Mrs Muir each ran their own private maternity hospitals in Southern Cross. A government hospital opened in 1907 but later became a subsidized private establishment run by Matron McLaren from 1924 to 1933.

During the mining Revival a period of turbulence saw the district hospital board dismiss Matron Finey. Her nursing ability was acknowledged but following a resident's complaint "regarding the conduct of some nurses", it was felt that the managerial task of controlling the staff was beyond her. She was asked to resign but refused. There was a public uproar. At first the board refused to call a public meeting and when it finally did the secretary refused to explain, to the 120 people who attended, the reasons for the matron's dismissal. Several women were then offered the job but either did not take up the appointment or resigned speedily. Between May 1939 and July 1940 the *Southern Cross News* carried a series of reports on the dispute. Significant in Matron Finey's case is the clear expectation of the hospital board that she was expected to act in loco parentis, controlling the private lives of nurses living and working at the hospital.

During the World War there were media reports of nursing shortages and after the war the *Southern Cross News*, 27 December, 1946, carried an article on the Commonwealth Reconstruction Training Scheme which encouraged ex-servicewomen into nursing. It is only in the 1970s and 80s that nursing has come to be seen as an appropriate career for both sexes. Nursing, over the years, has witnessed other changes. Nurses now adopt a professional attitude, eschewing some of the servility of the past. Mary Clarke, the theatre nurse in Southern Cross during the 1960s, was critical of some aspects of these

changes: "They don't work. They squabble to see which are nursing duties and which aren't. I think anything pertaining to a patient is nursing duties". She concedes, however, that she saw few medical changes in her time. Country nursing was less complicated. Difficult cases were always sent to Perth where more advanced medical technology and specialist care were available. It was partly due to the greater demands placed on nurses by such technology that they have sought to clarify their role in professional terms. Moreover, salary levels are coming to reflect the degree of training and expertise which nurses have. No longer are the female dominated professions prepared to tolerate the inferior salary structures of the past. Mary Clarke reported that just before her arrival in Southern Cross she was in charge of four operating theatres at the Mount Hospital in Perth and "worked all the hours God sent" but earned only \$10 a week. The matron earned \$12. But, for Mary, the rewards have been more long-term and non-materialistic. Now retired, she attended a Southern Cross luncheon in Perth, in 1986. She was delighted to meet a former resident who said: "I'll never forget you. You saved my grand-daughter's life".

Pauline Williams arrived in Southern Cross in 1962. Having completed her training in a modern Melbourne hospital she "nearly died" when she arrived to work at the old Southern Cross hospital because the facilities were so poor. In spite of old fashioned conditions she came to prefer country nursing: "It was so much easier to get on with the



*Plate 8: Southern Cross District Hospital staff, 1935. Back: Nurse Duffield, Nurse Stewart, Sister Bennett, Nurse Forward, Nurse Hannigan. Front: Dr P. W. Shanahan, Matron Finey, Sister Binks, Dr L. D. Hodby.
(Courtesy Patrick C. Kenny)*

people you worked with. In the city hospitals it was more like the army. Here everyone called each other by their Christian names. I couldn't get over that". After her children had grown up Nurse Williams had a chance to work in the modern facilities of the new hospital which opened in 1969.

Some idea of the workload of country nurses in the 1960s can be gleaned from hospital statistics published in the *Yilgarn Citizen*, 17 January, 1964. They show that, in 1963, Southern Cross Hospital treated 383 people as in-patients and 540 people on an out-patient basis. About 400 sets of film were taken with X-ray apparatus, each set comprising between one and six views. In total, 156 operations were performed, 57 of them major, 48 minor and 51 of an intermediate nature. Obstetric staff were kept busy with 41 births during the year.

The first woman to register as a doctor in Western Australia, Margaret Amelia Corlis, was living in Southern Cross at the time. Her husband, Josiah, had gone to Southern Cross and had sent for her to help when he found a typhoid epidemic raging in the district. Alexandra Margaret Annie Clark also registered from Southern Cross in June 1922. In 1949 she received the O.B.E. in the King's Birthday honours list for her services to medicine in the wheatbelt. The best known and best loved woman doctor in the Yilgarn was Dr Winifred Windmill who came to Southern Cross in 1918 and held her surgery in the Palace Hotel. She is remembered not only for devotion to duty (she would set an alarm in the middle of the night to attend to a patient) but also for her heroic efforts to save the life of Jim De Paoli who was badly burnt in a mining accident. Dr Windmill gave some of her own skin for grafts and spent up to three hours at a time dressing his burns. A local teacher, Miss Muriel Harbeck, a great friend of Dr Windmill, would play the piano for Jim while the doctor dressed his wounds. Recently, Southern Cross has welcomed the graduation of a home-grown woman doctor, Bridget McManus, daughter of the local pharmacist.

There are many parallels which can be drawn between women's unpaid work at home and their paid employment, particularly the extent to which both types of work are shaped by the same external realities of extremes of temperature, poor accommodation, the tyranny of distance and limited access to resources. The difficulties are illustrated by the experiences of female teachers. It was 47.2°C when Molly Coolahan arrived to teach at Corinthia in 1933; and Erna Forrester recalls that: "The ruling was that if the temperature got over a certain level, you had to send the children home but to us that seemed ridiculous because to walk home during that terrible heat would have been worse than staying in the school building the whole day".¹⁹

Classroom accommodation was often inadequate. One of the Presentation sisters, who arrived in Southern Cross 1900, had to teach in a rough hewn verandah, holding an umbrella to protect herself from the sun. Most local State schools were one teacher schools until after the World War. Evelyn Faul, the Strawberry Rock Road teacher in 1931, was very happy with her working environment:

It was the best school I ever taught in as far as the building was concerned. The school room itself was twenty four feet square and the outside was made of corrugated iron. It had steps up to it, and it had a huge full length enclosed porch, with the washbasins at the end of it, so that there was plenty of shelter for the children, winter or hot weather. The room itself had a jarrah dado up

about five feet, and the rest of the room was lined with plaster board and had a ceiling in it. It had a brick fire place which faced cornerwise across the room, which was much better than the old iron ones they used to have in the other schools, facing into the side of the room; the lovely old fashioned windows — you know, the sort that lifted up . . . a very nice building.

The school had been brought down from Golden Ridge, out of Kalgoorlie, and re-erected. Another example of a typical Yilgarn, one-room school can be seen today in the original building at Marvel Loch school.

Strawberry Rock Road school facilities compared favourably to the start made by Vivienne Sherlock in Bodallin. Concerned about the lack of educational opportunities for local children, she wrote a letter to the Education Department. On Thursday, 15 February, 1924, she received a telegram back asking her to open a school on the next Monday. On Friday, 16 February, 1924, she walked to the railway siding and caught the shopper train to Merredin seated in a small compartment — a dog box, attached to a goods train. It took her three hours to reach Merredin, 60 kilometres away, where she was able to buy supplies for the school which she opened in a bough shed attached to her house. Her husband had the onerous task of carrying water for the school. In May of that year they were able to move to purpose built accommodation in Bodallin. That original building is now the library of the present school. If Mrs Sherlock ever felt that her task was daunting she must have had her spirits raised by the note and gift sent by one parent: "We are sending along a leg of pork, as we are so grateful for the children's progress. Please bang away at them and make them clever like me". Vivienne Sherlock's own daughter, now Laurel Blyth, curator of the history museum in Southern Cross, was the first Bodallin pupil to graduate through to high school and subsequently to teachers' college. To do so she had to leave the district. Her mother, like many Yilgarn women, had to endure seeing her child leave home to complete secondary and tertiary education.

The tyranny of distance dictated access to the workplace just as much as it affected access to shopping facilities for homemakers. Florence Anderson often rode her bike 10 kilometres from Southern Cross to Ghooli school, where she taught. Sometimes she was lucky enough to be able to hitch a ride on a goods train:

One guard was a misogynist and if there wasn't a compartment for passengers, especially women, he wouldn't let them ride on the train. He tried it with me before I was riding the bike. When the driver saw what was happening he beckoned me down to the engine . . . I had the privilege of driving the engine.

Like their counterparts working at home, these women in paid employment also had to deal with the wildlife. At Strawberry Rock Road School the few books they had were chewed up by a plague of mice: "So I offered the children a penny . . . for each mouse they could catch . . . The Unkovichs were the best catchers!" said Evelyn Faul, "many times we had two mice in a trap, but the Unkovichs seemed to manage to catch three in a mouse trap at once . . . I think they had over ninety each". The pay-off must have made quite a hole in Miss Faul's meagre income.

Self reliance at work equates with the self-sufficiency which women developed in the home. There were no specialist resources and teachers had to makeshift and mend as best

they could. At Ghooli, Florence Anderson found herself teaching migrant Italian children from the Bonetti and Gianoncelli families:

I had the pleasure of starting them off at school. I had to use my own brain power to devise the quickest and easiest way to teach them, so I started off with eyes, nose, mouth and chin etcetera and showed them the words. Then came sentences and phrases . . . It cost me much time and money as I bought my own cardboard for them. In no time at all they . . . learned the language.

Like everyone else, most teachers found that if the physical environment created difficulties the community spirit which prevailed in the Yilgarn offered them support. Ellen "Paddy" Chinnery (nee Bown) recalled being delighted with her move to Southern Cross school in 1936. For her it was a pleasant change from a one teacher school. "I had a room to myself with not so many classes, a good headmaster and the other assistant, Miss Estelle West, was a fantastic person". "Paddy" Chinnery threw herself into the local community with fervour. She was on numerous committees and started the badminton club. There was dancing on Saturdays, roller skating and golf. She also started a choral society and was its pianist. Social acceptance in the Yilgarn has always been easy for individuals prepared to join in community activities, particularly sport. This is as true today as in the past. As Judy Guerini, a contemporary teacher in Southern Cross, observed: "Southern Cross is a very sports minded town. So, if you are involved in sport, you're okay".

Women in the Yilgarn Community

As the pivot of community life in the Yilgarn, sport has always been gender based. Some women and men have occasionally crossed the lines in jest, as in male netball teams and female football teams. However, the spectre of women playing football was too much for one correspondent to the *Southern Cross Times*, 30 June, 1920, who wrote: "I voice my indignation (at the) unseemly conduct of the women who played football . . . Our governing bodies should absolutely prohibit such exhibitions". Debate was engendered when another correspondent leapt to the defence of the female footballers: "the play was remarkably good . . . the outdoor exercise will benefit their health". The local satirist, "O.K." of Marvel Loch contributed to the controversy with a poem in the epic style of Alexander Pope:

An ancient I, beyond the glow
That none but youth and passion know,
Yet will I gladly risk a fall
For maidens fair that chase the ball.
. . .
To them that from our lady athletes shrink
I hurl the Briton's challenge, "evil be to them that evil think",
And hark Dame Grundy, know it's understood
That girls may play all skirtless and still be all that's good.

In general, women in the Yilgarn have made their own fun in women's groups. Even in unisex sports such as golf, they have chosen, or been obliged, to play as lady

associates. Tennis is one of the few sports which has offered scope for men and women to play together, which may account for its popularity.

Netball, a traditionally female sport, now has established teams in the district. In June 1960, Alma Cleland and Pauline Eiffler proposed formalizing the game which had been played casually since 1945. By July the fledgling Southern Cross club had two teams, known as the Tigresses. Two more teams were formed at Moorine Rock and the local competition was later augmented by another two teams from Bullfinch. Prior to 1972, women played for their town but since then the teams have been integrated and graded according to ability. Women who have worked hard for netball in the Yilgarn include: Marion Donovan, Alma Cleland, Pauline Eiffler, Betty Lyons, Diane Della Bosca, Cheryl Auld, May Armstrong and Maxine Hunt — all of whom have been, variously, coaches, umpires and players. Worthy of particular mention are two non-players: Violet Della Bosca, who has been president, fund-raiser and organizer of the Yilgarn's participation in Country Week games; and Anne Patroni who coached teams and was instrumental in organizing the construction of the netball courts at the rear of the Southern Cross oval in 1972. Currently there are four courts operational and a clubhouse was built in 1983.



Plate 9: Local women celebrating the opening of the Southern Cross Pool, 1963. Top left: Liz Greaves, Gail Mangini, Carol Hebbard, Colleen Watts, Jean Newbury, Deidre Hilton, Rosemary Wilkins, Sandra Turner, Sandra Guerini, Laurie De Mamiel, Kathy Goodhill, Janice Emmett, —, Pat McLaron, Lyn Baird, Glenys Della Bosca, Ann Clarke, Sharon Spain, Andrea Grace, Helen Davey, Margaret Turner, Judy Emmett, F. Liddle, Fiona Williamson, —, Susan, Leslie and Stephanie Dann, Williamson, Bruce, Jimmy and Gary Goodin, Marilyn Watts, Joan Hebbard, Linda Barkla, Roslyn Dann, Noeleen Watts.

Although sport has been an important focus of community life in the Yilgarn, other avenues of social interaction have emerged. As Sue Doncaster, wife of the Anglican minister said: "We felt there was a real need for something of a more spiritual (nature)". Accordingly, in June 1970, she started a branch of the Girls' Brigade. Irene Goodin ran the cadet corps of the group which was ecumenical in religious tone. The Doncasters left the town in 1971 but the company carried on with Dot Clarke as captain, assisted by Pauline Williams and Fay Dickson.

The activities of the Girls' Brigade illustrate the high degree of co-operation which has always existed between different community groups in the Yilgarn. They used equipment inherited from the Bullfinch Guides and, in training for their badge subjects, received help from: the St John's Ambulance sub-branch, whose members taught first aid; from a retired policeman, who instructed on safety matters; and from various individuals with craft skills.

Involvement in community life is time consuming and running the Girls' Brigade without child care resources forced many women to juggle babysitting with brigade activities. As one woman put it: "You know, the men become housewives when brigade steps in, because somebody's got to do the job and brigade requires so much of us". Why then did the women commit themselves to so much community work? Irene Goodin offers a reason: "I felt I was helping kids to grow up — how to handle themselves, and how to cope. I just felt that I was contributing to making good citizens".

Similar qualities of citizenship training were also stressed in the Girl Guide Movement which has had a spasmodic existence in the Yilgarn since 1916. Running the Girl Guides in a region remote from metropolitan resources was not always easy. The movement had been strong in the 1930s, but Joan Greaves, who reactivated the guides in the mid 1950s, sensed the isolation of the movement:

I often used to think that running those companies in the Yilgarn was like running "Lone Guides", but there were two or three of them instead of one. It was almost like you are out on a limb, and you had to make your mind up what to do with the girls to try to get them to see guiding as a big thing.

Remoteness was not the only problem. The fortunes of guiding were dependent upon the economic vicissitudes of the region as Joan Greaves recognized:

The Bullfinch (guides) had been going for quite some time because Bullfinch was, in those days, a thriving mining town and had all its own societies . . . the mine looked after them and they had a very nice room to meet in and adequate facilities. Whatever the Bullfinch guides wanted, within reason, they got, but Southern Cross was a different cup of tea . . . It was a rather run-down goldmining town relying on outlying farmers. Some of my guides came in 40 miles on a Saturday afternoon with their parents (for shopping) . . . We had to meet in what had been the parish hall of the Anglican church, and believe me it was in a dilapidated condition in those days and we had absolutely nothing.

Noteworthy women who have supported the Yilgarn guiding movement include Olive Watts, Fay Hampel, Hazel Chivers, Margaret Browne and Barbara Harrison. Between them they recalled some of the more memorable events in which their guides and



*Plate 10: First Girl Guide Executive, 1930s. Standing: Mrs Landon, Mrs Rocket, Mrs Page, Mrs P. Forrester (President), Mrs M. Carlson. Kneeling: Olive James (Watts), Brown Owl, Mrs McMuhon, Commissioner. Marion Denny, Captain.
(Courtesy Yilgarn History Museum, Southern Cross)*



*Plate 11: 1st Southern Cross Girl Guides, 1930. Left to right: Betty Rees (Oldmeadow), Dulcie Henderson (Hunt), Audrey Winter, Olive James (Watts), Bertha Landon, Commissioner — Mrs R. McGranahan, Marion Denny, Ruby ?, Faith Metzke (Grace), Olive Skewes, Lieut. E. McCrea (Forrester). Kneeling: Winnie Winter.
(Courtesy Yilgarn History Museum, Southern Cross)*

brownies were involved: the visit to Perth of the Baden-Powells, founders of the movement; in 1931, the arrival of the Duke of Gloucester at Kalgoorlie; and, in 1954, the arrival of the Queen in the goldfields, for whom the guide companies formed a guard of honour. In celebration of the centenary of Lord Baden-Powell, Lady Baden-Powell conducted a world tour which included Kalgoorlie. Joan Greaves recalls that there were about 200 girl guides waiting for Lady Baden-Powell in Kalgoorlie and that she spoke to every one. The premier of Western Australia, A. R. G. Hawke, was also concerned to meet the young guides and scouts. When he arrived to open the Bullfinch town hall, Catherine Thieme remembered that: "He went around and spoke to the lot of us".

The civic attitudes instilled through organizations for girls and young women were brought to fruition in the community groups run by and for adult women. With only limited opportunities to enjoy commercial entertainment, women have had to organize their own fun. The groups which they developed had many features in common, not the least of which was their membership. There has always been considerable cross-membership, leading some women to complain that they were simply too busy to become further involved. In the 1950s Joan Greaves, wife of the Anglican minister, felt harried: "Arriving from England to Southern Cross with parish work, visiting, Mothers' Union, guild, services at nine out-centres, fetes, balls, rallies and so on, plus a young family — being asked to be involved in guiding again, made me feel I couldn't give of my best".

Most of the women's organizations have run similar events such as dances, concerts, cabarets, euchre evenings and educational talks. There has always been a service orientation to their activities with fund-raising being a key feature. However, the origin of each group dictated certain differences in their customs and modes of existence. For example, the R.S.L. Women's Auxiliary always began meetings with two minutes silence — "Lest we Forget" and its work was geared to patriotic causes. Through branches in Moorine Rock, Southern Cross, Marvel Loch and, later, Bullfinch members, involved themselves in fund-raising for: the Mission to Seamen; parcels for prisoners' of war; Camp Comforts; the War Nurses' Hostel; War Orphans; Limbless Soldiers; Food for Britain; and War Widows. They catered for R.S.L. dances and sports days, sold poppies, made wreaths and became particularly famous in the 1940s for their Billiard Room Socials. The president's report, 1940-41, itemized the extent to which they sewed and knitted for soldiers:

The following articles have been made by our members since we started in March: 19 men's flannels, 9 surgeon's caps, 57 pillow slips, 114 face washers, 111 milk jug covers, 5 crocheted hot water bags, 1 pair socks, 3 pair knee caps, one pair desert socks and one knee rug.

They collected old rags and paper as part of their war effort and in 1942 voted to take over the collection of old rubber tyres from the Red Cross, if necessary.

Like many other community organizations, the R.S.L. Ladies' Auxiliary had links to State and Federal bodies but their inclination to the local was revealed not only through activities, such as sponsoring Miss R.S.L. for a popular girl competition, designed to raise funds for Southern Cross hospital, but also in their minutes. In April 1941 they moved "that we attend Central Council Meeting but unless we are allowed to carry on our own little functions and get the proceeds we shall refuse to join".

Denominational organizations such as the Magellan group, the Methodist Ladies' Guild and the Anglican Ladies' Guild were more involved with church work. Members conducted rallies, cleaned churches and donated funds for church repairs. While they arranged the usual round of socials, cake stalls, raffles and craft sales for fund-raising purposes, the Methodist Ladies' Guild showed originality in initiating the annual flower show. Members' concern for community standards was illustrated in 1971 when the Magellan and Methodist ladies' groups made a joint representation to the Agricultural Society in connection with a side show stall which, they felt, should have been better policed for the protection of children.

The Country Women's Association, with branches in Southern Cross, Westonia, Bodallin and Bullfinch, is the archetypical organization for women in the bush. The Southern Cross branch has acted as a focus of concern on local issues. Indeed, in its origins the branch grew more out of a need to succour women and children through the depression years than it did from the need for a companionable social life among women. Mrs W. St Clair Brockway, from Corinthia, felt that something had to be done to ease the plight of women in the district. A meeting was called in July 1934. Mrs Augusta Spillman, president of the Eastern Division of the Country Women's Association, spoke on the "Aims and Ideals of the C.W.A." with the consequence that a Southern Cross branch was formed. Monthly meetings were held on a Saturday as it was the big shopping day in town and it was felt that more women would be able to get to meetings. Even so, many women could not get in. Transport was a problem. Most women could not drive and in any case vehicles were needed on the farm. As Jack Hunt said, in his inimitable manner: "Mum couldn't just commandeer the truck to go off to a 'Chin Waggers' Association meeting' or anything like that". Saturday meetings were later changed to Thursday afternoons and in 1981 a morning meeting time was introduced. This reflects, perhaps, changes in shopping hours and the greater independence of women in driving themselves into town.

The first aim in the association's constitution in 1934 was "To improve the welfare and conditions of women and children in the country". Records of letters to the C.W.A. in the 1930s serve as grim reminders of how much local women needed C.W.A. help:

Dear Madam

I am sorry that I cannot address you by name, as I haven't the pleasure of knowing it, but I am writing to ask you, if you would kindly help me, as my family and myself are in great distress. My husband has been prospecting here for three years, and we, the family, has lived here in the bush, in a bag humpy, for that time trying to get a living. Although at times, things have looked very hopeful, which has urged us to carry on, we are now in the unhappy position of being at the end of our resources in every way, and my husband is now seeking work. I have a daughter of 15 years, also a son 13 years, who have no boots or shoes to wear, and we are all without decent clothes, as everything is past mending and we haven't a blanket to use, as our only covers are bags sewn together, so if you would be kind enough to help me in any way, by sending me any old things of any kind, I and my family would be extremely thankful, hoping you will kindly answer my appeal as I shall be anxiously waiting an answer, . . .

The C.W.A. tried to work discreetly. The golden rule was never to treat aid as charity. They distributed food which was often donated by other branches in the State. An emergency housekeeper scheme was organized to help new mothers or sick women who were unable to undertake normal household duties. Another of their projects, the "Children's Happy Holiday Scheme", provided many children with their first holiday. In addition, expectant mothers, arriving at the hospital with nothing prepared for their babies, would find clothing and goods organized by the C.W.A.

Even before the foundation of the C.W.A., local women had been concerned about the lack of facilities for mothers and babies in town: "When in town to get the weekly supply of stores the women and children had nowhere to go while waiting for their menfolk to attend to their business", wrote Erna Forrester. To meet the need, a group of women organized a rest room in a vacant shop loaned by the Forrester family: "Bright cretonne curtains were hung, a few chairs and a table were donated and one corner of the large room was screened off to enclose a wash stand and simple facilities for attending to babies. Provision was also made for boiling a kettle and making a cup of tea". Opened in 1930, the rest room was soon to be closed because "unscrupulous people began to abuse the facilities provided".²⁰

The provision of a rest room as well as a meeting place for the Southern Cross branch of the C.W.A. occupied much of the members' time in the early years. Fund-raising efforts and determined negotiation eventuated in the donation and relocation into town of a small, corrugated iron, assayers' room from the site of the Southern Cross United Mine. With the help of local men the room was jacked up and transferred with only one mishap, which left the room momentarily lying on its side. The rooms then grew like topsy with C.W.A. members showing considerable opportunism in acquiring useful material and equipment from all over the district. In their tradition of helping mothers, the C.W.A. kept a cot and pram at their centre for the use of families arriving from outlying areas. Use of the building continued until 1979 when the C.W.A. joined with the rest of the community in sharing the modern facilities of the new Recreation Centre.

Working separately, with their regional and State organization and with other local groups, the Southern Cross C.W.A. has had a strong social action dimension to its activities which defied the derogatory comments about the Chin-Waggers' Association. Erna Forrester recalled that the branch "seemed to be repeatedly requesting the Railway Department to do something about its train services, and its carriages". Health services also concerned members and in 1939 the C.W.A. convened a meeting of delegates from the various women's organizations in town and formed a hospital auxiliary which has subsequently been responsible for the installation of air-conditioning, a humi-crib, sterilizers and a mobile food heater. In 1936 they lobbied the Yilgarn Road Board for an infant health clinic. By 1942 they were still trying to get a clinic sister, and had added requests for diphtheria and whooping cough clinics. Still later, tuberculosis testing was added to the list of requests. When these services were eventually obtained, members were able to give practical assistance with some of them. The C.W.A. also helped to work for better accommodation for single teachers. As early as 1944 a C.W.A. deputation met the minister for education, seeking to establish a junior high school in Southern Cross. They also went into the matter of a student hostel. Younger children and their need for kindergartens and playgrounds have also been the concern of the C.W.A., as have

dangerous road and rail crossings, the need for a free lending library and homes for the aged.

The tone of social reform was set early in the formation of the C.W.A. and is nowhere more clearly expressed than in a letter of resignation proffered in 1934:

It is a grand thing for the womenfolk of our land to club together, with an objective such as that of our Association. Might I leave this message to members of your association — The longer I live, the more am I convinced that any social reform on a large scale, will be brought about through the agency of women, and not by men. The hand that rocks the cradle rules the world, and when we, as women, realize the tremendous responsibility resting upon us, and are prepared to shoulder those responsibilities, then will be seen in this fair land of ours a social reformation that will sweep the powers of evil before it. That power is ours, and if only we will use it for good, then will a generation arise who shall call us blessed. May your Association prosper is the earnest wish of

Yours sincerely,
Eva Hanton

Organizations illustrate only one facet of Yilgarn community life. The ethos of caring and sharing on a neighbourly basis is usually what local women have in mind when they talk about community spirit. In many ways it was adversity which brought people together. Poverty, limited access to resources and the occasional tragedy obliged neighbours to get together to help each other and to create their own social life. Camaraderie was the hallmark of interaction. Thelma Graves recalled the spirit of the times when she lived on the Miners' Settlement: "When the football season was on, one truck would take a crowd to the football matches and you were all more like brothers and sisters . . . It wasn't boy meet girl sort of business". Women and men were comrades as they strove to develop the district, but companionship between women was also important as Catherine Irving of Townsfoot farm recalled about the arrival of her new neighbour, Mrs White: "What a difference it made to have another woman to discuss things with, and we each tried to be helpful to the other". The Irvings and their neighbours showed considerable ingenuity in overcoming the problem of communication. As early as 1926 they worked together to install a party line telephone. As Mrs Irving explained:

The farmers around us, Messrs Potter, White, Hart, Dowdall, Halford and Trindle decided to put in the telephone. They had to cut the trees for telephone poles and amongst them bought the wire and cups. The exchange was at Potters . . . It was so good to have a chat with someone . . . There was a drawback, as we were all on the same line, and when the phone rang each of us answered it, so it was hardly private. We felt, however, it had a distinct advantage — if any of us needed help we could contact each other.

The Yilgarn district offered considerable barriers to communication. For many women the problem of distance and long hours of hard work presented very real obstacles to social intercourse. There are many examples of nearest neighbours being eight or nine

kilometres away. Jessica Harvey (nee Ridout) when pioneering at Mt Hampton is reputed to have not seen another woman for over six months. Doreen Odgers reported that her mother “just fell into bed at night, she was so tired”. The key which unlocks the apparent contradiction between happy memories of a vibrant community spirit and the isolation and fatigue, which in fact inhibited women’s opportunity to meet other people, may lie in the personality of the women. In Doreen Odger’s estimation, her mother was not lonely because “she’d too much to do. She had that happy-go-lucky nature”. Alan Brown said of his mother’s years on the Miners’ Settlement that she was “quite happy — but she didn’t have much pleasure”. He makes a distinction between pleasure, arising from an active social life, which was denied to many women, and happiness, a state of mind. In other words women contented themselves with their lot. It is also notable that many of these positive comments about Yilgarn society came from people who were young when they lived in the district. Their parents are not around to tell their story. Nonetheless, the long standing importance of the community to individuals who have lived in the Yilgarn can be seen in reunion luncheons which are held annually in Perth.

In spite of all the hard work, women did manage to have fun. Dances were very popular. Muriel Carlson, Ethel Webb and Elsie Hawkins all played in dance bands in the 1930s. Muriel is fondly remembered for her community contribution in providing free music for charitable functions. Elsie played in Hillies Dance Band: “The men had cream trousers with red coats and white lapels and a bow tie, and I wore a cream skirt with a red coat and white lapels”. She recalled that the bands were paid a regular fee and that the hat would be sent round for a collection if they played overtime. Popular dances included: the barn dance, with a flirtation added; the Gay Gordons; Maxina; Valetta and, finally, square dances, usually the Alberts and the Lancers. Ethel Webb remembered the impact of the World War on this form of entertainment: “I used to play at the dances but that was mostly for women. There weren’t many men left”.

By modern standards, social life in the Yilgarn in the inter-war years seems unsophisticated and innocent. Marj Basell recalls tennis parties for teenagers at her home in Marvel Loch which finished with sponge cake suppers and party games such as “oranges and lemons”. Motion pictures introduced city based, more sophisticated, images. The exact starting date of cinematic entertainment was a matter of some debate in a 1963 edition of the *Yilgarn Citizen*. Esmay Gibbney queried a previous statement in the paper which indicated that the first movies were shown in Southern Cross in 1931:

This, of course, refers to talking pictures as we know them today. My family went to Southern Cross about 1894 or 1895 and I remember the very first pictures were shown by a travelling show with a biograph . . . About 1910 Mrs Hugh Murray showed moving and silent pictures once a week and later sold to Mrs Sprunt.

In summer, films were shown outdoors and Elsie Hawkins recalled: “Every now and then there’d be a scream go up because someone fell through their deckchair — the sun had scorched the canvas”.

A notable feature of social life in the Yilgarn was its reliance on the local initiative

rather than commercialism. Edna Meharry observed the difference between the values prevailing in the district and those in the city:

Everything was a community effort, the dances and everything. You had to rely on the people and this is what I noticed when I came to Perth and joined a bowling club . . . they asked me if I'd cut a loaf of bread and make sandwiches. Well, I had never gone to a function without taking something, and then they gave me the money to pay for it and I couldn't believe that — it never happened in the country.

As former nurse, Mary Clarke, said: "I like Southern Cross, I like small communities where people know you for what you are".

Small communities can be intolerant of differences and the influx of migrants, particularly after the World War, did cause tensions but, on the whole, non-English speaking women seem to have fitted in better than the men. Ester Carnicelli remembered the warmth the Yilgarn people extended to migrants: "Marvel Loch people accepted me straight away. They never brushed me aside because I was a foreigner. We accepted each other in affection". She recalls only one instance of discrimination against her when a man in Mt Palmer called her a "ding". Two Irishmen were quick to her defence and apologies were soon offered and accepted. The welcoming celebration held for Mrs Carnicelli at the South Yilgarn Hotel no doubt facilitated her integration into the Yilgarn community as did her own determination to learn English — she made her own dictionary and received help from local women in extending her vocabulary.

Ester Carnicelli, however, may have had an unusual ability to learn English, for language was often a barrier to communication between the English speaking community and migrants. One resident remembers that the "Unkovichs were nice people . . . but the mother, well you wouldn't be visiting there, because . . . she couldn't understand you, and you couldn't understand her". The size of a particular ethnic group was also a significant factor in the quality and extent of communication which took place. Where there was a significant number they naturally met together in groups to socialize. Consequently, they were perceived as keeping to themselves. Stella Scott, who ran the unofficial post-office in Bullfinch between the wars, noted that "when there was a party everybody went, although very few of the Italians joined in with the general crowd as far as the dances were concerned. They were inclined to mix with their own kind". In some cases the daughters of migrant families were not allowed to join in. Daria Gianoncelli did not go out socially until she got married at the age of 17. The length of stay also influenced the integration of migrant and ethnic groups into the flow of Yilgarn community life. Rita Quadrio arrived in 1958 to marry a Southern Cross Italian migrant who had met her on a return trip to Italy. She was unsettled at first but slowly came to feel that she belonged as her children involved her in school activities. By 1962 the *Yilgarn Citizen* was announcing in Italian and English the availability of English classes for New Australians using what was then an avant garde approach to bilingual communication.

Ethnic tensions often derive from economic sources and migrant women were probably seen as less of a threat to the established community than their menfolk. It was the men in the community who saw migrants as taking jobs from the old Australians and street fights did occur. Tension increased during and after the World War in which Italy



Plate 12: Rita Quadrio, cafe proprietress, Ampol Service Station, Southern Cross, 1985.

was an enemy. Peggy Guerini was to feel the repercussions of this in her own life when she chose to marry an Italian migrant. She tells the story in her own words:

One bad thing about Southern Cross after the war was its high level of racism. My own father was even against me marrying Peter, as he was Italian . . . There were also quite a few Aborigines in Southern Cross. They had their own reserve where the railway station used to be. They were accepted much better than the Italians. They were part of the community and had their corroborees that everyone would listen to. No one dared to go to them of course. Regularly, every week, they would go around to every house in Southern Cross and ask for things such as tobacco, tea and sugar. I was a bit resentful that my husband wasn't as well accepted as the Aborigines. But it was because of the war. The old diggers used to get very uptight about the Italians.

Class as well as ethnic divisions have had some impact on relationships between women. Winifred Hall felt that before the World War "there were certain ladies who, because of their husbands' positions, would have a day each month where they would call on each other and leave their visiting card on a tray and each one would take it in turn which day they would have and that was the thing to do then". However, she felt that war was a great equalizer.

Italian and Yugoslav names are now part of the local fabric of society and some have found their way into the Queen's Birthday Honours' List. Doris Della Bosca (nee Goodin)

received a British Empire Medal for service to the community, as did Erna Forrester. In 1987 Nola Gobetti became the first woman elected to the Yilgarn Shire Council. Another local woman whose fame has spread beyond the boundaries of the shire is Lesley Styles, artist and writer, who now runs a gallery in Wittenoom. A surprising name to crop up in the Yilgarn context is that of Jessie "Chubbie" Miller, the first woman to fly from England to Australia. She was, in fact, born in Southern Cross on 13 September, 1901. Her father, Charles Stanley Beveridge, was manager of the Commercial Bank at that time.

On the whole, though, fame and fortune have not been the lot of Yilgarn women. The more typical picture is of women battling against a harsh environment, often with few facilities and working long hours. They have been supported by a strong community spirit, itself somewhat divided along the lines of class and ethnicity.

While the framework of their lives has been shaped by broader economic and political forces, the mosaic of their existence is patterned by the more immediate circumstances of hearth and home. In general, the changes which have occurred in Australian attitudes about women's role in society have been difficult to bring to fruition in a society dominated by the primary industries of mining and farming. In agriculture, women are increasingly taking their place, but mining remains, bound by tradition, an area of male employment.

The lives of Yilgarn women may have been circumscribed by the local environment and occupational structure, but the tone of Yilgarn society has also been significantly influenced and changed by women in their organizations and as individuals. Their impact has gone beyond the God's Police role of etching a veneer of civilization upon the rough and tough conditions which prevailed until recent times. Through their organizations they have taken a political stance reflecting a commitment to Eva Hanton's words: "Any social reform on a large scale, will be brought about through the agency of women".

The inescapable conclusion to this study of Yilgarn women's lives is that the mosaic of their existence is shot through with contradictions. Women are supposed to be weak yet Williamina Stokes carted two kerosene tins full of water seven kilometres every day and Teresa Gianoncelli carried her husband on her back for several kilometres to get help after his accident. Women were supposed to confine their duties to the home yet they have always worked in paid employment and have taken active roles in community life. Women were not farmers yet they farmed. Popular stereotypes and media images sought to trivialize women, but they have lived their lives fruitfully and with dignity. The fundamental contradiction, then, lies in what women have done as opposed to what they ought to have done. The reflection of their lives reveals a vast difference between myth and reality.

Lynne Hunt

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PLAY ON

What is the proper song to celebrate this land:
Old rock at evening, cooling from the summer sun,
Patina of silver on the ring-barked gum,
Sheen of the risen moon on silent sand dunes?

Look at the rooftops shimmering in the valley heat,
Or gateways opening their unravelling tracks
That lead to straggling human knots of farms;
Eroded gullies, fallen tree trunks of a patchwork land.

Makers of songs, recall this country's images for us then:
The long blind battering of sea on aged shores,
Unhurried sighing of the wind across the plains,
Sentences of fate in the crow's slow cries.

Distant a labouring engine climbs the ploughed hill,
The joyful dog yaps greetings at the paddock gate;
A windmill screeches as it pumps an old well dry:
All prompt the singer's rhythm in their awkward keys.

It's early morning in the bathrooms of the pub
Where whistling salesmen sniff the bacon smells;
And travellers coming still to land catch scent of coast —
The whiff of eucalypts with the harbour's coalsmoke.

Softly, sing softly; would you enchant this land?
Or will its strange richness somehow conquer you?
The pallid tree trunks smooth as marble thighs,
The sheen of broken sunlight on the river bay.

Please, when the perfect manuscript unfurls to play
And shakes awaiting instruments to life
When singers strum their ready throats, then
Let me hear wakening in your song my land again.

Glen Phillips

Chapter 10

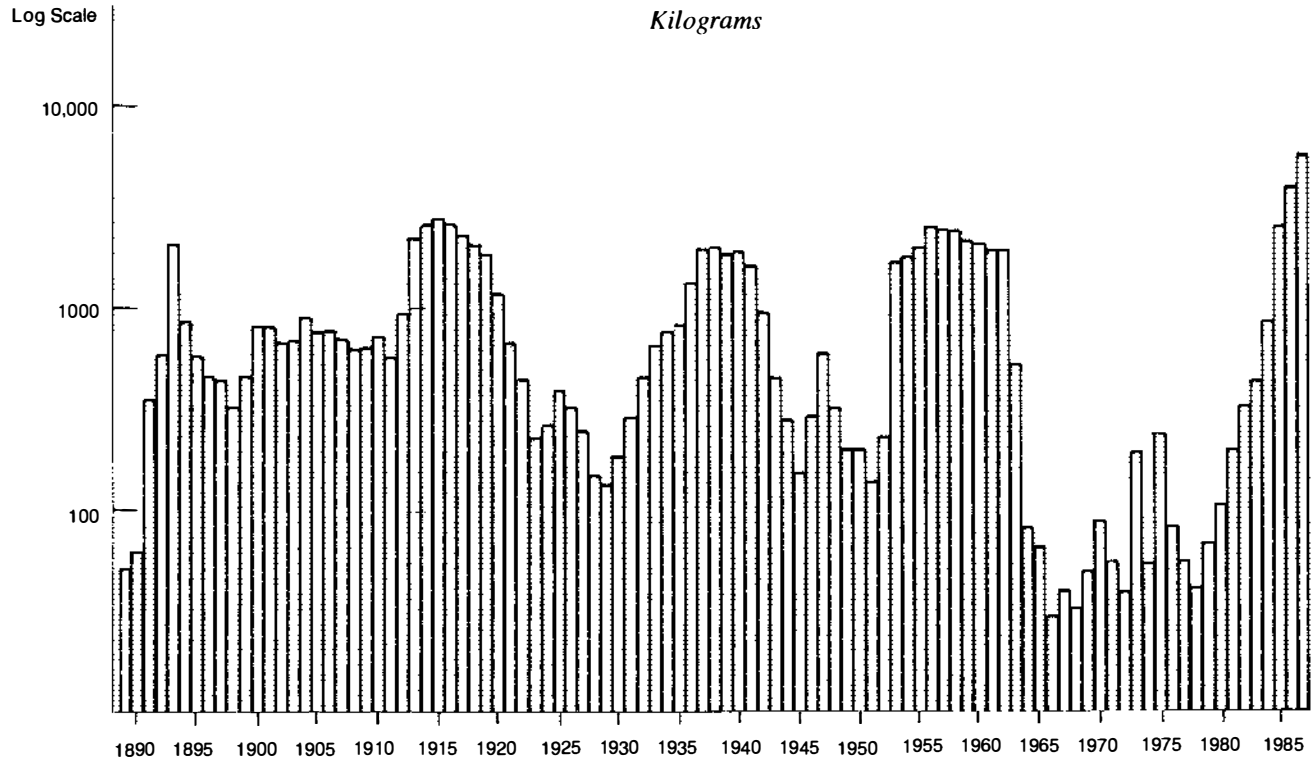
Booms and Busts: Economic Growth and Development

Scenario

To the casual observer some of the best measures of the economic prosperity of the Yilgarn region have been the number of mine shafts being worked and the number of seeders sowing crops. In more recent times it has not only been the number of shafts but also the number of large holes being excavated with the expansion of open cut mining. However, while these methods of measuring economic activity may provide instant guides, they fall far short of explaining how the region has developed as an economic and social entity.

Characteristically, mining companies and communities have mushroomed overnight and, on occasions, have just as quickly disappeared from Parker's Range and Nevorla through to Koolyanobbing and Bullfinch as deposits have been depleted or profits have diminished. This rather transitory existence of mining communities is in contrast to the farming community. Farmers generally consider the development of their farm as an investment in a future family business and therefore tend to dig in, particularly in hard times. In each period of financial crisis farmers have grouped together seeking whatever assistance they might obtain from every source possible to stay put, hoping for either a recovery in world prices or the breaking of a drought. Consequently, agriculture has developed over the years as the keystone of economic activity in the Yilgarn. However, the periodic revival of mining has provided the additional level of activity needed to prevent the economic and social decline experienced by some other regions solely dependent on agriculture.

Both mining and agriculture have experienced booms and busts caused by fluctuations in world levels of economic activity, but these have been accentuated in the Yilgarn as a consequence of a common characteristic, namely, marginality. This means, that although crops can be grown and gold can be extracted technically, economic efficiency has not always been possible because of the high cost structure imposed by the climate and the other natural characteristics of the region. Regions with a higher than

Fig.1: Yilgarn gold production 1889-1987.

average cost structure are always the first to suffer when prices are falling. Economic survival in the Yilgarn, therefore, has not been easy.

In fact, the Yilgarn is a classic example of a marginal region. Below state average yields in both agriculture and gold mining support that view-point. The nature of the ore bodies and the low yield of gold, amongst other factors, led to the development of the region as a relatively minor goldfield. However, higher gold prices in the 1980s together with improved gold mining processes have improved technical efficiency to the point where profitability in the Yilgarn has improved. This, unfortunately, is not the case for agriculture. Droughts, falling real world prices and increasing costs in the early 1980s deflated profitability in agriculture. The farming sector has experienced these hardships before and many a back was broken in efforts to survive in this marginal region.

Agricultural production in the Yilgarn has never contributed more than 6 per cent to state agricultural production in any one year and output has been inconsistent since the re-establishment of farming in the early 1950s. The area sown to wheat has averaged 5 per cent of the state's total. Unfortunately for farmers in the district, this proportion of the state's average area sown to wheat, generally contributed a smaller proportion to the total value of production because of lower yields. The worst year was in 1977 when only 1.93 per cent of total state wheat output was produced by farmers in the region. Over the years, the wool clip and oat production have both contributed less than 3 per cent each of total state production.

The co-existence of agriculture and mining has greatly influenced the economic development of the Yilgarn. The two activities have supplemented and complemented

TABLE 1
EASTERN AGRICULTURAL DISTRICT
POPULATION AND FARM STATISTICS 1984

Shire	Population	Number of Farms	Area of Farms ('000/ha)	Gross Agricultural Production (\$M)
Yilgarn	2120	167	859	\$23.0
Merredin	4610	142	310	\$18.4
Westonia	450	69	213	\$10.0
Wyalkatchem	960	76	129	\$13.0
Tammin	590	62	118	\$11.3
Traying.....	620	71	147	\$10.9
Quairading.....	1310	110	214	\$18.5
Nungarin	340	44	102	\$05.7
Naremben	1310	150	382	\$27.9
Mukinbudin	890	97	292	\$15.7
Mt Marshall	930	147	685	\$29.8
Koorda	790	99	250	\$19.6
Kondinin.....	1290	149	374	\$26.4
Kellerberrin	1670	105	185	\$14.8
Corrigin	1630	150	259	\$26.1
Bruce Rock.....	1420	124	268	\$23.8

Source: A.B.S., Local Government Statistics, 1984.

each other. During the 1920s as agricultural activity increased, mining decreased; but during the depression years of the 1930s as agricultural activity was declining, mining activity expanded. Thirty years later as gold mining activity was declining agricultural output once again increased, particularly after the cessation of the Great Western operation at Bullfinch. Fortunately, in 1965, Australian Iron and Steel, a subsidiary of B.H.P., commenced development of an iron ore mine at Koolyanobbing which grew to be the major mining activity in the Yilgarn during the 1970s. As a result of these two large scale projects, both the number of services and the local infrastructure were improved.

The relevant position of the Yilgarn district in the central eastern agricultural district of Western Australia in 1984 is shown in Table 1. This highlights the relatively large size of Yilgarn farms, which averaged over 5100 hectares. The development of large scale farming has been a key factor in the growth of agriculture in this region. Noteworthy features of the table are firstly, that the Yilgarn, by far the largest shire in the group, had the largest area of farming land; secondly, that its population was second only to Merredin Shire; and, finally, that in spite of the relatively large number of farms, it ranked sixth in terms of value of agricultural production following a year (1983) in which growing season rainfall was below average in Southern Cross.

Variations in output, characteristic of a marginal region, are well illustrated by grain receipts at Southern Cross in recent years: 1983 — 52,043 tonnes; 1984 — 7748 tonnes; 1985 — 60,312 tonnes; 1986 — 16,655 tonnes. Such wide variations are equally obvious when mining output is examined. For example, the contribution of the Yilgarn Goldfield to total state gold production has varied from 10 per cent in 1890 and 10.3 per cent in 1956 to less than 0.2 per cent in 1966 when output fell below 50 kilograms following the closure of Great Western Consolidated in 1963.

Output peaks were achieved in 1915 and 1956 when 2830 kilograms and 2611 kilograms were produced, respectively. In both 1914 and 1916 gold output was slightly higher than in 1956.

The value of gold production from the Yilgarn district in 1984 was \$11,986,000. Output was 904.3 kilograms from mine production and 4.7 kilograms from alluvial or dollied sources. The total value of agricultural and mining production in 1984 for the Yilgarn was, therefore, approximately \$35 million. This makes the Yilgarn Shire one of the most significant in the eastern wheatbelt region.

Mining

Although some early gold mines in the Yilgarn gave high yields of 30 grams per tonne of ore treated, such returns were rare. For most, the yields were much lower. The need to economize mining operations in the Yilgarn region and the interior goldfields of Western Australia in general were recognized at the outset. The initial annual report of the Mines Department, 1894, recognized the problem:

The interior goldfields of Western Australia possess a gigantic horizontal

extent, and the number and richness of their auriferous deposits are surprising. These facts themselves are not a guarantee for profitable mining. Economy, therefore, and judicious application of the acquirements of science and professional practice are also main conditions of success, and on those the future of many mining ventures will depend.

For the Yilgarn, in particular, those warnings were ominous for economy in mining operations has been a major factor determining success, providing that the price of gold was sufficiently high to warrant mining in the first place. In 1894 the Kathleen gold mine extracted, on the average, 32 grams of gold per tonne of ore treated, well above that of other mines operating in the district. The Fraser Gold Mine Co. produced more gold but the yield was lower at 19.1 grams per tonne. In 1897 the average yield per tonne for the Southern Cross Registrar's District, from 131,300 tonnes of ore treated, was 18 grams. This was the lowest for any goldfield in the state at that time. The quantity of gold produced to 1897 was 2132.6 kilograms.

In 1900 the state's production of gold was estimated to be 43,923 kilograms of which only 817 kilograms were produced from the Yilgarn Goldfield. Between 1900 and 1916 Yilgarn output was higher than in most previous years, reaching a peak of 2830 kilograms in 1915. This level of output was not to be attained again for nearly 40 years. Investment and employment continued to increase in the decade before the Great War, although gold output on occasions fell. Twenty three mines were abandoned in 1908, but Fraser's mine, employing between 42 and 50 men, continued in production, as did the Greenmount Centre, three miles south of Southern Cross. In late 1909, however, interest centred on the reports of a gold find at Bullfinch, which created a new wave of speculation. The state mining engineer at the time wrote:

These new discoveries are among the most promising "prospects" I have seen in the State, and are on such a large scale that they seem exceedingly likely to be of great importance.

Western Australian gold production had peaked in 1903. Yilgarn production in that year was 1.1 per cent of the state's total. However, from that time onwards until 1920, Yilgarn gold production as a percentage of state production increased for most years, particularly following the Bullfinch boom. In 1915 the area of land under lease in the Yilgarn Goldfield was greater than in any other goldfield in W.A. and the number of persons employed in gold mining was the second highest in the state. The actual contribution of Yilgarn output increased to over 8 per cent of the state's output in 1915. After that, activity declined. The number of mines producing gold fell from 62 to 47 between 1915 and 1919 and employment decreased from 940 to 804 men. The boom was over for the time being. The decline was amply illustrated by falling levels of productivity. The tonnes of ore raised and treated per man employed underground fell from 418 tonnes in 1915 to 164 tonnes in 1921 and the number of grams produced fell from 5703 to 2933 per man employed. As easily recovered deposits were worked out, lower grade ores had to be mined at ever increasing depths involving costlier operations, while the price remained relatively stable, at approximately \$8.50 per 32 grams.

TABLE 2
MINING PRODUCTIVITY IN THE YILGARN 1915 to 1921

	1915	1916	1919	1920	1921
Tonnes of gold ore raised and treated per man employed underground.....	417.97	363.89	298.26	404.26	164.25
Tonnes of gold ore raised and treated per man employed above and underground	218.43	214.81	194.17	195.32	72.01
Grams of gold produced per man employed underground	5703.00	5461.00	4620.00	4530.00	2933.00
Grams of gold produced per man employed above and underground	3009.00	3224.00	3007.00	2188.00	1286.00

Source: Department of Mines, Annual Reports, 1915 to 1922.

Concomitant with declining levels of productivity was the increasing cost of extraction. An estimate made by the Chamber of Mines showed that the cost of extracting gold increased from \$1.95 in 1913 to \$2.36 in 1917 per 32 grams. With profits being squeezed, the Yilgarn mines commenced closing and that trend continued until 1929. Output in that year fell to 146 kilograms, a low not to be experienced again until 1951. This downturn was not peculiar to the Yilgarn as state output had also fallen.

In 1929 Australia faced economic problems associated with the gold standard and balance of payment difficulties due to falling export prices and a decline in foreign investment. In an attempt to overcome these difficulties, the Australian government gave the Commonwealth Bank the power to buy all the gold available in Australia and the right to control the price of gold. Fortunately, in 1931, the gold standard was abandoned by Great Britain and as a result the Commonwealth Bank stabilized the Australian currency in terms of the pound sterling and not gold. By 1936 all countries had suspended the conversion of their currencies into gold. Consequently, the price of gold began to increase during the early part of the decade. In turn, the increased price of gold stimulated the gold mining industry. Further impetus was given to the industry by the gold bonus of \$2 per 32 grammes paid by the Commonwealth Government in 1931. As a result of these changes, between 1929 and 1936, Yilgarn gold production increased from 146 kilograms to 1376 kilograms.

As investment, much of it from foreign sources, and employment increased so too did the scale of operation. Mechanised plants tending more to large scale continuous production methods were introduced. By 1936 the extraction and processing methods had improved to such an extent that mines could profitably work a grade of ore as low as 5 grams per tonne. Employment opportunities increased to the point that there was a shortage of miners in 1935. Commonwealth financial assistance was given to the industry in 1935 and as a result state mining employment increased by an estimated 1230 persons.

This expansion of the gold mining industry came at an opportune time as it enabled many of the men who had turned to wheat farming to drift back to mining.

By 1936, activity in mining had undergone a complete transformation. Overseas investment had expanded exploration and development, and other Australian mining companies and investors responded to new prospects encouraged by the rising gold price, which reached \$17.42 per 32 grammes in 1936 up from \$8.49 in 1929. Generally, the revival abounded throughout the Yilgarn. The Mt Jackson mine in the north Yilgarn was re-opened, ultimately employing 80 men after a production lapse of 25 years. Kennyville, Marvel Loch and Burbidge also saw the redevelopment of old mines. There was a major new development at Mt Palmer. Optimism in mining was expressed by the governments of the day, Australian investors and British financial institutions. But what was missing were dividends. Early in 1937 an article appeared in the *London Financial Times*, headed "What is Wrong with Western Australian Shares?" The article expressed concern over the lack of returns on British investment, in particular from the de Bernales mines. This was a short time after Mr de Bernales had visited London in 1936 and reported to the Second Ordinary General Meeting of the Commonwealth Mining and Finance Ltd on 30th October:

I have returned more convinced than ever that both the Commonwealth as well as the Western Australian Government are doing and will continue to do everything reasonably possible to assist the advancement of the Australian Gold Industry. No hurdles will be placed in its path or progress either in the form of taxation or of hurtful legislation. The Gold Miners' Unions are bodies of commonsense men, who, although naturally desirous of securing the best conditions for their labour, are fundamentally fair. Even-handed, just settlements of differences can, therefore, be expected.

Claude de Bernales was involved directly with the revival of mining at the old Fraser's mine at Southern Cross and indirectly with the development at Mt Palmer where a modern plant was installed capable of processing 5000 tonnes of ore per month. At Fraser's mine the main shaft was dewatered and deepened, and an elevator of 118 metres was constructed. However, very little gold was recovered. By contrast, Mt Palmer went on to become a profitable venture.

While dividends were slow in coming, and in some cases, non-existent, the increased activity generated considerable mining employment in the Yilgarn which increased to 1063 men in 1936 and to 1105 in 1937. In particular, Marvel Loch Gold Development N.L., employed 110 men, Yellowdine Gold Development Ltd (Mt Palmer) 130 men and Southern Cross Mines Ltd, 80 men. With increasing investment and the construction of plants to process larger tonnages, productivity grew.

The tonnes of gold ore raised and treated per man underground increased by almost 65 per cent between 1934 and 1937 while the tonnes mined per man employed above and below ground increased by 80 per cent. Unfortunately, the output of gold per man employed above and below ground increased less than the tonnes of ore raised and treated, indicating declining yields.

TABLE 3
MINING PRODUCTIVITY, YILGARN, 1934-1937

	1934	1935	1936	1937
Tonnes of gold ore raised and treated per man employed underground	154.68	91.49	213.80	250.66
Tonnes of gold ore raised and treated per man above and underground	76.82	45.50	104.59	136.33
Grams of gold produced per man employed underground	2759.00	1834.00	2958.00	3871.00
Grams of gold produced per man above and below ground	1363.00	912.00	1447.00	2106.00

Source: Department of Mines Publications.

The next period of contraction commenced in 1938, although gold output rose marginally in 1940. In fact, by 1940 employment had fallen to 1091 men but the total production for the field was 1972 kilograms, a higher level of output than for 1939. Prospecting benefitted at this time as some mines offered their processing facilities to the public. However, by 1944, the mining industry in the Yilgarn had dwindled to the stage where only 196 men were employed. The war effort was one of the main factors which contributed to the decline as the enlistment of miners created a manpower crisis. In addition, supplies of quicksilver and cyanide were short due to shipping difficulties while machinery replacements were given low government priorities. Consequently, Yellow-dine Gold Development and other mines had to close down. Total output of the Yilgarn fell to 2.3 per cent of the state's output and the tonnage of ore raised and treated fell to 199 per man employed underground in 1944 — well below the state average of 757 tonnes.

Edwards' Find and the Radio mines were the only major producers left in the Yilgarn Road Board district in 1945. The Edna May at Westonia, was the largest producer for the Yilgarn Goldfield with an output of 132.64 kilograms. The Chamber of Mines of Western Australia in 1948 estimated that the production costs of gold mining had increased from \$12.45 to \$19.68 per 32 grams between 1939 and 1948 while the price of gold had only increased from \$17.40 to \$21.50. Declining profitability, in addition to the problems mentioned above, contributed to the general decline in gold mining throughout that period.

In 1944, representatives of the major western countries of the world met at Bretton Woods in the U.S.A. to establish an international financial system for international trade. Basically, the outcome was that the United States agreed to buy and sell gold at a fixed price, while the other countries agreed to buy and sell dollars at an agreed-upon exchange rate. Consequently, all currencies were indirectly tied to gold. As a consequence of the fixed price of gold, those mines with production costs higher than that price could not operate profitably. The ramifications of this agreement were one of the causes of the failure of the Great Western Consolidated project.

TABLE 4
OUTPUT OF GOLD FOR VARIOUS CENTRES IN THE YILGARN
GOLDFIELD TO 1984

Mine	Years To	Production kg
Blackbourne	1969	13.142
Bullfinch	1984	20,951.949
Corinthian	1983	1,866.188
Edwards' Find	1984	0.676
Edwards' Reward	1984	1,387.407
Enuin	1984	416.848
Forrestania	1968	18.950
Golden Valley	1984	3,268.628
Greenmount	1984	1,040.909
Holleton	1984	498.963
Hope's Hill	1984	2,014.523
Kennyville	1984	790.379
Koolyanobbing	1982	42.140
Marvel Loch	1984	12,604.951
Mt Jackson	1984	1,404.172
Mt Palmer	1984	5,014.746
Mt Rankin	1981	225.780
Parker's Range	1984	1,449.821
Southern Cross	1984	10,284.083

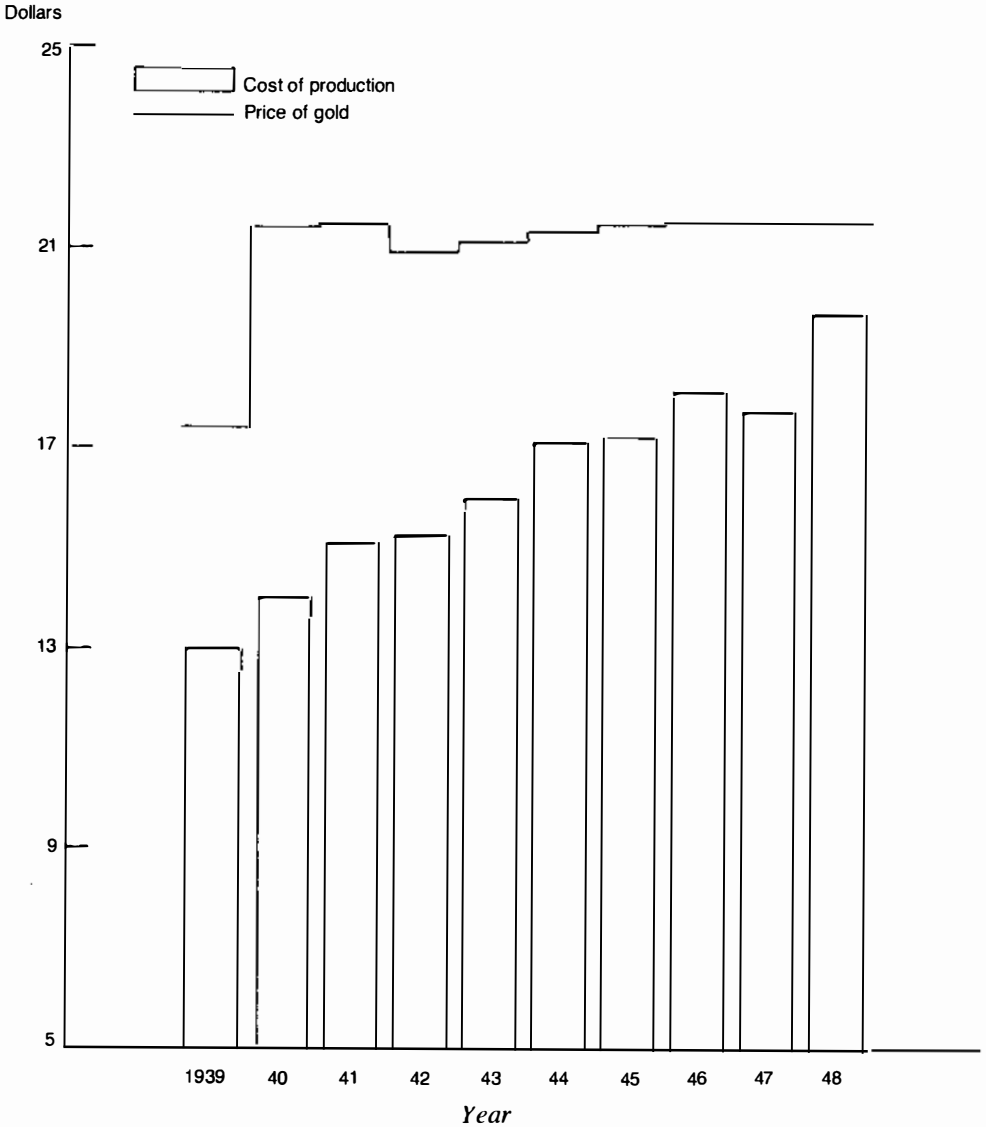
Source: Department of Mines.

Immediately after the war, gold production in the Yilgarn increased, to peak in 1947 when output reached 626 kilograms. The next upturn in activity commenced in 1952 with the Great Western venture. The Western Mining Corporation had formed Great Western Consolidated in 1948 to develop its leases in the Yilgarn. This was the first major mining development in the district since the mid 1930s, and the biggest gold mining operation developed to that date within the shire. The magnitude of the operation is best gauged by the amount of ore treated. Between 31st October, 1952, and the conclusion of the final clean-up in 1966, there were 4,611,546 tonnes of ore treated and 21,288 kilograms of gold recovered. Furthermore, to facilitate development, a new township was built at Bullfinch. Approximately 180 houses were erected together with quarters for single men. A clubhouse, swimming pool and other amenities were provided. An aerodrome was constructed in 1952. The company's power house also supplied the Yilgarn shire with electricity and the grid was extended to Nevoria and Marvel Loch.

The company's initial leases covered some 9128 hectares in the Bullfinch-Southern Cross area. Old mines redeveloped included the Copperhead, Corinthian and Fraser's. Another area considered was the Great Victoria mine, at Burbidge, but drilling failed to reveal that a sufficient yield would be obtained. Great Western also took options at Marvel Loch and Nevoria and development was undertaken, but unfortunately the yields proved

Fig. 2: Price of gold and cost of production, Western Australia 1939-48.

(per ounce)



(Source: Chemical Engineering and Mining Review.)

in the long run to be lower than anticipated. Ore from all sites was processed at Bullfinch to take advantage of the scale of operation of the plant.

“The Great Western Struggle” is how Sir G. Lindesay Clark described the Great Western project in his book *Built on Gold*. And a struggle it was. From the outset it was beset with many problems. Firstly, there were increasing construction costs due to the outbreak of the Korean War, and continual delivery delays and shortages. Secondly, the average yield over the life of the project was only 2.2 grams per tonne treated. Thirdly, specially designed road transport units designed to haul 100 tonnes of ore from Marvel Loch and Nevoria to Bullfinch had their efficiency reduced by road regulations limiting loads to 60 tonnes. Fourthly, the fixed price of gold remained low. This unfortunate set of circumstances for the company was further compounded by the general economic pressures of labour shortages and inflation in that period.

At the time of the voluntary winding up of the company in August 1970 its indebtedness was \$4.2 million. The realisation of plant and equipment did little to relieve the debt. During the time of its operation the Great Western had received subsidies amounting to \$2,963,558 from the federal government under the Gold Mining Industry Assistance Act (1954). Without that subsidy it is reasonable to assume that closure would have been earlier. For Western Mining Corporation, Great Western had been a disaster. The losses were heavy.

Close on the heels of the collapse of Great Western came the development of the Australian Iron and Steel venture at Koolyanobbing. This could not have happened at a more convenient time for the region. Gold production had slumped to 31.7 kilograms. The Radio mine, which had previously been a consistent gold producer, was using its plant in 1966 to crush metal for road and railway projects in the district. The state battery at Marvel Loch treated sands for a return of 9.2 kilograms of gold and 7.8 kilograms of silver. Gold mining had slumped to rock bottom by 1966. Iron ore mining was to become the dominant mining activity for the next 15 years.

Iron ore was first mined at Koolyanobbing in 1950 when small parcels were transported to Wundowie for processing. In 1966 a standard gauge railway line was constructed through Koolyanobbing enabling large scale iron ore production to commence in 1967. A new era in iron ore production commenced.

The initial iron ore development was located at Dowd’s Hill and operated by the Dampier Mining Company which later became BHP Minerals Ltd. Early plans were for a project with a plant capable of producing two million tonnes of iron ore per year. Construction of a township of 68 Housing Commission homes and accommodation and messing facilities for 60 single employees were completed by the beginning of 1967. A medical centre was constructed and educational, banking and postal services were developed. The roads were sealed and kerbed, the power supply from Merredin was extended to Koolyanobbing and water was supplied from the goldfields pipeline. The total expenditure by Dampier Mining Co. Ltd was over \$6 million for the plant with a further estimated expenditure of \$4 million for the extension of roads and the provision of water, electricity and a railway line. Total output from 10th April, 1967, when the first train load of iron ore was railed to Kwinana, to May 1983, was 25,014,893 tonnes. Peak production was 2.8 million tonnes in a year.

Declining Australian and world demand for iron and steel ultimately led to the

closure of the Australian Iron and Steel plant at Kwinana in 1983. Ore production from Koolyanobbing had peaked in 1973 and then declined until the cessation of production. Employment peaked in the half-year ending May 1977 when 143 people were engaged. Local processing of fine ore at Kwinana consumed about half of the output, while the other half (11.4 million tonnes) was shipped to the steelworks at Newcastle and Port Kembla. Only 541,987 tonnes of lump ore were shipped overseas. A further 1,728,688 tonnes of ore were mined at Koolyanobbing for Wundowie Iron and Steel between 1961 and 1980, an average of 86,000 tonnes per year.

Unfortunately, during the early life of the mine, quality control was a problem because of a lack of consistency in the grade of ore supplied, a lack of geological grade control drilling and a severe problem of maintaining the phosphorous level consistency beneath the required specification. In 1975 a successful method of quality control was introduced. The various deposits located in the area contained different levels of phosphorous and each had to be mined simultaneously to obtain the desired level of content.

The closure of the mine at Koolyanobbing was a considerable loss to the region as well as to the company, the miners and their families, and the state. But, typically of the region, as the iron ore venture was winding down gold mining activity was gearing up. Gold production increased as the gold price more than trebled between 1978 and 1980. Between 1978 and 1984 Yilgarn Goldfield production rose from 43 kilograms to 909 kilograms. Many changes occurred. New companies opened south of Southern Cross. Marvel Loch, the closest town to the growing gold-mining centres at Nevoria and Burbidge underwent a rapid population increase.

The immediate cause of this gold mining expansion was the increase in the price of gold at the time. This stemmed from the abandonment of the Bretton Woods Agreement almost a decade previously. In 1971, the United States of America had terminated the fixed rate of exchange between its dollar and gold. Consequently, gold became a commodity like any other metal that was sold on the world market. As the importance of gold as money declined, the speculative market increased as the price was no longer fixed in terms of American dollars. Between 1970 and 1975 the average annual price of gold increased from \$32.15 to \$126.99 per 32 grams. This in turn enhanced mining prospects. However, it was not until the price of gold rose to \$224 per 32 grams in 1979 and then to \$491 in 1980 that production took off in the Yilgarn.

The first major development occurred when Kia Ora Gold took over the leases of the old Marvel Loch mine in 1979. At that time the cost of production, including mining, cartage and milling was expected to be \$25 per tonne on an open cut basis. The original mine was upgraded and one of the first carbon in pulp plants in Australia was constructed. The first bar of gold was produced by the company in 1980 but the first profit was not made until the December quarter of 1983 when the company announced a surplus of \$200,550.

While Kia Ora Gold was preparing the open-cut development, underground operations were commenced. To make full utilization of the plant, ore was also extracted from the Corinthian in 1980, but this proved to be of too low a grade to be economic. Water problems were experienced at Marvel Loch but with the installation of pumps in 1982 the problems were solved. By 1983 the workforce was 90 men and women. Gold

output was 282 kilograms. Full production costs were \$300 per 32 grams of gold. On the 29th November, 1984, Kia Ora Gold Corp. N.L. announced through *The West Australian* that "With surface exploration near completion, the Marvel Loch open pit reserves have been upgraded from the previous 490,000 tonnes grading just over 4 grams of gold per tonne to 667,000 tonnes grading 3.5 grams per tonne down to 60 metres". The company also announced at the same time plans for a \$10 million upgrading of its Marvel Loch operation. The efforts of the company were rewarded with a profit of \$1.004 million in the December quarter 1985.

Another large scale open cut project was commenced in 1984 by Great Victoria Gold Ltd, located at Burbidge. This followed two years of preliminary work which had resulted in the company obtaining 10,000 hectares of tenements, including the old Bronco, Resurrection, Grand National and Great Victoria leases.

The construction and development of the mine, which was designed to process 300,000 tonnes per annum, took four months. The plant was located in a valley to take advantage of gravity feed, to reduce fuel costs. Power supply from the state grid system was unavailable and some 3.7 million litres of diesel fuel per month were expected to be consumed for power generation. Gold output five months after the commencement of construction in May 1984, was 93.2 kilograms.

Mining costs at Burbidge were estimated to be less than half the value of the gold produced, an amazing turn about from the 1960s when the Great Western struggle was on. Higher gold prices and improved technical efficiency had increased economic efficiency. Profit for the December quarter 1985 was \$1.14 million, an increase on previous quarters due to the introduction of new technology which reduced production costs from \$388 to \$230 per 32 grams.

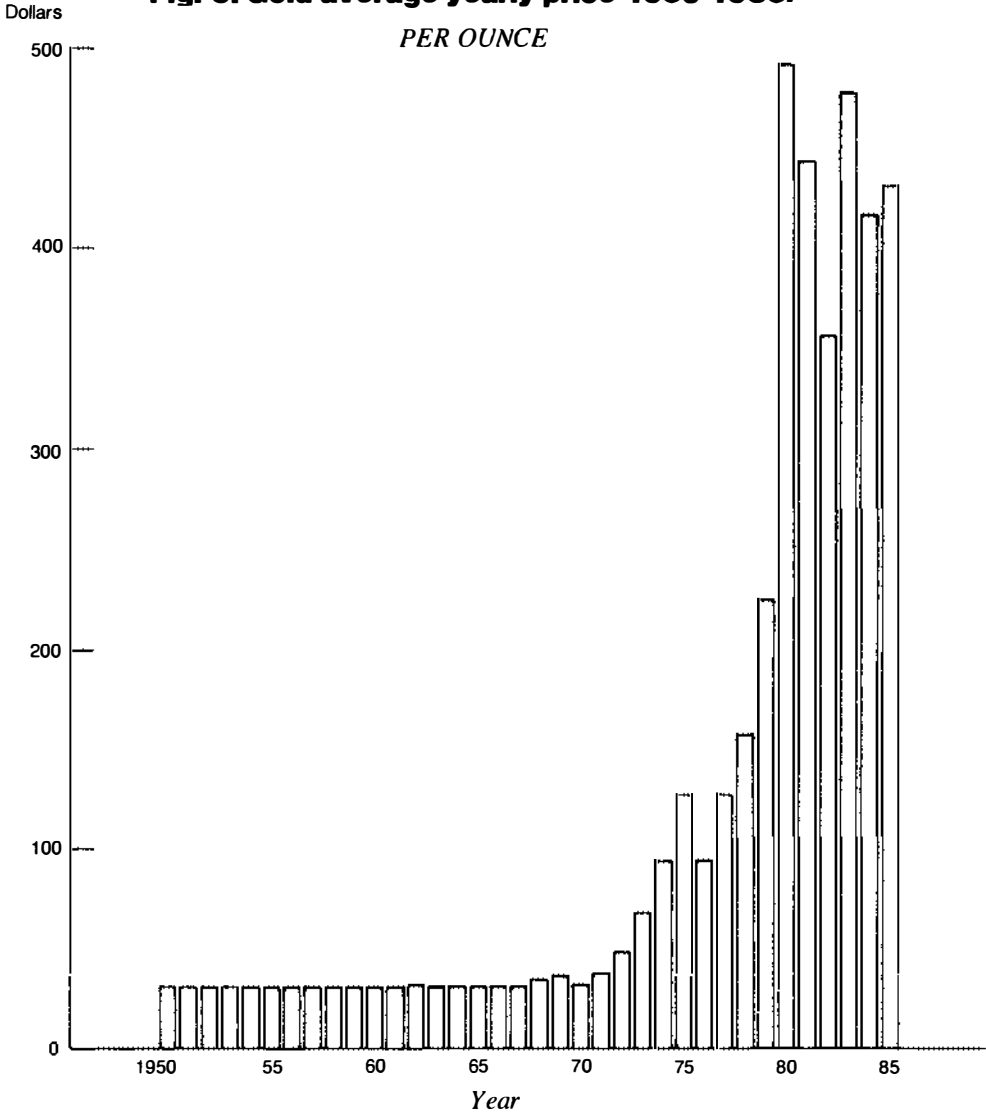
In 1983, expectations of a revival at Neveoria were aroused by the planning of an open-cut mine by Southern Goldfields Ltd. No time was lost with this development. The mine was opened officially on the 12th December, 1984, and within six months the results were beyond expectations. Even in that short period costs of production were reduced and the yield was increased with improvements in the efficiency of treatment. Operating costs per tonne of ore were only \$24. The average cost to produce each gram of gold during the first six months was \$3.72, excluding amortization charges, and it was expected that costs would be reduced further. Gold output for the month of July 1985 was 108.79 kilograms, nearly half of the output for the March quarter of the same year. Reserves were estimated at 400,000 tonnes of oxide ore at an average grade of 5.3 grams per tonne and 267,000 tonnes of other ore at 2.2 grams per tonne.

After many years of frustration in gold mining, the Yilgarn goldfield had three large, economically efficient mining companies operating in 1984. Improvements in technical efficiency and better gold prices had ensured the prosperity of these new mines in areas where previous companies had failed. Subsequently other ventures were planned. The managing director of Mincoa N.L. launched his company's prospectus for a float to raise \$10 million to redevelop the Edwards' Find mine in 1985. This was to be an underground project which was expected to take 12 months to redevelop. Production costs were anticipated to be \$6.43 per gram with an anticipated output of 50,000 tonnes of ore per annum.

Another company, Golden Valley Mines N.L., also expanded its interests in 1980

when it took over 16 gold mining leases in and around the Radio mine near Bullfinch. In 1981 an underground diamond drilling programme was undertaken in the Francis Furness mine but the results were discouraging. Subsequently, the mine and leases were sold along with three other gold mining leases involving the Mary Lena and May Queen group. In addition, the company had interests in the Fraser's mine and Fraser's North group. The Fraser's mine was dewatered in 1981. Diamond drilling at that time indicated that the ore

Fig. 3: Gold average yearly price 1950-1985.



potential was 600,000 tonnes to a depth of 600 metres. Bulk samples from Fraser's North were not as encouraging as the average grade of gold was only 2.6 grams per tonne. Between 1981 and 1984 very little activity took place at the Fraser's, Fraser's North and Radio group of leases held by the company. Following the refurbishing of the Radio mine in 1984, ore was treated from the Fraser's and Radio areas and, as a result, 16.43 kilograms were produced that year by the company and its joint venture partners.

The number of men employed by gold mining companies in the Yilgarn increased from 50 in 1982 to 141 in 1984. Kia Ora Gold Corporation employed 81 men in 1984; Great Victoria Gold Ltd and Southern Goldfield Ltd employed 30 men each. These 141 men contributed to 179,584 tonnes of ore being treated and 904 kilograms of gold being extracted. It is interesting to note that the number of tonnes of gold and ore raised and treated per man employed in the Yilgarn Goldfield in 1936 was 136 tonnes, whereas in 1984 it was 1274 tonnes. In particular, at the Marvel Loch centre in 1940 there were 184 men engaged in mining, mostly as prospectors and in small syndicates of leaseholders, and 35,300 tonnes of ore were treated, whereas in 1982 Kia Ora Gold Corporation had 50 men employed and 42,000 tonnes of ore were treated. Productivity per person in the 50 years had increased 10 fold due to the relative efficiency of company operations, the expansion of open-cut mining and improved mechanization.

Silver, gypsum and copper have all been recovered at some time or other in the Yilgarn. Silver, a by-product of gold production, has been the most consistently produced of these lesser mined minerals, with 7390 kilograms produced to 1984. Efforts to mine copper were thwarted by the low grade of deposits as were the attempts to establish lime kilns in the early part of the century. Commencing in 1935 gypsum was recovered from Lake Brown and, altogether, a total of 535,953 tonnes have been recovered. Production of gypsum from near Yellowdine has been greater with an output of 976,212 tonnes.

In 1986, gypsum production was being undertaken by three companies in the Yilgarn. With an expected increase in the demand for gypsum for agricultural purposes as well as the traditional ones, this may be a growth area in the years to come.

TABLE 5
GYPSUM PRODUCTION
YILGARN REGION 1978-1984

Year	H.B. Brady Pty. Ltd.	W.A. Plastic Mills	Blake and Sita
1978	19,246	26,173	
1979	23,929	27,695	
1980	22,232	33,386	
1981	24,529	30,236	
1982	26,330	36,282	
1983	23,158	22,719	
1984	32,530	37,217	252

Source: Department of Mines, Annual Reports 1978-1985.

Agriculture

The development of agriculture in the semi-arid extremes of the Western Australian wheatbelt with an average yearly rainfall as low as 281mm, was not easy. Much research in dry farming techniques had to be undertaken and implemented before progress could be achieved. It was the development of early-maturing, drought and disease resistant wheat varieties, in particular, Bencubbin, and the application of phosphate fertilizer which ultimately did much to encourage wheat farming in the drier regions. Between 1920 and 1930 government land settlement policies, designed to apply these new methods, stimulated the expansion of the wheatbelt into the Yilgarn. Settlement was helped by what was, initially, a buoyant market and by the introduction of tractors. The expansion was rapid. In the 1924-25 season, wheat production was 935 tonnes from 2293 hectares: By the 1930-31 season, production had reached 85,700 tonnes from 80,861 hectares. However, by then world prices had halved to 22.9 cents per bushel and that level of production was not reached again until 1969. Unluckily for most farmers, this early period was to be a bitter lesson. The losses were great.

During the gold-rush, rural activity in the Yilgarn served the local market for food in the mining and service communities, and provided fodder for animals used in transport. The production of fresh milk and meat were major agricultural activities. Official records show that, in 1911, there were 68 hectares under various crops, with a further 60 hectares utilized for grazing. Some attempts were also made to produce fruit including apricots, oranges, lemons, apples, pears and grapes. Of more importance was the number of fowls, ducks, geese and turkeys which was estimated to be 5500. There were also 831 cattle, 714 horses, 490 goats, 264 pigs, 215 camels and 147 sheep in the region. The horses and camels were no doubt required for transportation, while the goats, pigs, cattle and sheep were kept for fresh meat and milk to meet local needs. Wheat production was estimated to be 151 tonnes from 260 hectares. Humble beginnings, but the seeds were sown for future development. The fruit trees withered but the wheat industry continued to grow.

The importance of these early rural activities was not solely in providing for the local market. They also gave an indication of what might become commercially viable activities in the future. It was to some extent the efforts of those early pioneers that proved crops could be grown and animals reared in the region, but much was still to be learnt.

The development of more extensive agriculture was to take another 12 years. By the outbreak of the Great War farming had stagnated. Employment in the industry fell but the acreage sown to wheat increased to 456 hectares. The number of holdings either privately owned or leased from the Crown was only 30, with lots ranging in size from 2.5 hectares to 40,469 hectares. However, by the 1924-25 season development was starting to bear fruit. Then it accelerated as the world market expanded. Between 1924 and 1932 the area under crop increased 30 fold from 2300 to 88,000 hectares. Optimism for the future was high until the drought in 1929 and the price crash which followed in 1930-31.

The Depression and poor seasons dashed hopes. Unfortunately, as world prices began to rise again in the following seasons, rainfall proved elusive. However, increasing world prices and the prospect of farmers increasing their income stimulated planting after the downturn in the 1931-32 season. During the next two seasons the area sown was greater than in 1930-31, but the yields were low due to poor seasons.

TABLE 6
AGRICULTURAL PRODUCTION IN THE YILGARN, 1919, 1925, 1933

		1918-19	1924-25	1932-33
Privately Owned Land.....	ha	2,728	77,878	353,703
Area Under Crop.....	ha	566	2,904	92,375
Grazing Land.....	ha	397	662	46,231
Partially Cleared Land.....	ha	316	6,859	6,199
Capital Stocks				
No. of Buildings.....		20	37	534
No. of Dams.....		7	31	172
Value of Implements & Machinery.....	\$	1,548	15,496	172,400
Tractors.....				228
Employment.....		23	169	837

Source: Australian Bureau of Statistics.

TABLE 7
AREA SOWN TO WHEAT FOR GRAIN AND AVERAGE YIELD, YILGARN
1925-38

Year	Area Sown (ha)	Yield (t/ha)	Wheat Prices cents/bush
1924-25.....			60.83
1929-30.....	59,713	0.41	45.42
1930-31.....	80,861	1.06	22.92
1931-32.....	72,473	0.71	31.25
1932-33.....	88,001	0.69	30.42
1933-34.....	81,938	0.57	29.37
1934-35.....	66,363	0.38	32.08
1935-36.....	50,502	0.28	39.79
1936-37.....	44,468	0.16	55.21
1937-38.....	39,735	0.32	41.04
1938-39.....			24.37

Source: W.A. Statistical Register.

With below average rainfall, and the need to cut costs by reducing the application of fertilizers, those in the poorer growing areas suffered badly. The problems were compounded by the fact that many of those who had settled in the new areas of the Yilgarn were inexperienced and in poor health, which led to poor farm management. Some sought an alternative income by grazing sheep. Wool prices had fallen relatively more than wheat prices between 1925 and 1932 but from the 1931-32 season there was an upturn in prices. However, many were unable to switch to sheep because of lack of capital as the government refused to make loan monies available for this purpose.

Livestock numbers had also increased rapidly between 1925 and 1932, but the total value of output was not as great as for crop production. In this period sheep numbers increased from less than 100 to 6455; the number of pigs increased one hundred fold to 3714; and cattle numbers increased threefold. However, the number of mules, goats and camels decreased.

TABLE 8
LIVESTOCK IN THE YILGARN 1900-1946

	Sheep	Horses	Cattle	Pigs	Poultry	Camels	Goats
1900-01	121	192	41	158	4,491	0	585
1905-06	417	352	190	33	3,546	5	1,971
1910-11	192	714	31	264	5,488	215	490
1915-16	71	729	354	250	6,428	36	554
1920-21	422	739	1,413	118	6,716	21	516
1925-26	NA	703	775	151	4,841	3	184
1930-31	3,581	1,519	1,501	102	14,923	14	360
1935	23,638	2,131	3,375	1,866	16,013	0	104
1940	40,844	1,125	1,215	1,597	6,649	NA	NA
1946	87,620	626	2,173	1,177	3,041	NA	NA

Source: Australian Bureau of Statistics.

TABLE 9
SHEEP SHORN AND AVERAGE YIELD PER FLEECE, YILGARN 1929-37

Year	Number of Sheep Shorn	Average Weight Per Fleece (kg)	Cents per kg (F.O.B.)
1925.....			45.97
1928-29.....	2,129	2.8	29.87
1929-30.....	3,977	2.6	19.37
1930-31.....	4,521	3.0	14.77
1931-32.....	5,738	3.0	15.50
1932-33.....	5,741	3.7	15.74
1933-34.....	8,333	3.7	28.75
1934-35.....	20,613	3.1	17.73
1935-36.....	22,112	3.1	24.98
1936-37.....	23,161	2.9	29.70
1937-38.....			19.58

Source: W.A. Statistical Register.

Throughout the Depression both the Commonwealth and state governments attempted to solve the many problems facing Australian farmers. One such attempt was made by Prime Minister J. Scullin who, in 1930, appealed to farmers to grow more wheat. This cry was echoed around Australia. He was supported by the federal minister for markets and transport who requested the states to join him in guaranteeing to the wheat grower 40 cents a bushel net for the 1930-31 crop, payable on delivery at country stations. However, neither the Commonwealth nor the state government had the financial means to support the proposed price guarantee.

The optimism of the late 1920s, generated by the promises of the politicians, was unfounded. Wheat output in the states of Victoria, New South Wales and South Australia had already started to fall. Increasing debts and the promise of a fixed price encouraged farmers to increase their output. Before the crops were harvested in 1931 the wheat price had collapsed. With it went the price guarantee and the concept of a compulsory wheat pool which the farmers had been requesting to reduce costs. Further attempts in December 1930 to have the Commonwealth Bank finance wheat pools came to nothing because of constitutional constraints. All other attempts to solve the financial problems of wheat farmers failed again in 1931. Meanwhile, wheat prices had fallen to their lowest for several hundred years. Bankruptcy was imminent for almost all wheat farmers. In Western Australia, members of the Primary Producers' Association, in recognition of the desperate situation facing farmers, voted in December 1930 to stop production and to walk off their farms. Easier said than done, as the alternatives were few. For most, boiled wheat and treacle were preferable.

At this time, devaluation of the Australian currency and decreasing shipping freights attracted new buyers for Australian wheat. Japan and China both commenced importing wheat from Australia in 1930-31. The increased exports did little to resolve the financial problems of the farmers. However, the enactment of the Wheat Bounty Bill (No. 2) in November 1931 provided a bounty of 0.37 cents per bushel for all wheat marketed in 1931-32. Two further Acts, the Financial Relief Act and the Wheat-growers' Relief Act in 1932 and 1933 respectively, enabled the Commonwealth Government to assist in the reduction of the costs of wheat growers and to provide assistance to growers suffering severe hardship. By these means, wheat growers in W.A. received just over \$2 million in the two seasons 1932-33 and 1933-34.

The money for the Wheat-growers' Relief Fund was raised by a tax on flour; an increase in customs duty on tobacco; a special tax on property income; and from consolidated revenue. Further legislation was enacted in later years to provide additional relief to wheat growers. The report of the federal Royal Commission established to investigate the wheat industry in 1934 recommended: the rationalization of the industry to adjust output to prevailing prices; a dual price system for flour; continued relief for farmers; and, the establishment of a Commonwealth Wheat Board to control overseas sales.

At state level the government set up a Royal Commission to investigate farming problems in Western Australia. This commission was very critical of many aspects of farming methods and management and noted the need to provide relief for the financial burdens of farmers, to consolidate the wheat growing area in the long term and to introduce mixed farming. The report noted that the Miners' Settlement south of Southern Cross was a region in which major problems were awaiting solution, but the difficulties were not identified in particular. One of the recommended solutions, the consolidation of holdings, did not commence officially for over ten years. Many farmers had walked off their farms before that time. In addition, the Royal Commission reported on rural indebtedness. The level of indebtedness, perhaps the most serious factor affecting farmers, was estimated as follows:

Creditors of Western Australian Farmers in 1930

Agricultural Bank and Industrial Assistance Board	\$28.6m
Associated Banks	22.0m
Insurance and Trustee Companies	2.8m
Oil Companies	2.0m
Machinery Merchants	3.0m
Country Storekeepers	3.0m
Wheat Merchants	1.0m
Miscellaneous	1.0m
	\$63.4m

The reasons given for the level of indebtedness were:

1. A false prosperity created by lavish and easy borrowing;
2. An unlimited extension of credit;
3. Over-trading by merchants, particularly since mechanical farming came into existence;
4. Mounting interest rates;
5. A steady increase in tariffs;
6. A belief that the high world price for wheat would continue;
7. Competition by the Associated Banks for business;
8. The policy of the Agricultural Bank;
9. The purchase of estates for soldiers settlement at high prices;
10. The diminishing purchasing power of the Australian pound which created a false impression about prices and gave farmers a wrong idea of their prosperity;
11. The opening of light land which it did not pay to crop.

Because of the magnitude of rural indebtedness, the commission reported at length on the policies of the two financial institutions, the Industries Assistance Board and the Agricultural Bank, which were most concerned with farm finance. The report claimed that these two bodies had compelled farmers who were in debt to them to grow wheat on unproductive wheat lands to salvage some of the debt. In fact, such pressures were being exerted on farmers before the actual crisis occurred in 1931, that is, in the late 1920s. This was at a time when farmers in other states were winding down production as real prices had been falling since 1921.

The Western Australian Royal Commission also investigated the local cost of wheat production. Two estimates were made, one for farms using horses and the other for farms utilizing tractors. The cost of production for a 202 hectare farm model using horses was \$6.75 per hectare for wheat marketed or \$5.41 per hectare for cropped area. No allowance was made in the model for rates, taxes, interest, renewals or depreciation, and it was assumed that the farmer had sufficient seed to put in the crop. The yield estimated was 0.81 tonnes per hectare. The estimated costs included the bare essentials required for survival including fuel, food and stock feed. Forty one hectares of the crop were assumed to be held from market for agistment and feed.

In the tractor model the cost of production under the same physical conditions was

estimated to be \$7.73 per hectare of marketable area or \$7.41 per hectare for cropped area. In this model 17 hectares were held for seed, grist, and other domestic requirements. Thus, the cost of farming was found to be greater using a tractor than using horses.

In fact, highly mechanized farming was not a characteristic of the inter-war period. The number of tractors and trucks increased but these were associated with the clearing of land for the growing of grain, and other horse replacement activities. Full mechanization was to come later, with the introduction of bulk handling. This view is supported by the increase in the number of horses in the Yilgarn from 554 in 1925 to 2152 in 1930. To what extent the tractor was seen as either a substitute for capital or as a substitute for labour is not clear. There is more evidence to support the notion that the tractor was seen more as capital replacement, that is as a substitute for horses, rather than as a substitute for labour. For example, a study on the utilization of the tractor in South Australia in 1929 by A. J. Perkins suggests that one of the main considerations at the time was whether the tractor was more economical than horses. Fuel costs and mechanical repairs were considered to be a deterrent. Perkins' study revealed no economic advantage in using tractors. Horses were cheaper. This South Australian study was supported by an article written by V. Vansetti on farm economics in 1929:

. . . tractors have their good points; but who can deny that horses have more? The point that counts with farmers, who aim at a profit, is that the tractor, with its capital cost, short life, mechanical vagaries and ailments, cost of fuel, demand for frequent expert overhaul and constant judicious handling, is a costly means of agricultural power when compared to horses.

Possibly the technique of storing and handling wheat in bags contributed to the slow application of mechanized methods, even though farmers were particularly interested in bulk grain handling as it was estimated that bags made up 14 per cent of the costs of farming.

As a result of the declining returns from agricultural production, both capital investment and employment in farming in the Yilgarn fell during the Depression. The number of tractors in use fell to 154 in 1937 from 237 in 1931, and the employment of farm hands decreased to 461 in 1937 from 815 in 1933. These depressed conditions were not just peculiar to the Yilgarn region. Farmers in marginal regions throughout Australia suffered similarly. In 1938 the federal government finally reacted with the Wheat Industry Act which provided plans for the reconstruction of the wheat industry in marginal areas. By the time a first payment was made in Western Australia in 1940, wheat growing in the Yilgarn had already collapsed.

What did all this mean for farmers in the Yilgarn? Not very much, but for those that remained there was some financial relief. The decline in the number of active rural holdings and the area sown to wheat tells the story. Grazing sheep for wool became a more rewarding activity than growing wheat. No doubt, the Report of the Agricultural Bank of Western Australia, 1937, sealed the fate of many Bullfinch and Southern Cross farmers:

Commissioners were convinced that these (areas) are unsuited to wheat growing owing to light rainfall or heavy land and that sheep could only be carried with the growing of cereal crop.

They therefore decided assistance should cease . . . and that the Bank

should relinquish its security (except over stock and plant advanced) and hand the whole back to the Lands Department free of Agricultural Bank encumbrance, for disposal by sale or leasing. All clients have been offered transfer to safer districts ...

As bad, economically, as the Depression years were for the Yilgarn, worse was yet to come, the war years. The area sown to wheat in the district fell to 12,424 hectares in 1940-41 and dropped further to 5787 hectares in the 1944-45 season. Drought in 1940 reduced the yield to 0.04 tonnes per hectare, the worst on record. However, wheat prices in this period rose from \$0.30 to \$0.63 per bushel (27.2kg). During the war, government policies favoured decreased wheat production and increased wool production. Sheep numbers increased from 41,276 in 1940 to 84,567 in 1944, with an average woolclip weight for those years of 3.49kg. Wool prices increased from \$0.32 per kilogram in 1940 to \$0.45 in 1944 (F.O.B.). By the end of the World War there were 113 active farm holdings employing 147 full time people in the Yilgarn. Only 7765 hectares of wheat were sown from holdings of 293,969 hectares. Livestock numbers had decreased, except for sheep, and there were only 657 horses, 1981 cattle and 1682 pigs in the district.

The Commonwealth Government in 1941 imposed a production quota of 82 tonnes of wheat per grower for the 1942-43 season, with a guaranteed price of \$14.63 per tonne, but with no guaranteed price for over-production. The Western Australian government imposed even greater restrictions because of a carry-over of 1,360,000 tonnes of wheat. From 1942 to the 1944-45 season, wheat growers were permitted to sow only two thirds of their basic wheat growing area. Compensation was paid for the restrictions at the rate of \$2.96 per hectare. Compulsory crop restrictions were lifted in W.A. in the 1945-46 season, but the increase in acreage sown was minimal. After the war, the stimulus to wheat production came neither from changes in government policy nor from the Wheat Stabilization Act (1948), but from increased world prices. These were a consequence of the disruption of grain production in Europe during the war. A twofold wheat price increase between 1945 and 1947 was followed by a further increase in 1948 to \$64.36 per tonne. This was all that was required to revitalize wheat production.

Wool prices were also increasing and peaked in real terms in 1950-51 due chiefly to the pressures exerted on world prices by the war in Korea. The price more than doubled in one year from \$1.05 per kilogram in 1949-50 to \$2.635 in 1950-51. Relatively higher prices for both wheat and wool in the following years caused both the area sown to wheat and the number of sheep to increase. Barley and oat production remained stable.

With better export opportunities to Europe and improved prices for wheat, the concern for indebtedness diminished. The results of one of the many surveys done by P. Schaffer on farming revealed that in 1953 farming in the eastern wheatbelt was profitable. The 168 farms surveyed had an average gross income of \$14,408 and an average farm expenditure of \$7776 which included running expenses (52 per cent), wages and rations (16 per cent), depreciation (16 per cent), livestock purchases, rates, clearing and development. The same survey found that 49 per cent of 189 farms had no liabilities, 16 per cent had \$2000 or less and 9 per cent had more than \$8000 of debt. The conclusion drawn by Schaffer was that the overall debt position did not appear to be particularly onerous.

As a result of the labour shortage of the 1950s and even a little earlier, the role of the

tractor was seen in a new light — as a substitute for labour. In fact, Australia was to become by the early 1960s one of the top three countries in terms of the ratio of tractors to persons engaged in agriculture. But the rapid growth in the use of tractors in the post-war period was not due solely to labour shortages. The utilization of more efficient and better agricultural implements required greater horsepower. As a result, tractor horsepower increased to the 40-50hp range by the 1960s. Furthermore, the development of more powerful tractors made it possible to cultivate larger areas. This factor, coupled with the lower cost of machinery, made inevitable the more widespread use of tractors. In turn, this facilitated the use of larger machinery and, as a consequence, farm labour productivity increased. Improvements in the bulk handling of grain and superphosphate, and the contracting of services also lifted the overall level of productivity in the industry.

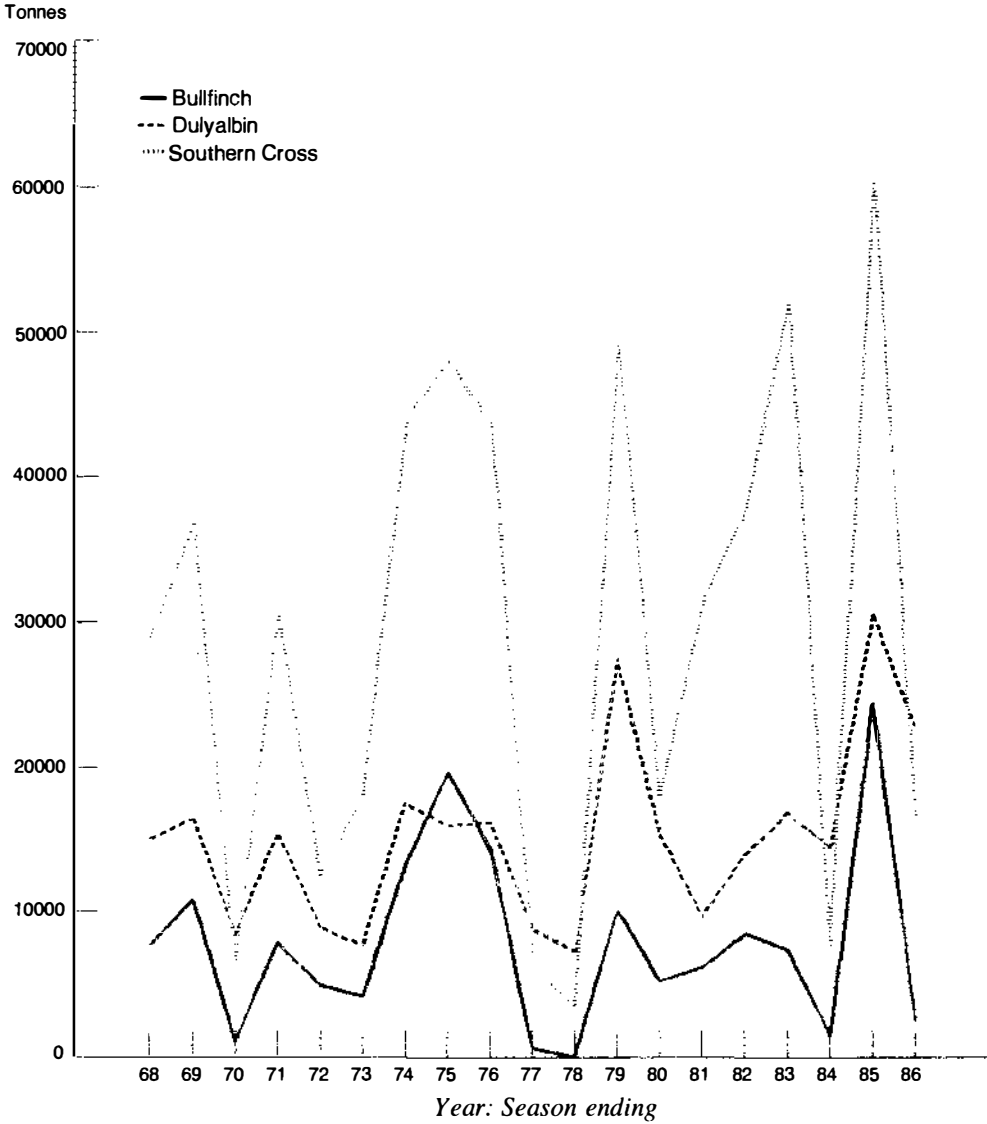
These changes in technology, which reduced costs, augered well for the Yilgarn area. By the 1966-67 season, the district was second in the state with 83,368 hectares sown to wheat. But again, the bubble burst. A drought struck in 1968, and then quotas were introduced following the harvest of 1968-69. An over-supply of wheat was again looming, for the wheat stabilization plans had done little to restrict output as the plans were concerned chiefly with stabilizing the incomes of existing farmers.

While wheat production in Australia was increasing, world supply was also increasing. The Green Revolution was gaining momentum in developing nations. Canada and the U.S.A. were overstocked with grain and acreages were being reduced. Seemingly, quotas were inevitable in Australia. It was becoming obvious that ad-hoc processes, which relied on imports from the U.S.S.R. and China and the vagaries of the world weather patterns to stimulate demand, would have to end.

The over-production of grain in Australia, which led to the implementation of quotas in 1969-70, was a consequence of a number of factors. High on the list were the various governments' policies which were chiefly motivated to solve the balance of payment problems. Wheat stabilization schemes, the expansion of wheat growing areas, and a general lack of policy on marketing were aspects of governmental policy which did little to ease the developing long-term problems. Generally, all farmers were treated as if the level of economic efficiency was universal in the cost formula and payment system used for calculating the allocation of funds. Farmers in the marginal regions where the cost-price squeeze was greatest, were given the same overall treatment as others in more fortunate areas where production costs were less. Ignored were the increasing costs of production, the slow downward trend in world prices and the decline in the demand for wheat. Luckily, the market always cleared the wheat stocks due to spasmodic sales to the U.S.S.R., China and other countries. Consequently, wheat production continued to contribute greatly to Australia's exports from 1960 to 1969. Nevertheless, there were underlying problems. The expansion of the wheat industry to solve an economic problem for the Australian economy was recognized by Gruen when he wrote in 1963: "I am somewhat doubtful whether it is economically advisable to encourage a more rapid expansion of Australian production to cope with likely balance of payments problems".

It was at this time that farmers in the Yilgarn were expanding output and implementing technological changes. With the Wheat Stabilization Plan of 1963-64 to 1967-68 ensuring, in the event of falling prices, a return for wheat at least equal to the cost

Fig. 4: Bulk grain deliveries Yilgarn 1968-86.



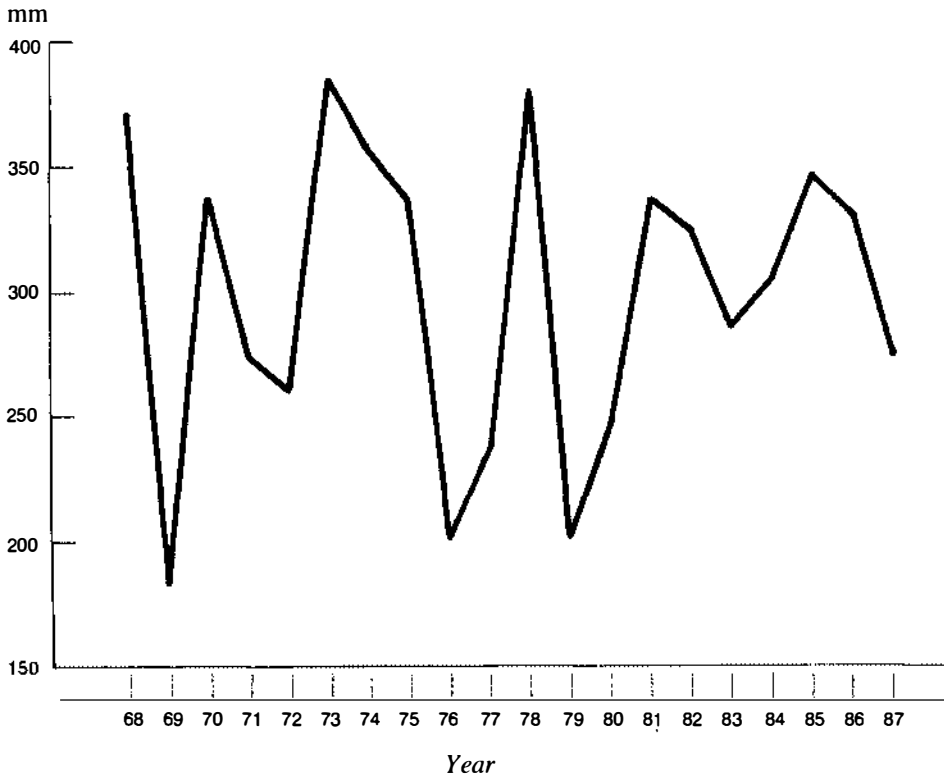
Source: Cooperative Bulk Handling Ltd.

of production, some form of security was guaranteed. The obvious reaction of farmers was to increase production as costs would be covered.

Within a season the situation had reversed. The Ukrainian wheat crop failed in 1972. World weather patterns also deteriorated and did not improve in 1973 and 1974. In a period of two years wheat prices rose 250 per cent. The grain surplus of the 1960s disappeared. But costs continued to increase. Worldwide inflation and increasing problems in the oil industry created a shortage of fertilizer and increased fertilizer prices. Unfortunately for the farmers in the Yilgarn, when the recovery occurred in the early 1970s the seasons were poor. Below average rainfall became the norm for the next decade.

The changes which occurred in agriculture in the Yilgarn from 1955 to 1974 are summarized in Table 10. The information clearly illustrates the increasing mechanization and size of farms, and the expansion of wheat growing in preference to other activities. The number of tractors per farm increased from 1.8 to 2.9 as wheat production per farm increased from 182 to 1115 tonnes; and sheep shorn numbers stabilized at approximately 1200.

Fig. 5: Rainfall for Southern Cross 1968-87.



Source: Bureau of Meteorology.

TABLE 10
YILGARN SHIRE — LAND USE AND PRODUCTION STATISTICS 1955, 1965,
1974
AVERAGE RAINFALL 295mm.
GROWING SEASON (MAY - OCTOBER) 206mm.

		1955	1965	1974
Number of properties.....		128	177	197
Average Area of Farms	ha	2964	3604	3679
Area Cleared	ha	1188	1493	1582
Area in Crop.....	ha	248	584	861
Area Sown Pasture	ha	—	32	191
Area in Fallow	ha	114	177	152
Proportion of Farm Cleared		40%	41%	43%
Proportion Cleared Land in Crop.....		21%	39%	54%
Proportion Cleared Land in Sown Pasture		—	2%	12%
Proportion Cleared Land in Fallow.....		10%	12%	10%
WHEAT				
Production per Farm.....	Tonne	182	624	1115
Production per Cleared Hectare.....	Tonne	0.15	0.42	0.70
Yield per Sown Hectare.....	Tonne	1.12	1.25	1.44
OATS				
Production per Farm.....	Tonne	24	17	33
Production per Cleared Hectare.....	Tonne	0.02	0.01	0.02
Yield per Sown Hectare.....	Tonne	0.58	0.65	0.88
BARLEY				
Production per Farm.....	Tonne	13	24	32
Production per Cleared Hectare.....	Tonne	0.01	0.02	0.02
Yield per Sown Hectare.....	Tonne	0.79	0.95	1.02
CATTLE				
Cattle per Farm.....		4	6	24
Breeders per Farm		3	3	13
PIGS				
Pigs per Farm.....		5	12	34
Sows per Farm		0.5	1	4
SHEEP				
Sheep per Farm		1163	1107	1237
Breeding Ewes per Farm.....		547	559	631
Proportion of Flock as Breeding Ewes		47%	50%	51%

WOOL

Sheep Shorn per Farm.....		1205	1196	1275
Wool Clip per Farm	kg	4836	4470	5105
Wool Cut per Head	kg	4.0	3.7	4.0
Wool per Cleared Hectare	kg	4.1	3.0	3.2

STOCKING RATE

Sheep per Cleared Hectare		1.0	0.7	0.8
Sheep per Winter Grazed Hectare		1.2	1.2	1.7

HAY

Hay Conserved per Farm	Tonne	17	10	18
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FERTILIZERS

Superphosphate Used per Farm	Tonne	18.6	55.7	98
Other Fertilizer Used per Farm	Tonne	—	—	3.1
Superphosphate Used per Cleared ha.	kg	20	37	62
Other Fertilizer Used per Cleared ha.	kg	—	—	2
Rate Super on Crop.....	kg/ha	75	101	110
Rate Super on Pasture	kg/ha	88	101	100
Proportion Cropped Area Fertilized....		100%	100%	97%
Proportion Pasture Area Fertilized		—	44%	30%

MACHINERY (per farm)

Grain Drills		1.4	1.7	1.8
Fertilizer Broadcasters		0.1	0.1	0.1
Harvesters		1.2	1.1	1.2
Hay Balers		0.1	0.1	0.2
Tractors		1.8	2.6	2.9

Source: Department of Agriculture, Merredin.

The sudden upturn in wheat prices in the 1973-74 period offered some encouragement to growers but the increase proved to be short-lived. Between 1973-74 and 1983-84 payments to growers per tonne fell from \$110.07 in 1973-74 to \$82.80 in 1976-77 and then increased to approximately \$150 in 1983-84. Rail freight in this period continually increased from \$7.70 per tonne to \$23.60 per tonne and handling charges doubled.

There is no average year for farmers. They move through peaks and troughs from season to season and from one period to the next. During the 1960s, apart from poor seasons and the other multitudinous problems associated with farming, the continuing crisis was the cost-price squeeze. Increasing prices for machinery, labour and other inputs, with relatively constant wheat prices, squeezed returns. On top of these problems came the fuel crisis early in the 1970s. The high price of fuel, later inflated by the levies and taxes imposed by governments, continued to cause problems for many years to come. With little or no control over the increased levels of inflation which commenced in 1973,

the only alternatives for farmers, if they were to maintain their levels of income, were to increase efficiency by expanding, or to opt out.

Undoubtedly, it was the rapid adjustment to the changing economic environment that enabled Australian wheat farmers to survive to become some of the world's most efficient, on a cost basis. But the path to improved efficiency was not easy. Expansion, the solution to the problems at the time, was fraught with additional problems. A larger scale of operation involved increased capitalization and the expansion of farm size. This in turn added to the cost of production and the risk factors. In addition, expansion also required increased managerial skill: the rule of thumb was no longer a means by which farmers could maximize their income. Increased financial knowledge was essential to take advantage of the increased scale of operation. Even the decision to purchase a tractor became more complex as the size and price of tractors increased. In 1976 there were 43 makes of tractors with a multitude of models available on the Australian market. Between 1971 and 1976 the percentage of tractors over 75Kw on Australian wheat farms increased from 3 per cent to 30 per cent. As the choice of models increased so too did the options available to farmers. A larger tractor could only be justified economically if the intended acreage to be worked was increased or the amount of labour used was to be reduced.

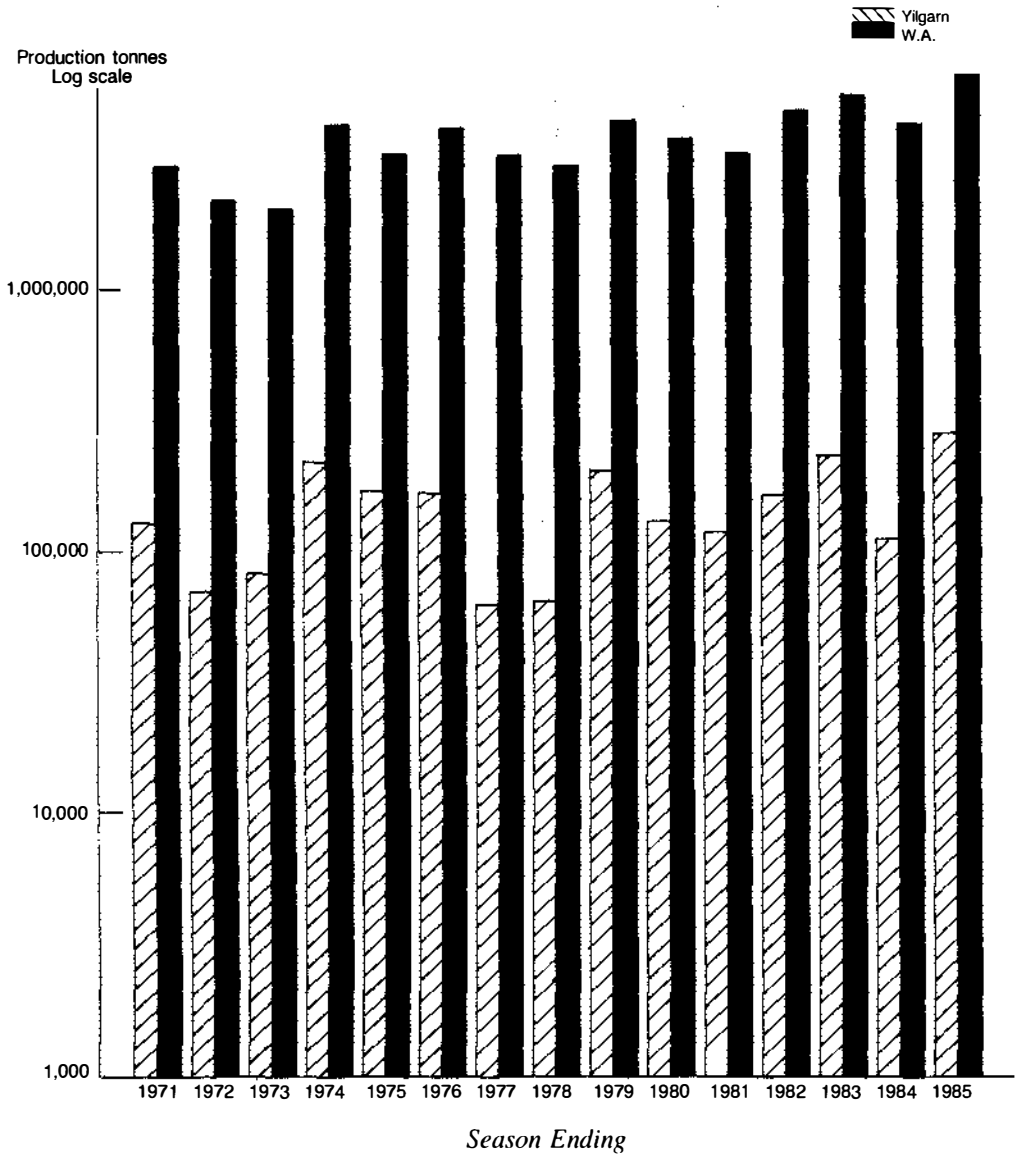
Future expectations with respect to work patterns, the development of the farm, profit maintenance, as well as the physical characteristics of tractors, especially engine size and fuel economy, type of gearbox, wheel equipment, comfort and after sales service all increased the complexity of farm management. Furthermore, increased tractor power to do more work in the same time or the same work in less time was not the only consideration. Better labour management and work organisation were also necessary if farmers were to optimize output. It is interesting to note that at the same time as acreage increased so too did the amount of labour deployed per farm. But, over-all, labour per hectare declined by 1 per cent between 1970 and 1979. This indicates that with the utilization of increased tractor power farmers opted for more work in the same time.

As wheat farm management improved so too did the yield per hectare for those in the better areas. However, because of the generally poor decade of wheat seasons in the Yilgarn district from 1970 to 1979, the farmers in that region did not achieve the same results. This was an unfortunate turn of events for at that time wheat payments increased from \$88.00 per tonne in the 1977-78 season to \$150.00 in 1983-84 season. Had the seasons been better the income from higher wheat payments would have relieved some of the cost-price squeeze.

The steady increase in wheat prices in the latter part of the 1970s was chiefly due to growth in demand from the oil exporting countries which were experiencing higher incomes from rising oil prices. Higher wheat prices, coupled with the desire to expand farm size to achieve economies of scale, caused an escalation in the value of land. The outcome was an increase in the real value of farm assets. Unfortunately however, as the value of farm assets was increasing the return on farm investment was decreasing. With the decline in demand from the oil exporting countries, due to the fall in oil prices in the middle of the 1980s, farm land values, in turn, declined.

Australian wheat farmers throughout the 1970s received very little direct financial assistance from the Commonwealth Government. Indirect assistance was provided to the wheat industry by way of the home consumption price policy, income tax concessions,

Fig.6: Wheat for grain Yilgarn and Western Australia 1970-85



fertilizer subsidies, research assistance, the interest rate rebate on Australian Wheat Board borrowings and the guarantee of a minimum return for wheat produced. These concessions offered little or no cash transfer. However, they reduced the risk of price falls and influenced production and investment decisions.

In summary, the Australian wheat industry between 1950 and 1980 saw many changes. Not only were there improvements in the economies of scale and in farm management techniques but there were also improvements in crop rotation, and in the introduction of strains of hard wheat and rust resistant varieties. The relative change in price between wheat and wool encouraged increased wheat production. The wheat stabilization scheme also gave a discriminatory advantage to growing wheat rather than alternative crops. In total, the Wheat Stabilization Plan fostered the over-production of wheat and provided assistance to the less efficient producers which encouraged an inefficient allocation of resources. It was not until the 1980s that the question of the over-expansion of the wheat growing area into marginal lands was once again to become an issue.

The early years of the 1980s were marked by poor seasons in Western Australia with a severe drought in 1983. Droughts had been a feature of the 1970s and loans were made available to farmers, lessees and share-farmers in drought declared areas. These loans provided carry-on finance for the next season. In 1979-80 for example, the maximum loan was \$30,000 for the next season with an overall limit of \$70,000 over three years. The interest rate on drought loans at that time was 4 per cent per annum and while loans were repayable over seven years, when necessary, only interest payments had to be met in the first two years. These loans, while relieving the immediate pressures, provided no long-term solution to the problems. Unemployment benefits were also available to

TABLE 11
GRAIN AND SUPER FREIGHT RATES 1973-1984

SEASON	GRAIN FREIGHT RATES		SUPER FREIGHT RATES \$/t
	EX SOUTHERN CROSS	TO SOUTHERN CROSS (March/April Prices)	
1973-74.....	\$7.70	\$6.03	\$14.70
1974-75.....	\$9.00	\$6.93	\$33.90
1975-76.....	\$10.60	\$8.10	\$56.25(a)
1976-77.....	\$10.60	\$9.54	\$47.09
1977-78.....	\$12.50	\$9.54	\$46.65
1978-79.....	\$13.70	\$11.25	\$48.32
1979-80.....	\$13.70	\$12.33	\$50.00
1980-81.....	\$16.30	\$12.33	\$60.55
1981-82.....	\$18.75	\$14.67	\$74.69
1982-83.....	\$20.88	\$16.83	\$87.45
1983-84.....	\$23.60	\$18.68	\$95.15

Source: Rural Hardship Committee, N.C.P. W.A.

(a) Bounty not applicable

primary producers providing they were available for work on a full time basis and the nett income from farm property was lower than the unemployment benefit. This, however, was a situation of Hobson's choice as farmers were not in a position to undertake full time work.

In January 1984 the Western Australian minister for agriculture issued the government's revised drought relief plan for 1983-84. A road subsidy of up to 9 cents per tonne/kilometre was to be paid on the distance in excess of 60 kilometres to the nearest Co-operative Bulk Handling bin (or private source) at which grain for feed was available. Subsidies for hay and stock agistment were 75 per cent of freight costs but only for agistment up to \$10,000, after which the subsidy was 50 per cent. Subsidies and assistance for water cartage was also provided for, and drought loans were extended to \$40,000.

Also in January 1984, farmers in the south Yilgarn region were offered concessions as a result of a deputation to the minister for transport in November 1983. These included a special fertilizer rate to Southern Cross and Moorine Rock, a reduction of 23 per cent on the previous rate. Grain rates for the five off-line grain receival facilities in the south Yilgarn were to be the same as for facilities on the railway line. As a result of further meetings in Southern Cross between the minister for transport and grain producers, the government announced another scheme which provided a further average saving of \$640. However, the cartage rate was still 2 cents a tonne per kilometre more than road transport over long hauls, according to Mr H. Cowan, State leader of the National Party of Australia.

Rural indebtedness began to increase before the drought in the 1983 growing season. Wheat prices had started to fall and costs were increasing. The cost problems were accentuated as a result of the higher level of capitalization at a time when interest rates were increasing. Farmers in marginal areas were the first to face the problems. But little government assistance was forthcoming. As a result, a number of rural indebtedness surveys were conducted on a state basis and national estimates were made by a number of organizations. In a survey of Western Australian farms in wheat growing areas completed by the Western Australian Agriculture Department in Merredin, Mukinbudin and Southern Cross, it was found that one third of the farmers were facing serious hardship in March, 1984. This was below the ratio in the Esperance and Moora regions but above the state ratio. During the year ended 1st March, 1984;

Survey work and yield analyses conducted by the Primary Industry Association also point to the relatively high levels of indebtedness in the lower rainfall marginal areas of the wheatbelt. Farms in these regions are characterized by a high percentage of farm area in crop and are on the average larger farms.

An analysis of farm costs conducted by Bird Cameron, chartered accountants, based upon unaudited financial statements of farms in the wheat and sheep area of Bruce Rock, Narembeen, Merredin and Southern Cross indicated that the average operating farm median surplus was \$18.83 per hectare for the 1984-85 season. This was after allowing for family wages of \$25,000 for the first full time family labour unit and \$15,000 for subsequent full time family labour units. Both sheep and cattle values were estimated at market price. The group median operating income per hectare was \$139.24 and the group median operating expenses were \$81.22 before allowing for the value of family wages.

Given the improved land value including buildings, the estimated rate of return was approximately 9 per cent, without accounting for non-operating costs.

TABLE 12
TYPICAL FARM COST STRUCTURE YILGARN, 1984-85

Production per ha

Wheat (t)	1.35
Barley (t)	1.62
Other Grains (t)	0.00

Livestock

Sheep

Wool/sheep	5.2kg
Wool/production ha	5.6kg
Lambs Marked to Ewes Mated	74.8

Cattle

Calves Marked per Cow Mated	0.00
Livestock Nos/productive ha	1.43

Land Use

Wheat %	40.0
Barley %	20.0
Other Grain	0.0
Sheep	36.7
Other	3.3

100.00%

Machinery Value

Harvested ha	\$133.30
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Operating Income

Grain Sales

Wheat/ha	\$68.08
Barley/ha	37.77
Post Grain Advance	25.24
Hay	0.00
Wool Sales	18.90
Livestock Profit	5.00
Sheep (\$15/head)	3.91
Cattle (\$200/head)	0.00
Other Farm Income	2.62

Total..... \$156.52/ha

Operating Expenses

Contract Work	\$ 0.30
Fees and Levies	11.92
Fertilizer	10.73
Fuel	9.45
Repairs	8.10
Shearing	2.62
Stock Expenses	0.87
Wages	1.71
Freight and Cartage	16.54
Other	14.26
Sprays	5.77
	<hr/>
Total	82.27
Value of Family Wages	21.67
	<hr/>
	103.94

Financial Expenses

Farm Rent	0.0
Interest and Borrowing Expenses	15.27
	<hr/>
Total	\$15.27

Capital Expenses

Loan Repayment	8.55
Hire Purchase Instalments	0.00
Plant Leasing	0.00
Plant Payments and Improvements	5.41
	<hr/>
Total	\$13.96
Profit/ha	52.59

Source: Bird Cameron

In an address by D. J. Whitely, Chairman, Rural Adjustment Authority on "The Current Financial State of Farming Industries", the plight of the farmers in the eastern wheatbelt in 1986 was described as follows:

The seriousness of the situation suggests that we might need some sort of ice breaking to start with. Perhaps when you think of ice breaking one's reminded of one of the greatest ice breakers of all time, the Titanic, which sank to the bottom of the Atlantic. The seriousness of the situation in agriculture could even be compared to the sinking of the Titanic. It's not sinking as rapidly but it is sinking surely. I would like to show you that in picture form, because a picture is worth a thousand words they say.

The data presented by Whitely showed that farm income in the eastern wheatbelt region fell by 22 per cent between 1980 and 1985. In the same period, farm operating costs increased by an estimated 141 per cent, from \$47,400 to \$114,200, the biggest increase being in crop costs. Estimated gross farm income increased by only 49 per cent, from \$112,000 to \$167,000.

Income and Operating Costs
(Average 2000 hectare Eastern Wheatbelt farm)

	1979-80	1984-85	% Change
Gross Farm Income	112,000	167,000	49
Operating Costs			
Crop Costs	4,800	18,100	276
Fuel and Oil	5,900	18,600	216
Labour	2,500	7,000	213
Fertiliser	9,700	26,900	178
Parts and Repairs	8,200	19,100	133
Overheads	7,700	15,000	94
Sheep Costs	8,600	9,500	11
Total F.O.C.	\$ 47,400	\$114,200	plus 141%
Operating Profit	\$ 64,600	\$ 52,800	minus 22%

As a result of declining profits, land values decreased in the 1980s. Farmers who had earlier acquired additional property at high land values and had borrowed to do so, were generally those in greatest difficulty because of the high level of interest payable and the decline in land values. A Western Australian Agriculture Department survey on rural indebtedness found that the level of debt was greatest in 1984-1985 when the farmer had purchased additional land in the previous five years. It was estimated from that survey that indebtedness in wheat growing districts had increased on average by 11 per cent for the year ended March, 1984 and that the medium long-term indebtedness increased by 15.2 per cent to \$115,757 while short-term indebtedness rose by 3.6 per cent to \$55,277.

By the middle of the 1980s Australian wheat farmers in general were facing extreme difficulties. World prices fell further, costs escalated and marketing opportunities deteriorated due to increased supplies of subsidized wheat from Europe and the United States of America at a time when world demand was deteriorating. Farmers rallied together to highlight the problems with mass meetings throughout Australia. At one such meeting in Northam in February 1986, wheat farmers threatened to walk off their farms unless their demands were met. These included a reduction in interest rates on existing debts and carry-on finance; a moratorium on the debts of farmers; the removal of fuel taxes and tariffs for farm producers; the removal of the capital gains tax and a more competitive Australian Shipping Line. They also objected to the Australian policy of indexed wages. One of these factors, high interest rates, was an issue faced by all borrowers. However, the set of economic factors determining farm income did not apply to the whole economy and that tended to isolate the rural sector. In August 1986 an Australian deputation approached the U.S.A. government to protest against the sale of

subsidized American wheat in the U.S.S.R., typically an Australian market. The relevance of the deputation was that it emphasised the international problems that existed in the wheat market and agriculture in general. Unless supply is restricted and demand increases, assuming favourable seasons continue, solving internal problems may not prove to be a panacea.

If world wheat prices do not improve in real terms then costs both off and on farms will have to be pruned. The rate of return on investment is too low. The most important concerns relate to the off-farm costs as most farmers are already technically very efficient. Improvements in the handling, storage and transport of cereals are areas where costs could be reduced. Increased use of road transport, which would compete with the rail system, may reduce costs to farmers but may increase the social and real costs of road maintenance, congestion and accidents.

Prospects

The economic future of the Yilgarn will ultimately depend upon the adaptability of farmers and mining companies to changing world markets or their ability to increase efficiency.

Efficiency in the extraction of gold has reached such a high level that deposits of ore which could only be mined uneconomically or not at all in the past are now being mined profitably. Whether the present companies can continue to mine economically if a gold tax is applied will depend upon the price of gold and the consequent after tax return on investment. Due to the rapid increase in the world's supply of gold, it would appear that during the next few years price fluctuations may continue downwards, with a possibility of lower prices in 1987. With respect to iron ore it would appear that given the low level of world demand for steel and iron it is doubtful that iron ore deposits at Koolyanobbing will be mined for many years to come.

Agricultural activity, given the present market situation of depressed prices, may not be as prosperous as mining in the immediate future. Pastoral activity or other crops may have to be considered in addition to the present agriculture pattern. Much research needs to be undertaken to ascertain the best alternatives to wheat production and future world demand for agricultural products. With increasing wool prices, sheep may prove to be a short-term panacea for farmers, as was the case in the 1930s.

It would appear that further subsidies to the extent of those in the European Economic Community and the United States of America will not be forthcoming for Australian farmers. A University of Cambridge report from the Department of Land Economy estimated that the average cost of producing a tonne of wheat in Western Australia was \$US62.30 in 1986 compared to \$US125.20 in the United States and \$US127.20 in Britain. This comparison revealed that the yields and costs were lower in Western Australia than in Europe and the United States in the 1985-86 season. On a cost basis there is little justification for subsidies in Western Australia for in Europe and the United States wheat is subsidized to enable them to compete with Australia. Furthermore, interest rates have not fallen to the same extent in Australia as they have in other countries. Those who have borrowed heaviest will no doubt suffer most. Lower interest

rates and a further devaluation of the Australian dollar would relieve some of the pressures, but not all. To compensate for declining prices the quantity sold would have to increase for incomes to be maintained.

Southern Cross is rather well situated as a service centre for interstate traffic. However, given the present lack of activity immediately to the east, the town cannot expect to become a major regional centre. The expansion of mining activity at Marvel Loch has led to a rapid increase in its population and a consequent increase in the need for additional services. On the other hand, Bullfinch and Koolyanobbing have virtually become ghost towns.

No doubt, the region will continue as it has in the past, moving from booms to busts in mining and in agriculture. The long-term survivors will be the farmers. Farmers have more alternatives open to them in periods of hardship. Unlike gold or gypsum deposits which are non-renewable resources, arable land can be continually cultivated.

John Prestage

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FROST ON THE LANDSCAPE

Frost on the fence-railing, capping the tops of posts;
Autumn sun over thin salmon-gums by the salt lake,
Red in the mist. Steam from post-rail and iron roof;
The frost lifts. Hens shuffle out into streaky sunlight;
The dog heaves on his chain at a cat curled on a post.

In autumn, each autumn, one must steel oneself again
For the sight and touch of frost. Wakening to frosty
Mornings the trembling rabbit leaps at the strike of the trap.
It is hard to forget the thin squeal heard across frosted grass,
Or the sound of the shaken chain tethering trap to its post.

After the dawn barrage had fractured night,
Our section advanced over the shambled earth;
The frosty soil smoked red in the weak sun.
Partly interred we found a forward post,
The severed limbs still chained to their icy gun.

Love cannot postpone the time of frosts,
And when in the black ill-starred night
The frost descends to stalk on iron talons,
Lovers disturbed by the white scars of its passing
Must also wait until unruly sun unchains them.

Glen Phillips

Chapter 11

Electoral Representation of Yilgarn Shire

This chapter has three principal aims. First, to describe the pattern of change in the territorial representation of Yilgarn shire in both state and federal parliaments. It would appear that, apart from the early days of separate representation, the marginality or peripherality of the Yilgarn coupled with its relatively small population and large area have resulted in its encapsulation into either a goldfields or a wheatbelt electoral district in order to top up the electoral populations of host districts. The second aim is to describe the history of individual and party representation of Yilgarn shire in state and federal parliaments. It is well-known that electoral redistributions can give competing political parties an initial advantage, especially those in power, even with a system of neutral electoral commissioners. In the Yilgarn case, the history of electoral redistributions has had important implications for party representation, notwithstanding the undoubted importance of the identification of the local candidate with the local community. The latter is often especially important in communities like Yilgarn where the population is relatively low. The third aim of this chapter is to describe the changing pattern of voting behaviour in Yilgarn and the host electoral district for both state and federal elections. No attempt is made to explain the pattern of voting since this lies outside of the scope of the chapter and is a separate and significant piece of research in itself. Rather this section will concentrate on a description of the overall decline in Labor voting in the region especially at the federal level.

Territorial Representation of Yilgarn Shire

Electoral boundaries in the state of Western Australia have been delimited 15 times for state elections and 11 times for federal elections. In some cases, the electoral redistribution procedures have had little impact upon changing the territorial representation of Yilgarn shire, especially at the federal level. Boundary changes at the state level, on the other hand, have resulted in the Yilgarn district being regrouped in various ways until the abolition of the title Yilgarn in the 1982 state redistribution. For convenience and clarity of presentation, boundary changes will be described separately for state and federal redistributions.

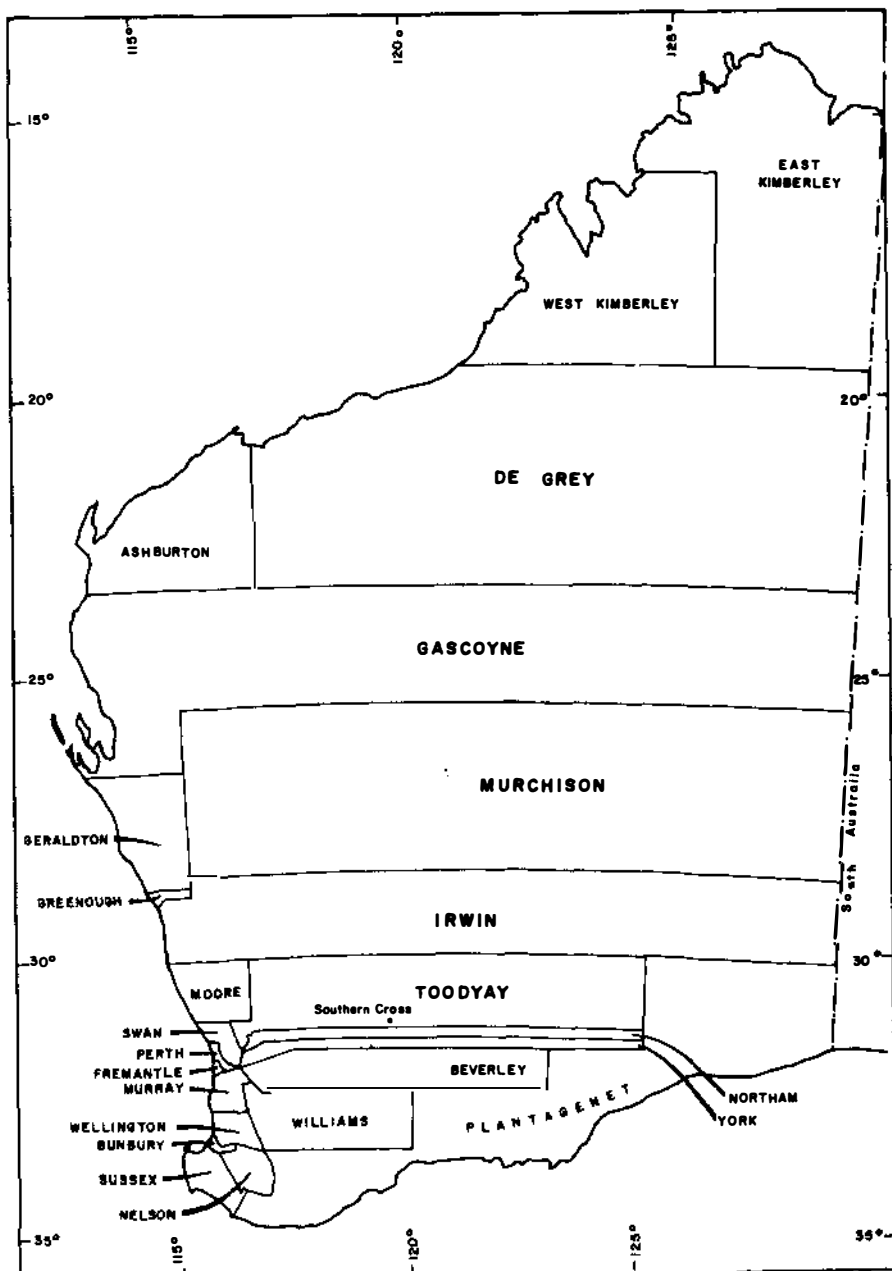


Fig. 1: First state electoral districts 1889.

WA State Electoral Redistributions

Although the decision to grant responsible government to Western Australia was regarded by some as a folly verging on political crime, the first Legislative Assembly was nonetheless established under the *Constitution Act* which was proclaimed in October 1890. While this act divided the state into 30 electoral districts for the Legislative Assembly, the 15 members of the Legislative Council were nominated by the governor in the first instance. The east-west alignment of many of the original electoral districts meant that much of what is now Yilgarn shire was contained in the district of Toodyay, although the southern half was shared by the districts of Northam, York and Beverley (Figure 1).

The *Constitution Acts Amendment Act 1893* increased the number of Legislative Assembly districts to 33 and at the same time divided Western Australia into seven electoral provinces each of which elected three members to the Legislative Council. This act created the first electoral district of Yilgarn which was fairly large in area and included the region from the Yilgarn goldfields in the west to Boundary Dam near the South Australian border to the east (Figure 2). For the Legislative Council, Yilgarn was located in a wheatbelt-oriented East Province along with the Assembly districts of Beverley, Moore, Northam, Swan, Toodyay and York.

The *Constitution Act Amendment Act 1899* further increased the number of Assembly districts to 50. Part of the northern lakes section of Yilgarn was excised to create the North Coolgardie district and the new Yilgarn electorate became an elongated north-south district centred on Southern Cross and the Yilgarn goldfields with an extension south as far as Ravensthorpe (Figure 3). Total representation was also increased for the Upper House with the creation of ten provinces each returning three members. For the Council, the new Yilgarn was given a goldfields orientation with its location in North East Province along with the districts of Coolgardie, Dundas and North Coolgardie.

In 1902, although parliamentary representation was not increased, there were a number of electoral boundary changes for the Assembly and regroupings for the Council. In Yilgarn, for example, there was a small northern relocation of its southern boundary with Plantagenet. For the Upper House, on the other hand, the modified Yilgarn became part of a new South Province which was coincident with the previous North East Province apart from the exclusion of the North East Coolgardie district and Kalgoorlie. The settlement of Coolgardie had its own representation with the remainder of the former West Coolgardie district becoming the district of Mt Burges. The new South Province thus consisted of the Assembly districts of Yilgarn, Coolgardie, Dundas and Mt Burges.

The *Redistribution of Seats Act 1904* maintained the same level of electoral representation in Western Australia. The district of Yilgarn, however, was now placed in an enlarged South Province along with Boulder, Coolgardie, Dundas, Hannans and Ivanhoe.

In the *Redistribution of Seats Act 1911* the Yilgarn district was enlarged to include the Dundas Goldfield. In addition, it was included in a modified South Province with Boulder, Coolgardie, Hannans and Kanowna.

The *Redistribution of Seats Act 1929* abolished Yilgarn as a separate electoral district and amalgamated it with the town of Coolgardie in a new goldfields seat of Yilgarn-Coolgardie. The new district still remained in South Province (Figure 4).

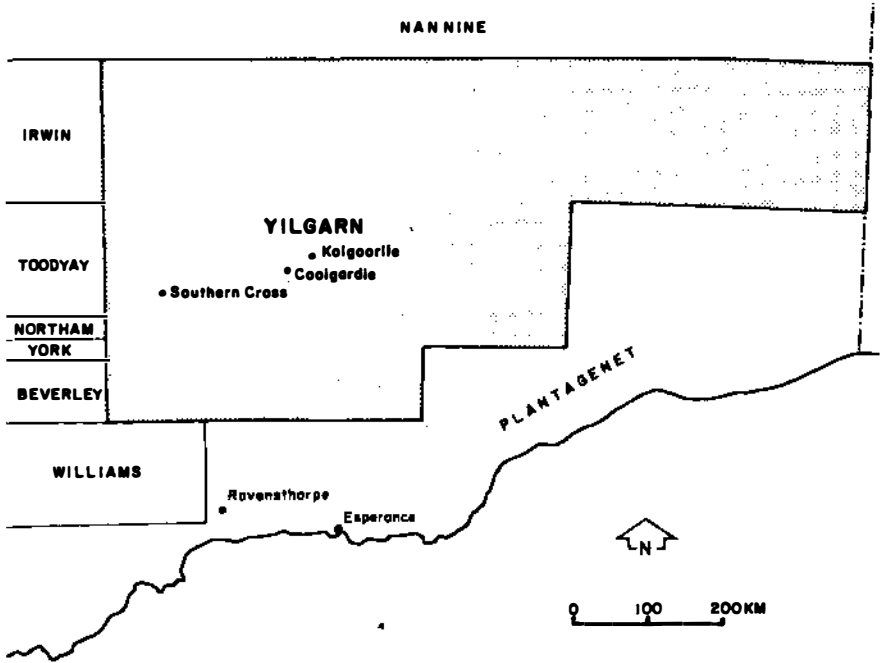


Fig. 2: First Yilgarn electoral districts 1893.

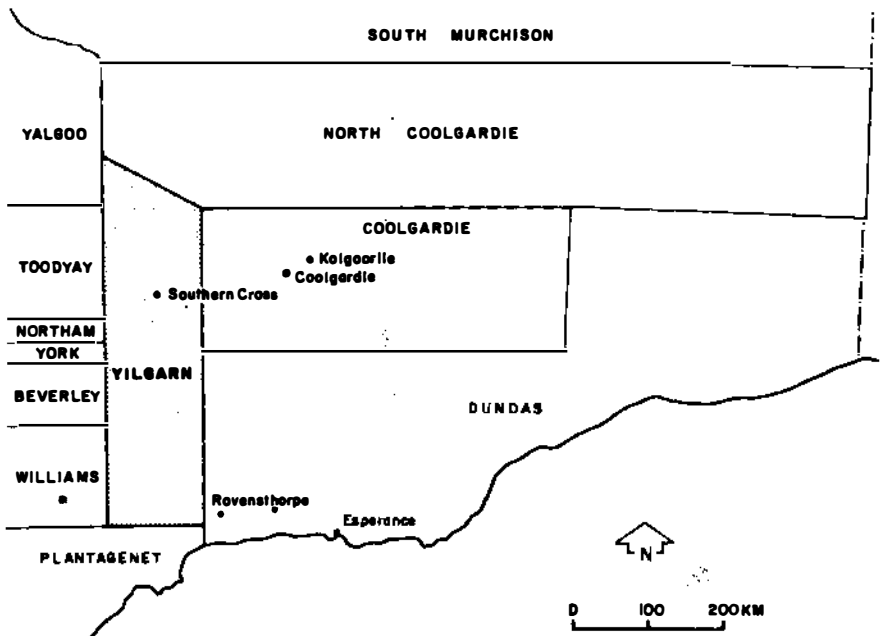


Fig. 3: Yilgarn electoral district 1899.

Whereas to this point electoral boundaries were open to the charge of overt governmental manipulation, the *Electoral Districts Act 1947* enabled the appointment of neutral electoral commissioners to undertake independent redistricting procedures in Western Australia. Overall, as a consequence of the act, representation did not change except that, in the case of Yilgarn-Coolgardie, the district was abolished. The shire of Yilgarn became part of the new district of Merredin-Yilgarn along with Coolgardie and the shires of Westonia and Merredin, and the commissioners decided to group Merredin-Yilgarn with Boulder and Eyre in a new South East Province.

In 1955, the boundaries of Merredin-Yilgarn were modified to give the district even more of a wheatbelt orientation: Coolgardie was excised to become part of the new district of Eyre in the south-east of WA, and the remainder was added to the shires of Bruce Rock and Narembeen. At the Council level, on the other hand, the modified Merredin-Yilgarn joined with Eyre and Boulder in a reconstituted South East province (Figure 5).

After the 1955 redistribution, it became standard practice in Western Australia to enact a redistribution either in the same year as the census, or as soon after the census as was practicable. It may well be that the Commissioners' aim to catch an adequate electoral population for the 1961 redistribution was the reason for the rather peculiar shape of the redesigned district of Merredin-Yilgarn (Figure 5). One effect of the boundary changes was to include the shire of Coolgardie at the expense of Narembeen. For the Upper House, Merredin-Yilgarn was joined with the new Boulder-Eyre Assembly district to form a modified South East Province.

The only exception to the practice of having a redistribution after a census occurred in 1964 and only for the Legislative Council. Although the total number of members (30) and their tenure (six years) remained the same, the territorial basis of electing the Council was changed. The ten provinces each electing three MLCs were replaced by fifteen

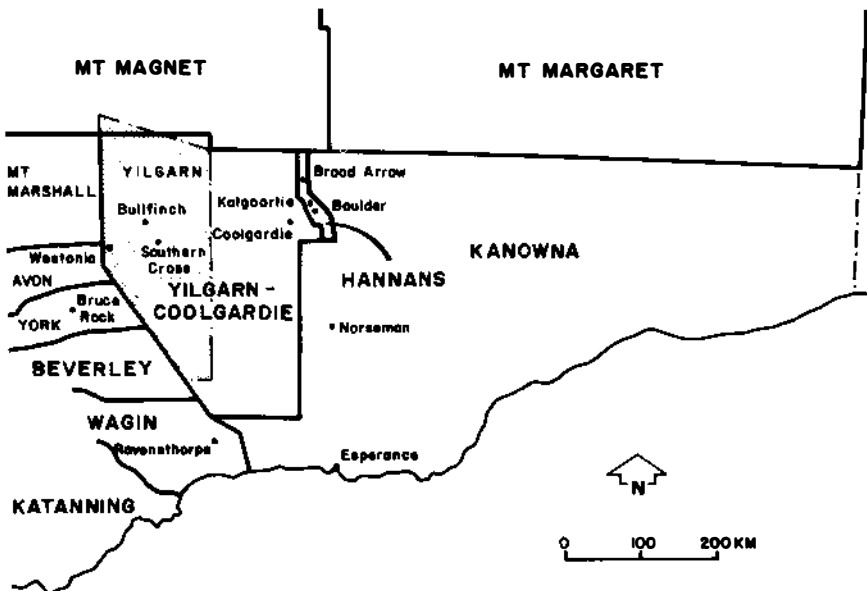


Fig. 4: Yilgarn — Coolgardie 1929.

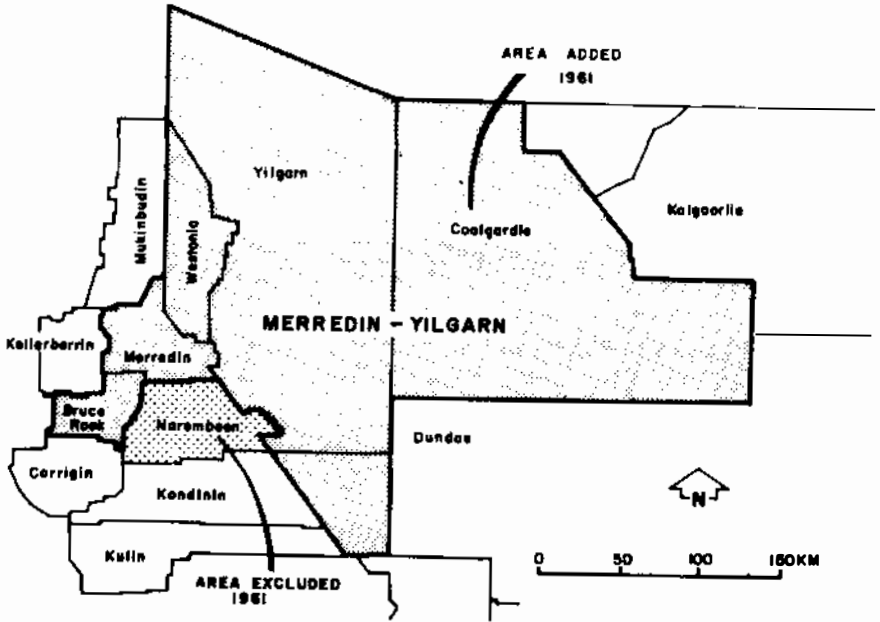


Fig. 5: Merredin — Yilgarn 1955-1961.

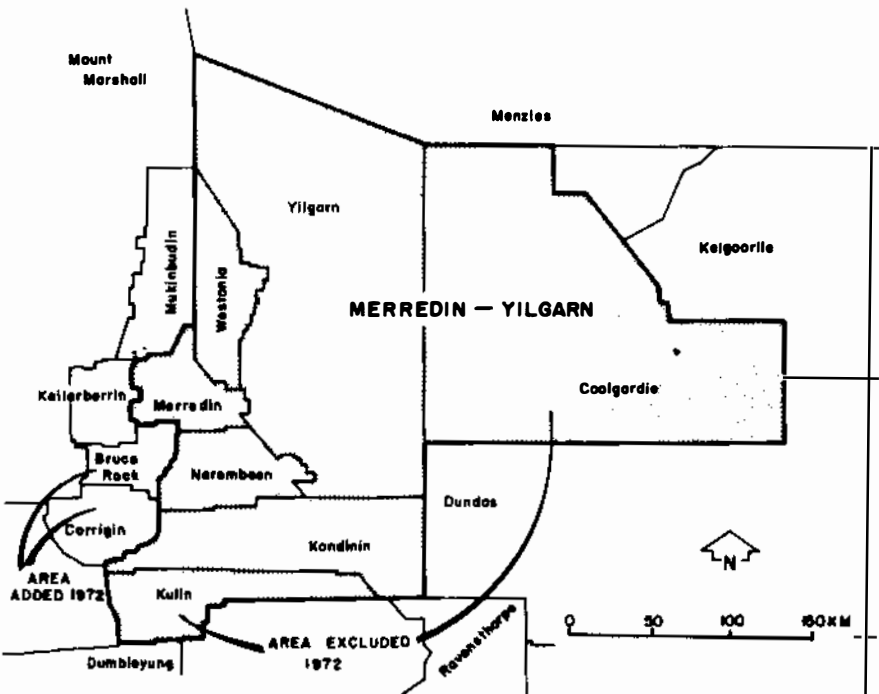


Fig. 6: Merredin — Yilgarn 1966-72.

provinces each electing two MLCs, with half of the House retiring every three years. The effects of this change together with the provisions of the 1947 act were to have important implications for electoral representation in the Legislative Council. Whereas provinces in Metropolitan Western Australia were to be delimited on the basis of four or five contiguous Assembly districts, provinces in non-Metropolitan WA were delimited on the basis of two or three contiguous districts. For Merredin-Yilgarn, the impact of the Council redistribution was to reduce its level of effective electoral representation, since after 1961 it would have been able to elect three MLCs with one other Assembly district (Boulder-Eyre) in South East Province. After 1964, however, a third Assembly district (Kalgoorlie) was added to South East Province, with the latter being represented by only two MLCs.

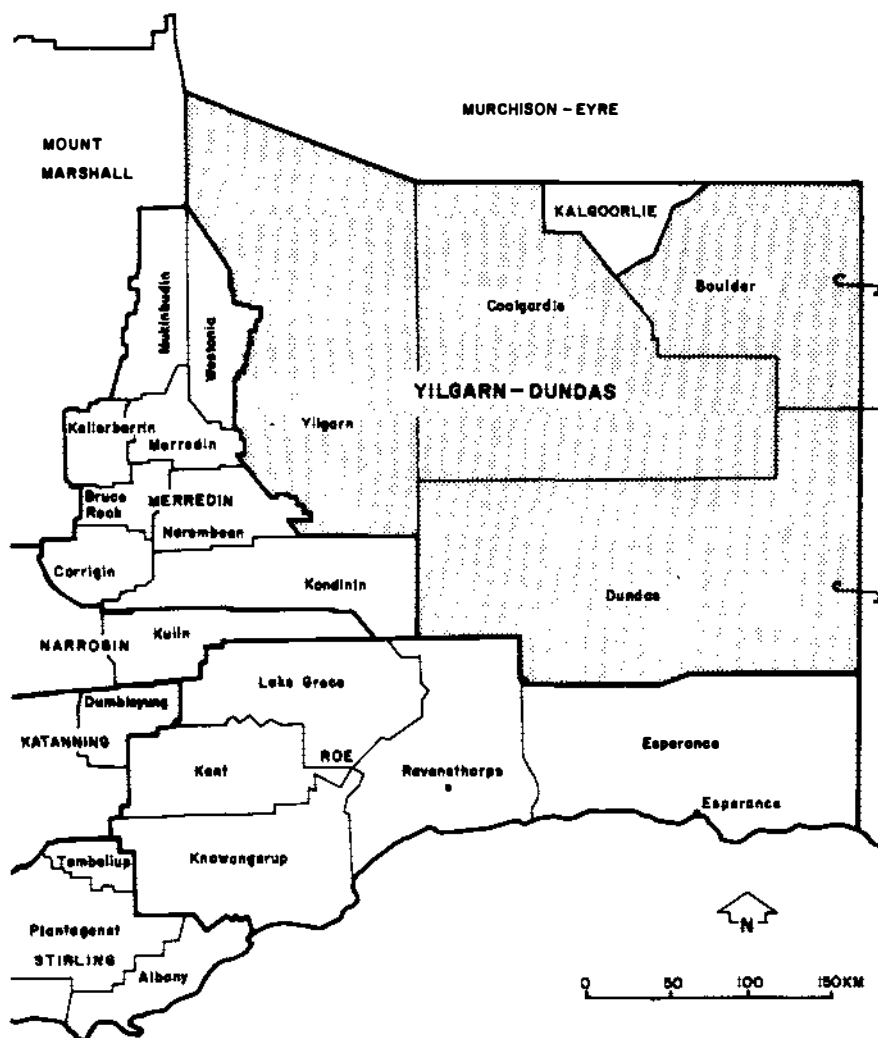


Fig. 7: Yilgarn — Dundas 1976.

In the 1966 redistribution, overall Assembly representation in Western Australia was increased by one MLA to 51. For Merredin-Yilgarn, the minor pre-existing intrusion into the wheatbelt was extended with the re-inclusion of the shire of Narembeen together with Kondinin and Kulin (Figure 6). Together with Merredin-Yilgarn, the South East Province now included the new Assembly districts of Boulder-Dundas and Kalgoorlie.

Merredin-Yilgarn's wheatbelt orientation was partially strengthened by the 1972 redistribution which saw the excision of Coolgardie (which was added to Boulder-Dundas), the addition of Corrigin, the re-inclusion of Bruce Rock, but yet the exclusion of Kulin Shire (Figure 6). Presumably, the electoral population of the latter was needed elsewhere. The district still remained a part of South East Province along with Boulder-Dundas and Kalgoorlie.

The 1976 redistribution increased the number of Assembly districts to 55 and the number of Council provinces to 16. The district of Merredin-Yilgarn was abolished with a new district of Merredin being created containing all of the wheatbelt shires of the former district. Yilgarn shire was attached to the former district of Boulder-Dundas to comprise the new district of Yilgarn-Dundas (Figure 7). The latter, with Kalgoorlie and Merredin, comprised a reconstituted South East Province.

The final remnants of separate state representation for Yilgarn were removed in the 1982 redistribution when Yilgarn-Dundas was abolished. The shire became one of fourteen in the new wheatbelt district of Mount Marshall. Electoral representation of the shire at the state level had come full circle since its lack of distinctive territorial identity in the first map of electoral boundaries of 1890.

WA Federal Electoral Redistributions

The problems of marginality and transition between wheatbelt and gold in terms of the territorial representation of interests evident at the state level also emerge, but to a lesser degree, at the federal level. This is partly a result of fewer federal electoral divisions than state districts in Western Australia and also partly because there have been fewer electoral redistributions at the federal level in WA (or at least fewer redistributions that parliament has accepted!). Prior to the second world war, reports of federal electoral commissioners for WA were more likely to be rejected or allowed to lapse than be accepted. The former occurred in August 1903, June 1905, October 1909, March 1931 and May and November 1934. In contrast, the reports of July 1906, February 1913, September 1922 and July 1937 were accepted. The September 1962 report on WA was the only one among seven which lapsed after the second world war, on the other hand, due to objections by the Country Party.

The electoral boundaries for the first federal election of March 1901 were delimited by the WA premier, John Forrest. His electoral proposals for the five WA divisions of Coolgardie, Fremantle, Kalgoorlie, Swan and Perth, which contained no provision whatever for modification or objection, were proclaimed in December 1900. The Yilgarn district found itself to be part of the southern section of the Coolgardie division.

WA's level of federal representation remained unchanged after the 1906 redistribution and Yilgarn continued to be located within the Coolgardie division (Figure 8). A major change which occurred in 1913 abolished the Coolgardie division and replaced it with a new Dampier division. As part of this redistribution, Yilgarn was located within a revised Kalgoorlie division. In 1922, WA still continued to possess five federal electoral divisions, but the redistribution resulted in the removal of Dampier and the addition of Forrest on the south coast. Yilgarn remained a part of Kalgoorlie (Figure 9). In 1937, although the number of divisions as well as their names remained the same, the boundaries were modified. These changes had no effect, however, on the location of Yilgarn within Kalgoorlie. The federal redistribution of 1949, on the other hand, resulted not only in a major change to the electoral representation of WA, but also to that of Yilgarn. The overall level of representation increased from five to eight with the addition of the new divisions of Canning, Curtin and Moore. Possibly, in order to catch electoral

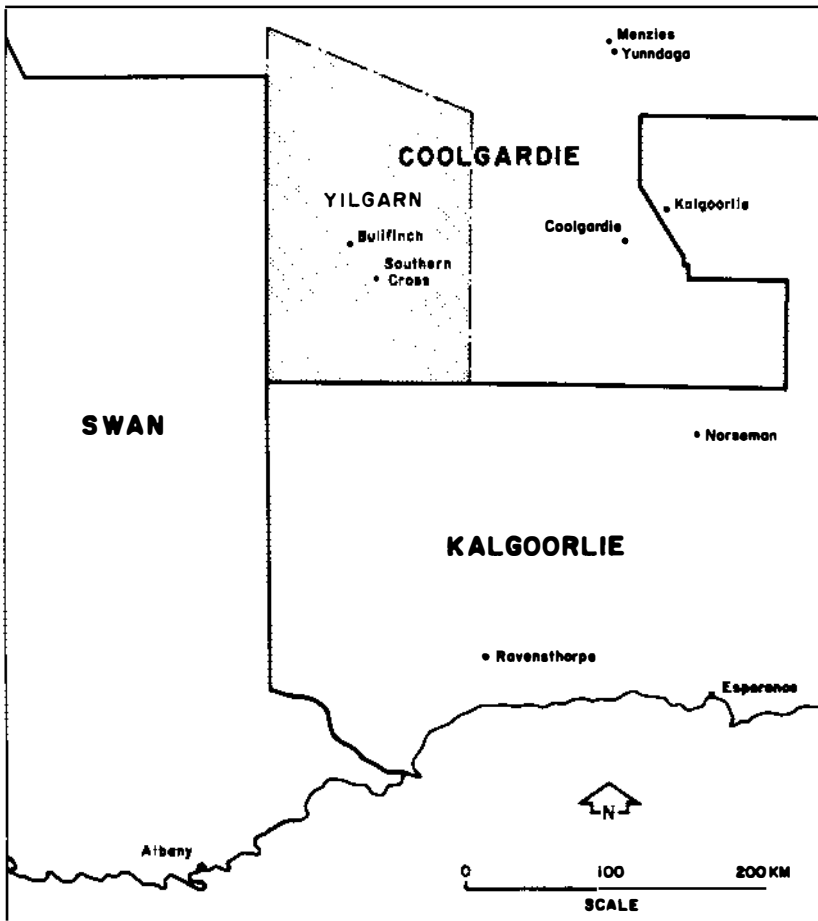


Fig. 8: Southern Coolgardie division 1906.

population for Moore, Yilgarn was re-allocated away from Kalgoorlie (Figure 10). The territorial representation of Yilgarn's interests at the federal level immediately changed, consequently, from a goldfields to a wheatbelt orientation. This orientation was reversed after the 1955 redistribution which saw the addition of a ninth division (Stirling) in WA. This resulted in the return of Yilgarn from Moore to Kalgoorlie (Figure 11).

In 1968, significant variations in the electoral populations of federal divisions necessitated an electoral redistribution. In WA, although all nine division names remained the same, some of the electoral boundaries were changed, and although Yilgarn remained within Kalgoorlie, Merredin was a notable attachment. The 1974 redistribution saw WA's federal representation increased to ten with the addition of Tangney. The subsequent restructuring of electoral boundaries to accommodate a new division had no effect upon Yilgarn, although Merredin was returned to Moore. Yilgarn's federal representation was also unaffected by the 1977 redistribution which delimited no new divisions for WA. At

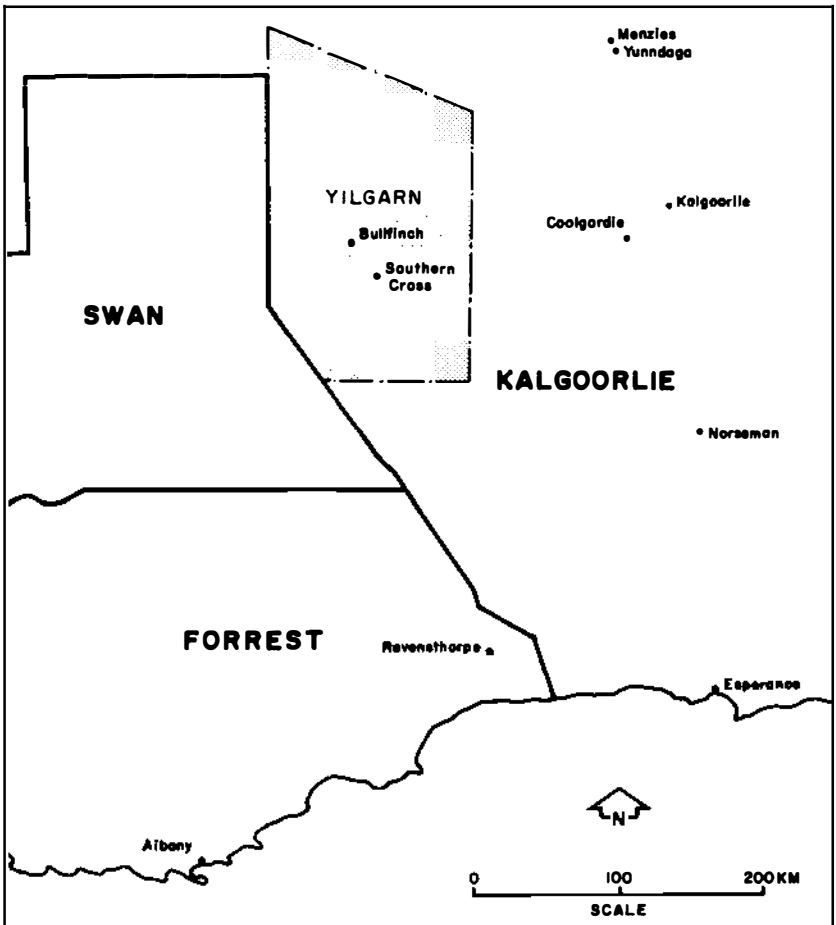


Fig. 9: Yilgarn in Kalgoorlie Division 1922.

the 1980 redistribution, on the other hand, federal representation for WA increased to 11 with the addition of the new division of O'Connor. This necessitated some changes to the southern boundary of Kalgoorlie, but Yilgarn still remained in the latter. At the most recent redistribution of 1984, WA's federal representation was increased to thirteen with the creation of the divisions of Cowan and Brand. In order to accommodate the new divisions, the electoral population of Kalgoorlie was reduced by more than 5000 to 67,450.

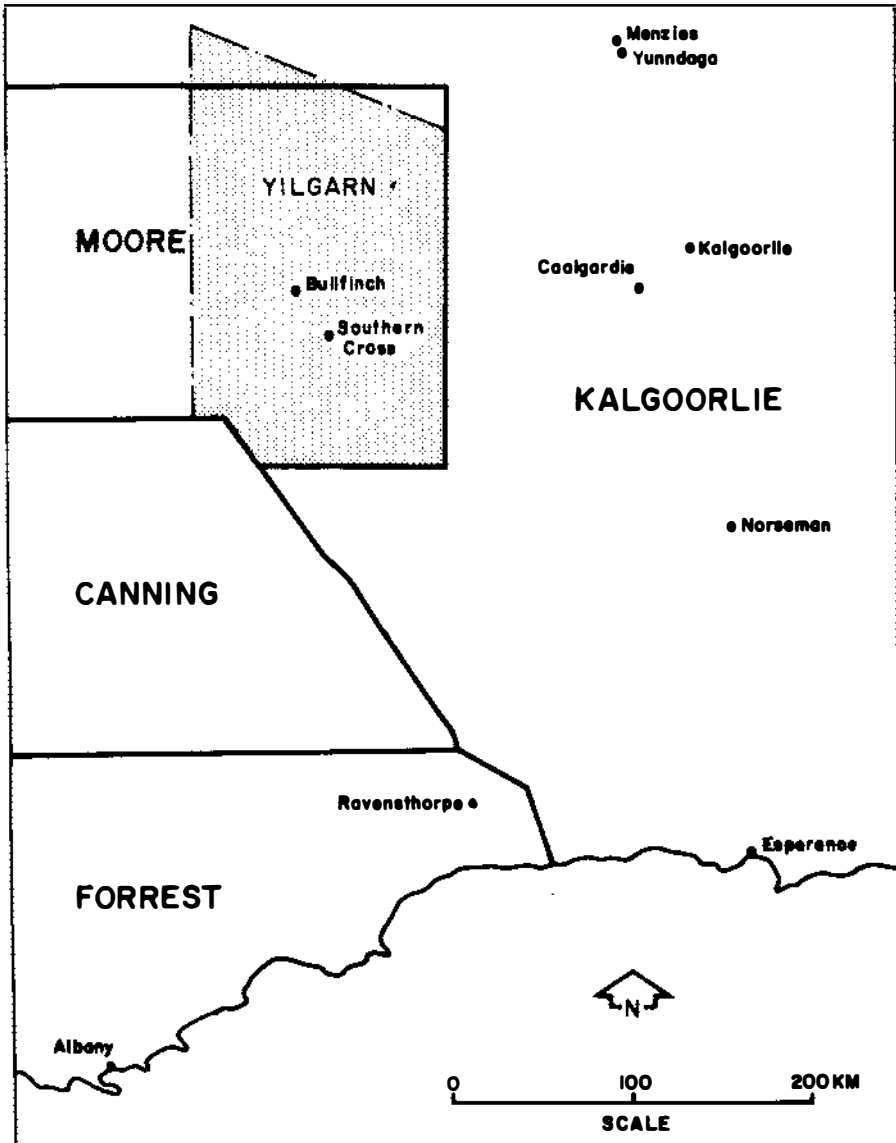


Fig. 10: Yilgarn in Moore Division 1949

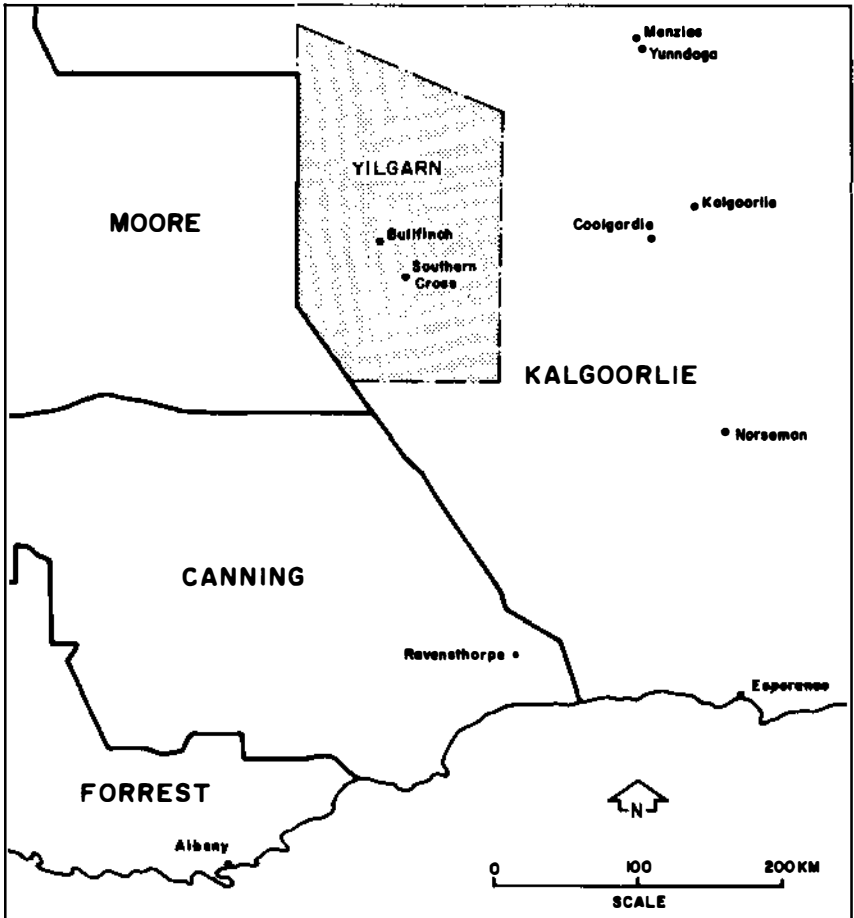


Fig. 11: Yilgarn in Kalgoorlie Division 1955.

Political Party Representation of Yilgarn Shire

Political party representation at any one time in any electoral system is primarily a product of the interaction of two geographical distributions — namely, between the distribution of electoral boundaries and the distribution of political party supporters. The way in which the changing nature of the political party representation of Yilgarn shire can be explained, therefore, is via a consideration of the ways in which it has been attached to electoral entities of differing socio-economic complexion at both state and federal levels.

State Party Representation

For the Legislative Assembly, the first member to represent the district of Toodyay within which Yilgarn was located was Bernard Clarkson who defeated Charles Dempster by 8 votes out of 158 in the first state parliamentary election of December 19, 1890.



*Plate 1: Charles Moran, M.L.A., first member for Yilgarn, 1894.
(Courtesy Battye Library)*

Following the 1893 redistribution, the first member for the new district of Yilgarn was Charles Moran, an Independent who had a majority of 34 votes out of 371 over the Opposition Party candidate, Lancel De Hamel at the state election of July 9, 1894. Mr Moran was succeeded by another Independent, William Oats who defeated both a Ministerialist and an Opposition candidate in the 1897 election. Mr Oats was the first member with local Yilgarn connections and was a well-known and active personality. Among his many offices, Oats was a former manager of Fraser's mine and was the first chairperson of the Yilgarn Road Board.

The emergence of the Labor Party saw a new element introduced into state politics in the 1901 election. For Yilgarn electoral district, however, the sitting member Oats ran for the Opposition Party and defeated the first Labor candidate, R. H. Sneddon by 39 votes in a four-way contest.

After the 1901 election, the Labor Party was very strong in the WA goldfields, and this was reflected in Yilgarn where goldmining was the principal industry. As a separate electoral unit, Yilgarn was represented by Labor members thereafter from 1904 to 1930, when the district was abolished, irrespective of redistributions and internal Labor Party divisions. The first Labor member for the district, Austin Horan, was elected by 440 votes over a Ministerialist candidate at the 1904 election when the number of voters in the district had reached a peak of 6420 compared with 989 in 1901 and 2059 in 1905. Mr Horan was re-elected in 1905 with a reduced margin over an Independent Labor candidate, F. Reid, in the first of a number of electoral contests between competing Labor candidates in the region. Reid in fact succeeded Horan as Labor's candidate for the 1908 election and convincingly defeated a Ministerialist candidate by more than 600 votes. However, in 1911, Horan contested his third election (this time as an Independent) but was easily defeated by the endorsed Labor candidate, Charles Hudson.

Although Hudson was re-elected for Labor in 1914, he ran as a National Labor candidate in 1917 and was narrowly defeated by Official Labor's Alexander McCallum in a four-way contest. The Labor split during the first world war reflected the deep division within Australia over the question of conscription. The debate was especially bitter in Western Australia, since in each of the defeated national conscription referenda of October 1916 and December 1917, WA voters (along with Tasmanian voters) gave affirmative majorities. Within Western Australia, National Labor was pro-conscription and Official Labor was anti-conscription. The split continued after the war, with National Labor eventually being eliminated.

Hudson ran again in the 1921 election as a National Labor candidate, but this time was defeated by Edwin Corboy, a former federal Labor member for Swan. Corboy was re-elected with an increased majority in 1924, but his majority was cut significantly by J. Blake, a Country Party candidate, in 1927. The strength of the Country Party vote reflected the relative importance of agriculture in the Yilgarn district. While there was strong support for the Country Party among Yilgarn farmers, Southern Cross and other towns continued to support Labor. In addition, by that time the number of enrolled voters in Yilgarn had fallen to 1389 with more than 70 per cent being male, compared with an average male enrolment of 56 per cent from 1947 to 1980.

The relatively low electoral population of Yilgarn was instrumental in its abolition at the 1929 redistribution and its amalgamation (without Ravensthorpe which had been



Plate 2: William Oats, M.L.A. 1897-1904, M.L.C. 1904-1910; former manager Fraser's Mine, Southern Cross; first mayor of Southern Cross, 1892-95; first chairman, Yilgarn Road Board, 1982-95.

(Courtesy Royal Western Australian Historical Society)



Plate 3: Lionel Kelly, M.L.A. for Yilgarn, 1941-1968; former Bullfinch greengrocer; chairman, Yilgarn Road Board, 1930-31, 1936-43.

excised) with Coolgardie in a new goldfield district of Yilgarn-Coolgardie (Figure 4). This amalgamation not only removed a fairly safe Labor seat, but it also served to heighten internal tensions within the Labor Party since the new district was contested by two Labor candidates at the 1930 election. This election was especially significant in the history of Yilgarn party representation not only because there were two Labor candidates, but because each had strong but different internal territorial support, and because the result was close and there was a subsequent appeal to it.

It appears that the Labor Party was unable to resolve the question of who should be the endorsed candidate consequent upon the amalgamation of the former Yilgarn and Coolgardie electoral districts, both of which had sitting Labor members. Both members therefore stood and, as a result produced considerable ill feeling within the party. The close result reflected the split Labor vote which allowed Price, the Country Party candidate, to obtain the highest first preference vote (848) with Corboy second (678) narrowly ahead of Lambert (674). After the redistribution of preferences, the sitting Yilgarn member, Corboy, was re-elected after receiving strong support (50 per cent of the total valid vote) in the largest polling place, Southern Cross. His "opposition" Labor candidate, George Lambert, on the other hand, had a strong base in Coolgardie (66 per cent of the total valid vote) which he had previously represented since 1916. Lambert appealed against the result to a Court of Disputed Returns on the grounds that 83 voters at a number of itinerant woodline camps were actually located outside of the electoral district at the time of the election but their enrolments had not been changed. The woodline vote strongly favoured Corboy, and, if it had been disallowed, would have resulted in his elimination and Lambert's election. The appeal was dismissed, however, on the grounds that voters were permitted to vote in the district in which they were actually enrolled.

Ironically perhaps, George Lambert succeeded Edwin Corboy as Labor member for Yilgarn-Coolgardie in 1933 when he comfortably defeated an Independent Country Party candidate. Although Lambert remained the district's member until his death in 1941, his local hold on the district gradually declined and he was re-elected with a substantially reduced majority in 1936 and was elected on preferences in 1939 over an Independent Labor candidate, Lionel Kelly.

Lionel Kelly succeeded Lambert for the district of Yilgarn-Coolgardie at the 1941 by-election when he stood as an Independent Country Party candidate. Kelly was a prominent local identity and had been active in local government as chairperson of the Yilgarn Road Board from 1936 to 1943. The 1941 by-election result was very close with Kelly defeating the endorsed Labor candidate by 113 votes. At Southern Cross polling place, Kelly won fairly comfortably. However, his support base was not only confined to the mining towns for he was relatively strong in the farming areas. He had strong support within Yilgarn shire and especially in Bullfinch where he had been a storekeeper. Before the 1943 election at which he retained his seat comfortably, Kelly joined the Labor Party and was returned unopposed for Labor in 1947.

The redistribution which was promulgated in 1948, similar to that of its predecessor in 1929, resulted in no change in the number of Lower House members. Both redistributions, in other words, were concerned with the territorial rearrangement of the representation of voters' interests. The state-wide impact of these two redistributions on this representation is worthy of detailed study, especially in terms of its implications for

the competing political parties. Interestingly, both redistributions potentially had an important impact on the representation of political party interests in the Yilgarn region. In 1929, Yilgarn electoral district was abolished and amalgamated with another Labor district, and after the resultant district of Yilgarn-Coolgardie appeared to be safely Labor on the basis of the 1947 election, the 1948 redistribution resulted in *its* abolition. As was noted above, the newly created district of Merredin-Yilgarn had more of a wheatbelt flavour than its predecessor. At the 1950 election, however, even though the addition of Merredin yielded the Liberal and Country League an advantage of approximately 141 votes, Lionel Kelly comfortably defeated the LCL candidate in a two-way contest.

For the 1953 election, Kelly again was elected unopposed. He was appointed Minister for Mines and Fisheries in the Hawke government, and in 1954 was given the Industrial Development portfolio in addition. The redistribution promulgated in 1955 followed a similar pattern to the previous two as far as Yilgarn representation was concerned. Even though its electoral population had actually increased from the 1950 to the 1953 election, the district was reconstituted in 1955 to less of a goldfields and much more of a wheatbelt orientation (Figure 5). In terms of party representation, the removal of Coolgardie to Eyre from Merredin-Yilgarn disadvantaged the ALP by more than 300 votes based on the 1950 election result. Furthermore, the addition of Bruce Rock gave Labor only 35 per cent of the total valid vote while the addition of Narembeen yielded Labor only 27 per cent. The increase in Labor support both at Bullfinch and Merredin in particular did much to offset the disadvantages caused by electoral boundary changes. Whereas the addition of Bruce Rock and Narembeen were disadvantageous to Labor, the Country Party candidate benefitted significantly. The wheatbelt reorientation of Merredin-Yilgarn which led to the introduction of a Country Party candidate, coupled with the preferential voting system, were collectively of potential importance to the likelihood of continued Labor Party representation in the district. In the event, Kelly's 1950 majority was reduced by about 5 per cent at the 1956 election. From December 1957 until the resignation of the Hawke government in April 1959 Lionel Kelly was Minister for Lands, Agriculture and Fisheries.

The 1959 election saw the first straight ALP-Liberal contest in Merredin-Yilgarn. Interestingly, the lack of any Country Party candidate appeared to be to Labor's benefit, especially at Bruce Rock and Narembeen, and Kelly's majority increased by almost 30 per cent. Interestingly too, a Liberal-ALP contest was to happen only once more while Yilgarn had any significant level of separate representation, and that was at the 1980 election, after which it was absorbed into Mount Marshall. Although the re-inclusion of Coolgardie after the 1961 redistribution was to Labor's advantage, Kelly's majority was severely reduced at the 1962 election. This was partly a consequence of the fact that Kelly's opponent was a Country Party candidate who received strong support especially at Bruce Rock. Not surprisingly, therefore, the 1965 election was a three-cornered ALP-LCL-CP contest, and this led to a reduction in Kelly's majority to only 288 votes or 6.8 per cent of the total vote.

Three sets of events combined thereafter to cause the first defeat of a Labor member in the district at the Assembly level since federation. The addition of Narembeen, Kondinin and Kulin after the 1966 redistribution turned Merredin-Yilgarn again towards the wheatbelt and to the advantage of non-Labor parties, especially the Country Party

(Figure 6). The second event was the decision by Lionel Kelly not to contest the 1968 election. He was succeeded by James McMillan Brown. The electoral importance of this change cannot be underestimated since Lionel Kelly had been the local member for 25 years and had served as a minister in the Hawke Government in the mid-1950s. The third event was the decision by Mr Evans to run as an Independent Country Party candidate. This resulted in a four-way contest and was especially important in Merredin where Evans received substantial support. Even though James Brown received the largest proportion of the total valid vote (40 per cent), he was defeated on preferences by Jack Stewart, the LCL candidate, by 327 votes. Stewart had previously run unsuccessfully in 1965.

The decision by Mr Evans to run as a DLP candidate and the introduction of Mr Legge as an Independent produced an interesting five-way contest for the 1971 election as both Brown and Stewart were recontesting the seat. Legge, who did relatively well in Hyden, received the lowest vote, and the largest proportion of his preferences drifted to Labor's Brown. However, even though the largest proportion of DLP preferences went to the Country Party, Brown won the seat with a 55 vote majority.

The exclusion of Coolgardie, the addition of Corrigin and the re-inclusion of Bruce Rock after the 1972 redistribution resulted in Merredin-Yilgarn having more of a wheatbelt orientation for the 1974 election and produced an initial electoral disadvantage to the ALP (Figure 6). The election was a three-way contest between the sitting ALP member, a Liberal candidate and Hendy Cowan who ran for the National Alliance. In essence, the National Alliance was a short-lived merger of the Country Party and the DLP in an attempt to offset mutually declining electoral support. In the event, Brown was defeated by Cowan as a result of a strong drift of Liberal preferences to the Alliance.

The 1976 redistribution saw the abolition of Merredin-Yilgarn, the creation of a separate Merredin district and the attachment of Yilgarn shire to the former Boulder-Dundas which was held by Tom Hartrey for the ALP. The new district of Yilgarn-Dundas therefore returned to a goldfields orientation (Figure 7). Hartrey retired before the 1977 election and was succeeded by another ALP lawyer, Julian Grill, who won the seat fairly comfortably over a Liberal candidate and significantly increased his majority at the 1980 election.

The abolition of Yilgarn-Dundas after the 1982 redistribution not only resulted in the submergence of any adequate local representation for Yilgarn shire in state parliament, but also virtually ensured that in any subsequent elections for its host district, Mount Marshall, representation would be by non-ALP members. In a NP-NCP-ALP-Lib contest for the 1983 election, for example, the Labor candidate, Robert Couzens, received the lowest number of first preference votes. Even though a majority of his preferences went to the National Party, the Liberal candidate, William McNee narrowly won the election. Couzens ran again in the 1986 election, only to see his preferences lead to McNee's defeat and the election of Morton Schell for the National Party in a three-way contest.

The pattern of political party representation for the Upper House has been much less complex in general than that for the Assembly. As was noted above, for the Legislative Council, prior to the 1899 redistribution, Yilgarn electoral district was part of East province along with a number of other wheatbelt districts. The first three MLCs, elected at the 1894 Council election for East Province were Richard Burges, Richard Hardey and Charles Dempster. The only change to the election of 1900 was that Hardey was

succeeded by John Taylor in the 1896 election. For virtually all Council elections after the 1899 redistribution until the redistribution of 1982, Yilgarn's representation at the Upper House was predominantly in a goldfield district by Labor members who tended to represent the area for extended periods of time. This was especially the case after the Council election of 1908, although the decade following the first world war tended to be dominated by Independents and members representing the National Party, some of whom had switched from Labor.

The 1899 redistribution saw Yilgarn relocated in North East Province with Coolgardie, Dundas and North Coolgardie, and Charles Sommers was elected in the election of 1900. The amendments of 1902 placed Yilgarn in a modified goldfields-based South Province. In the 1904 election, William Oats, who had represented Yilgarn in the Assembly, was elected by a 126 vote majority. Oats represented South Province for six years and died shortly after in April 1911. John Glowery represented the enlarged South Province following the 1904 redistribution after the election of 1906. In 1908, John Kirwan, a journalist and former Free Trader turned Independent defeated Jabez Dodd, a union secretary, by 233 votes. Kirwan became a long-serving Independent MLC for South Province until his retirement in 1946. He defeated Labor candidates in the elections of 1914, 1920 and 1926, and was returned unopposed in 1932 and 1938. Throughout all of this time, Yilgarn shire remained in South Province, although the boundaries of the latter changed in 1911 and 1929.

The person first defeated by Kirwan, Jabez Dodd, ran successfully for Labor in 1910. Mr Dodd represented South Province to his death in 1928 including being re-elected twice unopposed in 1916 and 1922. James Cornell was another long-serving member of South Province from his election as a Labor candidate in 1912 to his death in 1946. Cornell, like Dodd, switched to the National Party in 1917 and was elected as a National candidate in the 1918 Council election. After a fall in his vote in 1924, he was re-elected in 1930, 1936 and 1944 with an increasing share of the total vote.

Following the death of Jabez Dodd, Charles Williams was elected for Labor in the 1928 Council election for South Province. He continued to represent South Province for Labor for 20 years until his retirement in 1948, having been re-elected unopposed in 1934 and 1940. George Bennetts was elected for Labor in South Province in 1946 following Kirwan's retirement. The 1947 redistribution saw the then Assembly district of Merredin-Yilgarn reconstituted as part of a South East Province in 1950 along with Boulder and Eyre and Yilgarn shire remained in South East Province until the 1982 redistribution. George Bennetts was re-elected unopposed for Labor for South East Province in 1952 and was re-elected in 1958 with more than 83 per cent of the total vote. He retired in 1965, having served as an MLC for almost 20 years.

Robert Boylen, who succeeded James Cornell after his death in 1946 was re-elected for Labor in the 1950 election for South East Province, and represented the Province until his death in 1955.

With Charles Williams' retirement in 1948, John Cunningham was elected unopposed for the Liberal and Country League in the 1948 election for South Province. Cunningham was narrowly defeated by Labor's James Garrigan in 1954 but was re-elected for the reconstituted South East Province in the election of 1956. He was narrowly defeated again, however, in the 1962 election by the ALP candidate, Robert

Stubbs. James Garrigan was re-elected in 1960 and 1965 and served until his death in 1971.

Robert Stubbs was re-elected unopposed for the ALP in 1968, won again in 1974 despite redistributions in 1966 and 1972 and retired in 1980. Following the death of James Garrigan in 1971, South East Province was won convincingly by Ronald Leeson from a DLP candidate. Leeson was re-elected for the ALP in 1977 for a reconstituted South East province with a substantially reduced share of the total vote. The last MLC to represent a South East Province which contained Yilgarn shire was James Brown, the former ALP member for Merredin-Yilgarn who was defeated by Hendy Cowan following the 1972 redistribution. Brown was elected in 1980 with an 8 per cent majority over his Liberal opponent.

As was noted earlier, the redistribution of 1982 ended both Yilgarn's connections with the goldfields in terms of collective interests and its association with ALP representation in the Legislative Council. It became part of Central Province which after the 1983 Council election was represented by William Atkinson, a Liberal, who won on preferences in a Lib-NP-NCP-ALP contest. Mr Gayfer became the other member for Central Province after winning for the Country Party on preferences in a CP-Lib-ALP contest in the 1986 Upper House election.

Federal Party Representation

The historical pattern of political party representation of Yilgarn shire at the federal level is relatively uncomplicated compared with that of the state. For the most part, the shire has been contained within the electoral division of Kalgoorlie, apart from the earliest elections from 1901 to 1913 when it was located within Coolgardie division and for the period 1949-1955 when it was in Moore. Federally, therefore, Yilgarn's representation has had more of a goldfields than a wheatbelt orientation. As such, this has meant that the shire has generally been represented federally by Labor MHRs even though the electoral boundaries of Kalgoorlie have been modified periodically. Those occasions when Kalgoorlie was not won by Labor have generally been associated with unusual electoral circumstances. This is not meant to imply, however, that Kalgoorlie at the present time is a safe ALP seat, especially in view of long-term voting trends which will be discussed in the final section of this chapter.

From 1901 to 1913 when Yilgarn shire was within Coolgardie division, it was represented by Hugh Mahon for Labor (Figure 8). Mahon was one among a number of early migrant members in Australia who had been active in Irish politics. Electoral divisions for the 1903 election were to have a quota of 23,338 with a maximum allowable deviation of 10 per cent. Coolgardie's electoral population of 21,686 was 7 per cent below quota and was 78 per cent male. After the 1906 redistribution, Mahon won Coolgardie with a majority of more than 4000, with only one-third of eligible voters turning out to vote. For the 1910 election, he increased his majority to more than 6000 votes with a 56 per cent turnout.

Yilgarn was placed within Kalgoorlie division after the 1913 redistribution which abolished Coolgardie (Figure 9). Charles Frazer, who had represented Kalgoorlie federally for 10 years, was elected unopposed at the 1913 election. After his death, Mahon was elected to Kalgoorlie unopposed in a December 1913 by-election, and was



*Plate 4: Hugh Mahon, M.H.R., first federal representative of Yilgarn district, 1901.
(Courtesy Batty Library)*

re-elected, again unopposed, in the election of 1914. At the May 1917 election, however, which was fought on the conscription issue, Mahon was narrowly defeated by a National Party candidate, Edward Heitmann who had previously been a state member for Geraldton, but had decided to resign his state seat to contest Kalgoorlie.

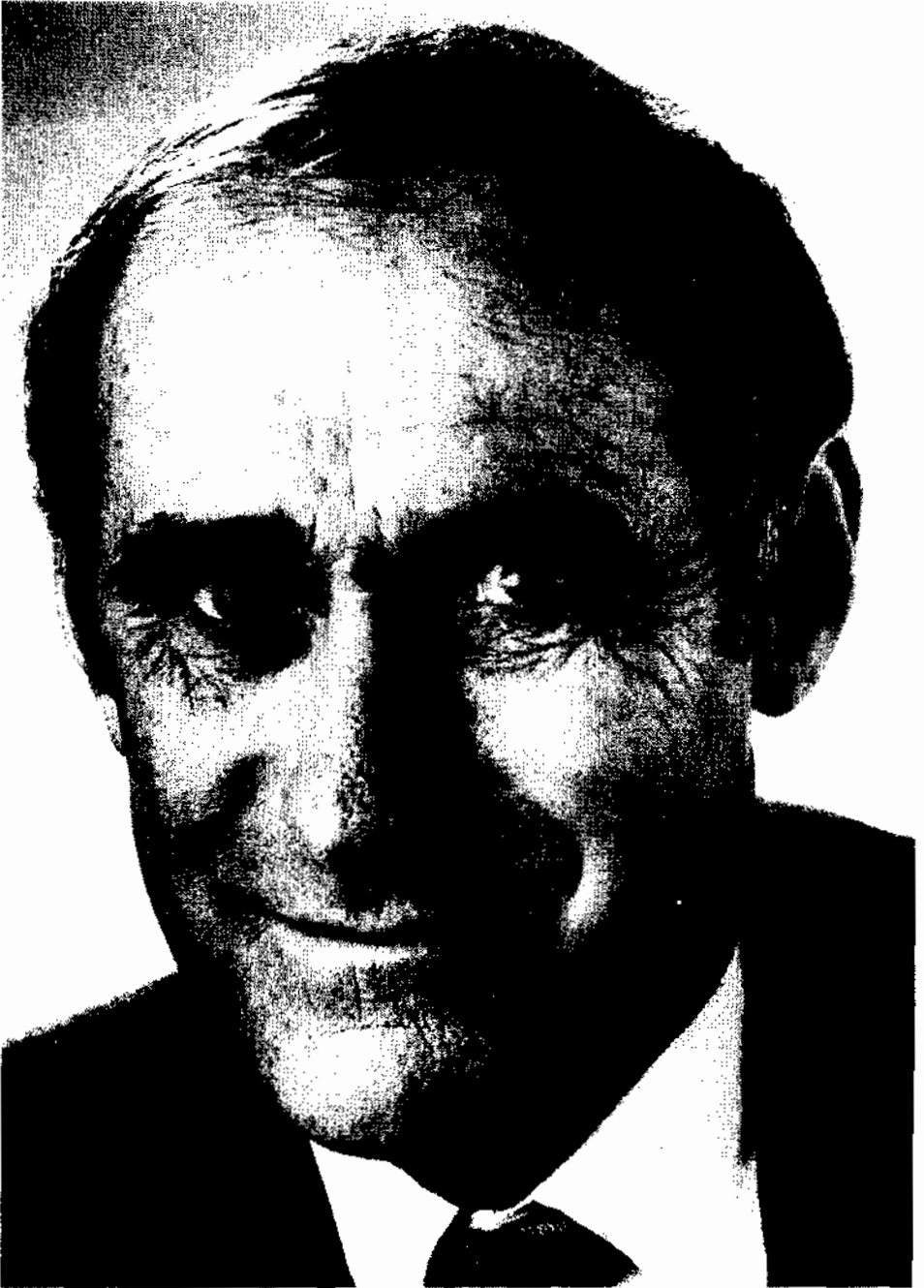
Mahon narrowly regained his seat at the 1919 election but during the ensuing parliamentary session he obtained the dubious distinction of being expelled for making a "disloyal statement". Being an Irish Catholic, his Protestant parliamentary peers apparently regarded him as possessing questionable national loyalty. Their suspicions were fuelled by a speech which Mahon delivered to a crowd of more than 3000 which was vigorously critical of British policy in Ireland. The meeting later unanimously passed a motion supporting the creation of an Australian republic. Shortly after, the matter was raised in a rather lengthy and stormy parliamentary debate at which a motion was passed on party lines to declare the Kalgoorlie seat vacant. Having been the only member ever removed this way, Mahon duly lost the by-election in December 1920 to a National Party candidate, George Foley.

Foley only lasted one term, however, since Albert Green, a former state Labor member for Kalgoorlie defeated him in 1922. Green was to represent Kalgoorlie for 18 years thereafter until his death in 1940. He was re-elected with 56 per cent of the vote in 1925 and was unopposed in 1928. His share of the vote only increased marginally in 1929 (to 57 per cent) and even declined slightly in 1931 (to 56 per cent), even though he was federal minister for defence from 1929 to 1931, and thereafter postmaster general in 1931-2. However, Green was re-elected unopposed in 1934, received a record 71 per cent of the vote in 1937 and was again unopposed in 1940.

The by-election of 1940 following Albert Green's death resulted in a narrow victory for the Labor candidate Herbert Johnson. He, like Green represented Kalgoorlie division for 18 years until his retirement in 1958. He was returned with a significantly increased majority in 1943 and increased his share of the vote to 67 per cent in 1946. However, as was noted earlier, the 1949 redistribution re-allocated Yilgarn shire to the division of Moore (Figure 10). This essentially wheatbelt orientation resulted in Country Party representation for three elections.

For the election of 1949, Hugh Leslie, a former state Country Party member for Mount Marshall resigned his state seat to contest the federal division of Moore. In the event, he succeeded on the preferences of Labor's Kevin Byrne. Leslie was re-elected in 1951 with 58 per cent and again in 1954 with 56 per cent of the total vote.

The redistribution of 1955 replaced Yilgarn shire back in Kalgoorlie and Herbert Johnson resumed as the local member after his win in the 1955 election (Figure 11). The retirement of Johnson in October 1958 probably had a significant effect upon the result of the 1958 federal election in Kalgoorlie. Even at the 1955 election, Kalgoorlie was not a safe Labor seat with 59 per cent of the total vote. The loss of the personal following of a long-standing member contributed to a Liberal victory on preferences in November 1958. In addition, the formation of an "Anti-Communist Labor Party" and then the Democratic Labor Party in the mid-1950s had an important impact on local federal party representation in Yilgarn. Official DLP policy at that time was to allocate preferences to non-Labor candidates. In the 1958 federal election for Kalgoorlie, Peter Browne succeeded in



*Plate 5: Senator John Panizza. Yilgarn farmer; president, Yilgarn Shire, 1982-87; elected to Australian Senate 1987.
(Courtesy Senator John Panizza)*

narrowly defeating the ALP candidate, Frederick Collard, in a four-way contest by 179 votes after having received more than 80 per cent of DLP preferences.

However, Browne was defeated by Collard on preferences in another 4-way contest by 359 votes in 1961. Frederick Collard became another long-standing member for Kalgoorlie and held the seat until 1975 when he was defeated in the post-Whitlam sweep. In 1963, Collard defeated Browne outright in another four-way contest with 52 per cent of the total vote which increased to 58 per cent in 1966 and again slightly in 1969 despite the redistribution of 1968, but declined slightly in 1972 to just over 57 per cent of the total vote. The 1974 election following the redistribution represented one of the strongest challenges to Labor in Kalgoorlie, firstly because it was a highly contested election with five candidates, and secondly because the Liberal candidate, John Cotter, was a member of the Pastoralists' and Graziers' Association. In the event, Collard retained the seat with just over half of the total valid first preference votes.

However, the anti-Whitlam backlash led to Collard's defeat by Cotter in the election of December 1975. Labor's share of the total vote in Kalgoorlie dropped to 44 per cent, which apart from the 1963 election, was the lowest for 32 years. After the redistribution of 1977, Frederick Collard did not re-contest Kalgoorlie, and was succeeded as ALP candidate for Kalgoorlie by Brian Conway, who, in the December 1977 election, obtained 37 per cent of the total vote, which was the lowest Labor share ever in the division. Consequently, John Cotter was relatively easily re-elected in that election.

Labor's fortunes changed at the election in 1980 when the aggressive Graeme Campbell defeated Cotter narrowly with the assistance of Democrat preferences. Campbell succeeded in increasing the ALP share of the first preference vote by 8 per cent, and in March 1983 he won with an outright majority. Following the redistribution of July 1984, however, when the electoral size of Kalgoorlie was reduced by more than 5000 to 67,450, Labor's share of the total vote fell to 51 per cent. The competitive character of the four-way contest in the December 1984 election contributed to this decline. Whereas the 1980 election had been contested by Labor, Liberal and Democrat candidates, the new element of competition in the 1984 election came from the Nuclear Disarmament Party or NDP. Kalgoorlie was the only federal electoral division in WA contested by the NDP because the party alleged that Mr Campbell had abandoned his past opposition to the mining and export of uranium. In the event, the NDP share of the total valid vote (4.8 per cent) was higher than that obtained by the Democrats. Campbell was re-elected in the 1987 federal election. At the same election, a prominent local identity and former Shire President, John Panizza, was elected as a Liberal to represent Western Australia in the Senate.

Voting Behaviour in Yilgarn Shire

The third and final aim of this chapter is to describe the overall pattern of voting behaviour in Yilgarn shire, paying particular attention to its relationship with the voting patterns evident in host electoral units at the state and federal levels. As was noted in the introduction, an explanation of the pattern of change lies outside of the scope of the current research. Although there have been considerable variations either side of the 50 per cent majority line, there has been an overall pattern of decline in the proportion of

electors in Yilgarn shire voting Labor, especially since the time of the split in the mid-1950s and especially for voting at the federal level.

State Voting Behaviour

The overall decline in Labor voting in Yilgarn shire at the state level can be illustrated by comparing percentage votes from 1924 to 1986 for Southern Cross (Figure 12). As can be seen, apart from a slight increase from 1924 to 1927, and again in 1936, the Labor vote at Southern Cross declined from more than 74 per cent in 1924 to 32 per cent in 1943. Interestingly, the period of greatest Labor success in Southern Cross followed the 1948 redistribution and the creation of the new district of Merredin-Yilgarn, which was represented at that time by Lionel Kelly. Since the 1956 election, however, Labor's share of the vote fell gradually until in 1968 it fell below 50 per cent for only the third time (Figure 12). In the six state elections after 1968, Labor's vote at Southern Cross has exceeded 50 per cent only twice, in 1980 and in 1986.

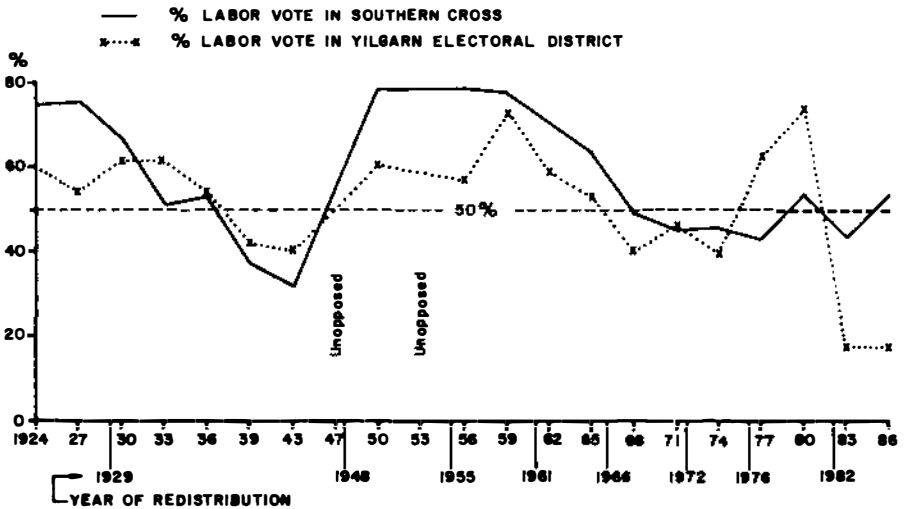


Fig. 12: Percentage Labor Assembly Vote 1924-86.

One fairly crude means of determining whether the interests of Yilgarn shire were being fully represented within the host electoral district is to compare the changing Labor vote at Southern Cross with that for the host district (Figure 12). For state elections from 1924-1986, for example, the Labor vote of the host district only exceeded that for Southern Cross seven times. For two-thirds of the elections, the host vote has been lower, and in some cases appreciably lower. This was the case in 1927 and 1956, but reached its lowest level from 1983. It would appear that Yilgarn shire's commonality of interest with Mount Marshall has been fairly low following the 1982 redistribution. Furthermore, whereas the greatest level of Labor support in Southern Cross occurred in 1950 and in 1956 as part of Merredin-Yilgarn, the greatest level of Labor support in the host district occurred in 1980, immediately after the abolition of that district and the creation of Yilgarn-Dundas.

The idea of commonality of interest in terms of electoral representation can also be extended to the Legislative Council in order to examine changes in voting patterns for the winning candidate for Southern Cross and the host Council province (Figure 13). The overall pattern indicates that whenever the winning candidate was Labor, the percentage Labor vote at Southern Cross was lower than that for the Province as a whole. The only exceptions to this generalisation were for the 1928 and 1954 Council elections. Furthermore, non-Labor winning candidates have generally polled better at Southern Cross than for the host Council province (Figure 13). The only exception to this generalisation was for the 1986 Council election in Central Province.

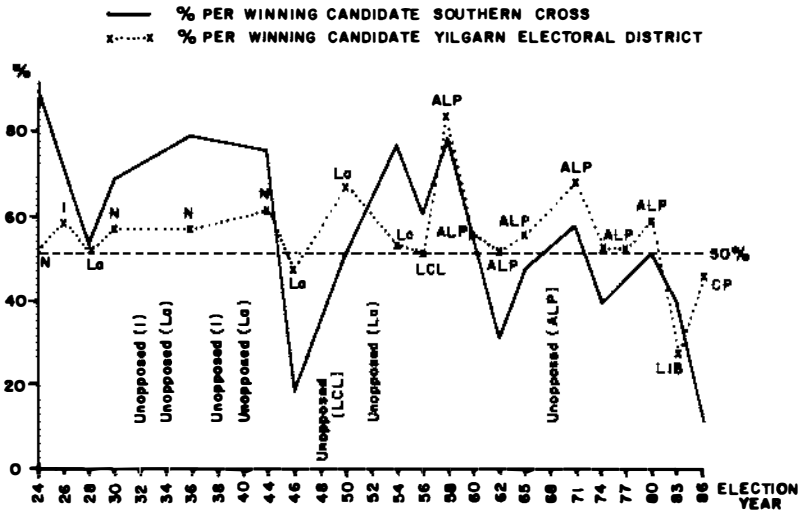


Fig. 13: Percentage Labor Council Vote 1924-86.

Interestingly, the strength of Labor support has varied considerably by level of election. For more than half of the the eight Assembly and Council elections from 1965 to 1985, for example, the Council Labor vote has been lower than the Assembly Labor vote at Southern Cross (Figure 14). This was particularly the case for the 1965 and 1986 elections. On only one occasion (1971) has the percentage Labor vote been significantly higher at the Council level.

Figure 14 Percentage ALP Vote at Southern Cross 1965-1986

	Legislative Assembly	Legislative Council
1965	62.8	46.8
1968	48.5	unopposed
1971	45.1	57.5
1974	43.6	39.4
1977	42.7	45.2
1980	52.7	50.1
1983	42.8	39.7
1986	52.7	33.8

Federal Voting Behaviour

A comparison of the strength of the Labor vote for the Yilgarn subdivision with the host division at the federal level indicates some interesting variations in the level of common interest as well as some interesting variations around a distinctive decline in federal Labor voting for contested elections between 1910 and 1984 (Figure 15).

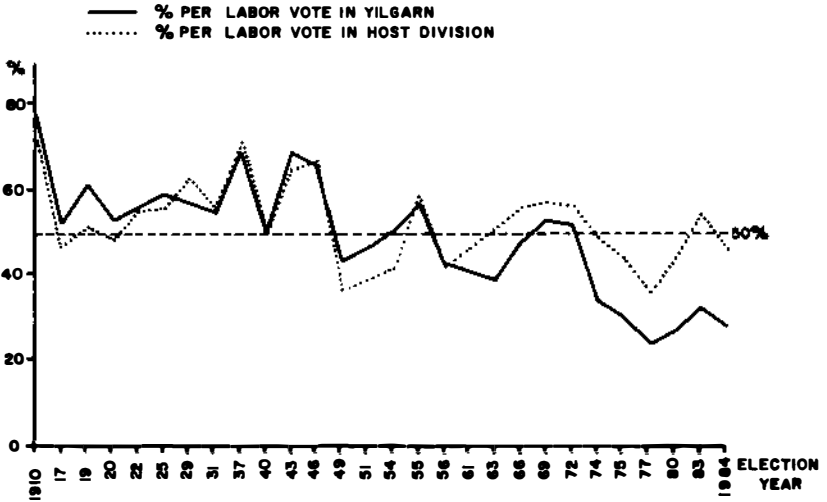


Fig. 15: Percentage Federal Labor Vote in Yilgarn 1910-84.

The overall pattern of change in Yilgarn subdivision and the host division is remarkably similar except that, whereas the Labor vote in Yilgarn was invariably higher than that for the host division before the mid-1950s split, since that time it has nearly always been less, and in some recent elections, considerably less.

For both Yilgarn and the host division, on the other hand, the Labor vote peaked in 1910 and was also relatively high in 1937 and in 1943. Apart from minor peaks in 1955 and in 1969, the overall post-war trend has been one of decline in percentage Labor voting, especially in the Yilgarn subdivision. On only four occasions out of the sixteen elections after 1946 has the Labor vote in Yilgarn subdivision been greater than 50 per cent, with the lowest level being only 24 per cent.

Apart from the 1922 election, electoral turnout was always lower in Yilgarn than in the host division from 1910 to 1984 (Figure 16). After 1922, however, turnout rose sharply with the introduction of compulsory voting in 1924. It is interesting to note that compulsory voting appears to have contributed to a change in the pattern of turnout by sex in Yilgarn subdivision. For the six federal elections prior to 1924 (that is, 1910-1922 inclusive) the average male turnout was 63 per cent and the average female turnout was 61 per cent. However, in the six elections following the introduction of compulsory voting (that is, 1925-1937 inclusive), the average male turnout was 74 per cent compared with an average for women of 80 per cent. In other words, in Yilgarn subdivision the introduction of compulsory voting was associated with an average male turnout increase of 11 per cent

compared with an average increase for women of 19 per cent. Furthermore, whereas men had a higher average voter turnout before compulsory voting, this was not the case after 1924. Whether this change is a result of changes in enrolment procedures or whether it is symptomatic of an interesting social shift is open to investigation.

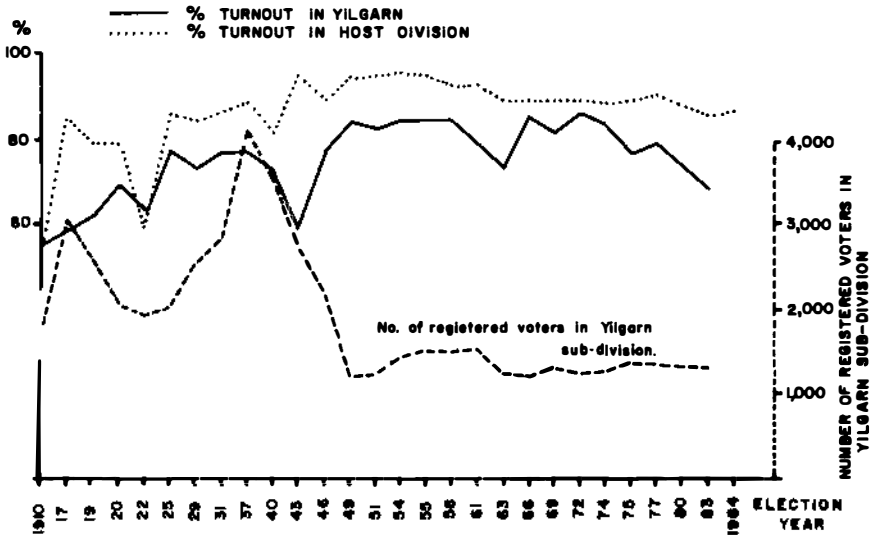


Fig. 16: Federal turnout and registration in Yilgarn 1910-83.

The lowest overall turnout recorded (below 60 per cent) for elections from 1910 to 1984 for both Yilgarn subdivision and the host electoral division was in the 1910 election. Whereas the percentage turnout has remained fairly stable in recent elections for the Kalgoorlie division at around 90 per cent, there has in fact been a gradual decline in turnout in Yilgarn since 1972. This may well reflect the level of accuracy of electoral rolls, although the number of registered voters has remained fairly stable at around 1300 for more than 20 years (Figure 16). This compares with a peak of more than 4000 in this time period just before the second world war, and a secondary peak of just over 3000 during the first world war. The sharpest period of decline in the number of registered voters in Yilgarn was from 1937 to 1949, and thereafter numbers have only fluctuated minimally.

Conclusion

This chapter has attempted to fulfil three main aims. The pattern of changing territorial representation of Yilgarn shire at state and federal levels has been described. It would appear that Yilgarn has been allocated and re-allocated to electoral units on the basis of electoral convenience rather than on the basis of commonality of interest. This has in part been a consequence of its relatively low electoral population, especially after the second world war. Clearly Yilgarn has had a strong history of Labor representation both at state and federal levels. However, from time to time, the district has been represented by other political parties and independents depending on the nature of an electoral

redistribution or on some combination of unusual circumstances. However, changing voting patterns in the Yilgarn and host electoral units indicates not only that there has been a general decline in support for the Labor party, but that, in addition, there is currently a relatively low level of commonality of interests with the host unit, especially at the state level. This in turn undoubtedly has had a negative effect upon local electoral participation.

Dennis Rumley **

ACKNOWLEDGEMENT

In particular, I would like to thank sincerely Christopher Berry whose typically thorough work as a research assistant made my writing task so much easier.

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Chapter 12

Population, Services and Amenities

Section A: Population

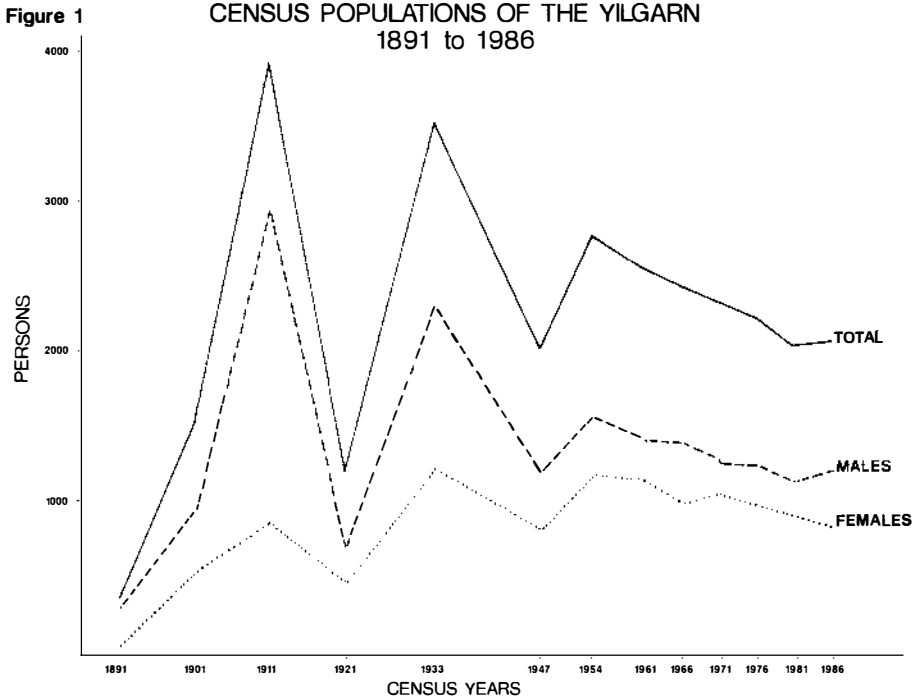
The demographic character of the Yilgarn population has changed significantly since the 1890s as a result of many factors including economic, social, historical and technological change. Using census and other data, this section analyses a number of characteristics, changes and trends which can be linked with the economic, social and historical developments discussed in previous chapters. The analysis is restricted to population characteristics and changes as indicated at the census dates and therefore may mask significant changes which took place during inter-censal periods for which data is unavailable.¹

The census of the Colony of Western Australia conducted in 1891 was the first in which details for the Yilgarn district were enumerated. The growth of the Yilgarn population together with the male and female components of that population are illustrated in Figure 1. As a result of gold discoveries in the area during the 1880s, some 380 persons were counted at the 1891 census, the majority of whom (65 per cent) were living in or around the new settlement of Southern Cross. At this time the population had very much a frontier character with approximately 85 per cent of the population being male. However, even at this beginning stage of the Yilgarn, 62 females were residing in the area. At the taking of this census, most of the people in the Yilgarn were living in tents with over 75 per cent of occupied dwellings being constructed mainly of canvas as shown in Table 1.

TABLE 1
NUMBER OF OCCUPIED DWELLINGS AND MATERIALS OF CONSTRUCTION
YILGARN DISTRICT, 1891

Materials	Number of Dwellings	Materials	Number of Dwellings
Brick	9	Canvas	163
Stone	—	Huts	5
Wood	20	Other	4
Iron	13	Total	214

Source: Census of Western Australia, 1891.



By the next census conducted in 1901, the population of the Yilgarn had increased over four-fold to 1546. The town of Southern Cross had more than doubled to 564 persons — but this number now constituted only approximately one third of the total Yilgarn population. The population of females had more than doubled and was now 38 per cent of the total. The population and the number of occupied dwellings in the various localities within the Yilgarn district at the 1901 census are shown in Table 2.

As Figure 1 illustrates, the Yilgarn population again underwent dramatic growth between 1901 and the following census conducted in 1911 when nearly 4000 people were counted. This represents an increase of over 150 per cent. Meanwhile, the total population of Southern Cross had grown to approximately 850. Mining and activities related to servicing the mines and miners were still the mainstay of the economy of the Yilgarn community and largely account for this increase. The 3950 people recorded in 1911 was the peak population for the Yilgarn although other non-census sources record populations of over 4000 in the late 1930s.² Another characteristic which reflects the nature of the mining industry is the male-female ratio which in 1911 was three to one.

The effects on population of both the downturn in the mining industry and the impact of the Great War are reflected in the Yilgarn population recorded at the 1921 census. Between 1911 and 1921 the population of this area had declined nearly 70 per cent to 1210 — an all-time low for this century. Despite the decline in mining it was still the major industry employing over 40 per cent of the workforce as shown in Table 4. Although the number of females had decreased as shown in Figure 1, the actual proportion of females in the population had increased to approximately 40 per cent.

TABLE 2
POPULATION AND NUMBER OF OCCUPIED DWELLINGS IN THE
YILGARN DISTRICT, 1901

Locality	Occupied Dwellings	Males	Population Females	Total
Bodallin	6	13	6	19
Bronte	4	4	6	10
Carrabin	5	10	8	18
Hope's Hill	7	10	4	14
Karalee	11	14	1	15
Kellandi	8	10	1	11
Mt Jackson	12	16	9	25
Nulla Nulla	5	9	11	20
Parker's Range	6	14	—	14
Parker's Range Road	8	22	10	32
Southern Cross (Township)	145	351	213	564
Southern Cross (locality)	216	419	292	711
Yellowdine	9	18	10	28
Yerbillon	8	17	2	19
Not stated	—	—	—	46
Total				1546

Source: Census of the Commonwealth of Australia, 1901

The growth of farming in the region during the 1920s was largely responsible for another peak in the Yilgarn population recorded at the 1933 census. The population had grown from the record low in 1921 to over 3500 persons by 1933, an increase due partly to the large number of small-holders on 1000 acre blocks, together with their families, and due to the demand for labour in the farming sector. Over 40 per cent of the workforce was engaged in that industry, outstripping mining as the major employer. (Refer Table 4.)

TABLE 3
WORKFORCE AND CONJUGAL CHARACTERISTICS OF THE YILGARN, 1933

YILGARN WORKFORCE	Males	Females	Total
Farming	790	9	799
Mining	567	—	567
Industrial	187	1	188
Transport & Communication	95	4	99
Commerce & Finance	79	19	98
Public Admin & Professional	22	18	40
Personal & Domestic Service	29	69	98
Other	46	2	48
Total	1815	122	1937
CONJUGAL CONDITION	Males	Females	
Never Married			
Under 15 years of age		445	446
15 years of age and over		1011	184
Married		751	555
Widowed		70	38
Divorced		10	6
Not stated		23	1
Total		2310	1230

Source: Census of the Commonwealth of Australia, 1933.

The labour intensive nature of farming at this time helps account for the decline in the proportion of females in the population to a figure of 35 per cent. This contention is supported by the data in Table 3 which highlights the large proportion of males in the farming workforce and the high proportion of single males in the Yilgarn population at this time. This sex distribution was affected also by the presence of many men in the mining industry, for example those receiving prospectors' subsistence, who were separated from their wives because of the need to escape unemployment in Perth and elsewhere.

The great depression of the 1930s which saw an exodus from farms, together with the loss of population due to the decline in mining and the effects of the World War are the major factors accounting for the decline in population during the intercensal period 1933 to 1947. At the 1947 Census, 2039 persons were recorded in the Yilgarn District, a decline of over 40 per cent on the 1933 figure. Following the low figure recorded in 1947, the Yilgarn population grew to 2770 in 1954 largely due to the expansion of farming and the opening of the Great Western Consolidated mine at Bullfinch in 1952.

TABLE 4
OCCUPATIONAL STRUCTURE OF YILGARN WORKFORCE
(selected census years)

OCCUPATIONAL CATEGORY	1891 %	1901 %	1911 %	1921 %	1933 %	1947 %	1954 %	1961 %	1971 %	1981 %
PRIMARY										
Mining	64	31	44	41	29	27	38	32	19	6
Farming	-	-	1	2	41	18	20	23	33	36
Forestry	2	1	17	3	-	5	1	1	-	-
Pastoralism	1	-	-	2	1	2	2	1	1	1
Water Supply	1	1	2	6	-	-	-	-	-	-
Other	-	1	-	-	1	-	-	-	-	-
COMMERCIAL	9	8	7	6	5	9	8	9	14	10
PROFESSIONAL	2	5	4	5	2	4	5	6	11	11
INDUSTRIAL										
(Manufacturing & building)	15	18	119	10	19	13	15	13	19	
Transport & Communications	-	27	6	15	5	8	8	7	6	4
DOMESTIC (Personal Services)	5	9	8	10	5	7	5	5	4	7
OTHER	-	-	-	-	-	-	-	-	-	6

Note: Due to rounding totals may not equal 100.

Source: Population Censuses of Western Australia and Australia various years.

As illustrated in Figure 1, after 1954 the Yilgarn population steadily declined until very recently when a small increase occurred. The decline in the population over this period was due largely to the following factors. Firstly, changes in the economics of farming and farming technology led to larger farm units and a change to capital intensive rather than labour intensive techniques. Secondly, the vagaries of the mining industry including the closing of the Bullfinch mine in the early 1960s and the opening and closing of the iron ore mine at Koolyanobbing between 1967 and 1983 caused fluctuations in the

population. And thirdly, significant changes in a number of demographic factors led to smaller average-size families in Australia.

The upsurge in mining activity in the Yilgarn during recent years has helped to arrest the decline in population but future trends will very much depend on world metal, grain and wool prices and in particular the price for gold. The repercussions of population decline on the provision of economic and social services and amenities in the Yilgarn is discussed in Section B of this chapter.

Changes in the structure of the workforce as shown in Table 4 provide further evidence of mining and farming as the dominant sectors in the Yilgarn's economy from the 1890s to the present. Until the introduction of farming in the district in the 1920s, mining both directly and indirectly accounted for the great majority of the workforce. A detailed analysis of the workforce employed in the "Industrial" and "Commercial" categories in Table 4 in the 1891 and 1921 censuses shows that most of the occupations were concerned with servicing the mines or the miners and their families. The significant proportion of the workforce in the "Transport and Communication" category in 1901 and 1921 was engaged on work related to the railways; while the relatively large proportion of 17 per cent (over 450 persons) in 1911 in the forestry category was concerned largely with obtaining and supplying timber to the mining and water supply industries, particularly to fuel steam boilers.

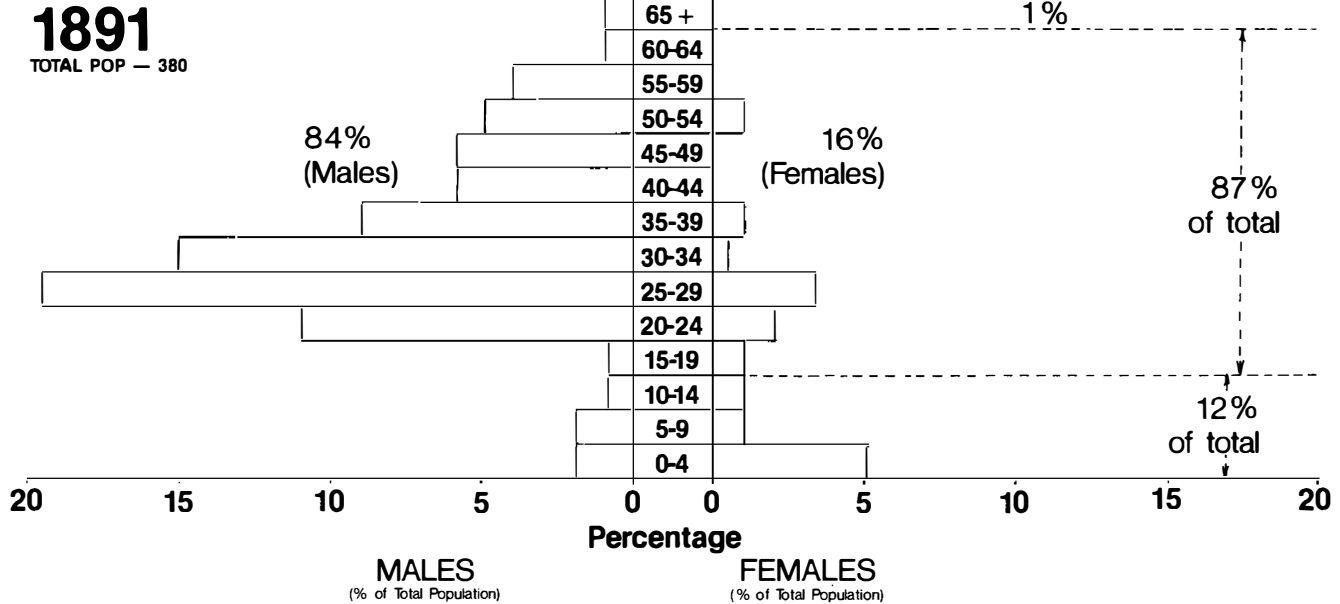
The importance of farming to the Yilgarn economy since the 1920s is evident from Table 4, although the proportion of the workforce engaged in this sector has varied from a peak in 1933, when over 40 per cent (nearly 800 persons) were classified in this category, to low points in 1947 and 1954 of 18 and 20 per cent respectively. At present it is the main employer of labour although the secondary and tertiary sectors of the economy have increased their proportions in recent years.

The series of population graphs comprising Figure 2 show the changing pattern in the age structure of the Yilgarn population together with changes in the ratio of males to females. Figure 3 illustrates the changing trends in the proportion of dependants in the population. Together these figures reflect economic and social changes in the Yilgarn's history as well as recent demographic trends in Australia's population.

Figure 2.1 represents an extreme situation in Yilgarn's population history. At the 1891 census the population was dominated by single males (refer Table 5) of whom approximately 90 per cent were between the ages of 20 and 60. With less than 30 families in the district at this time, the number of children recorded was relatively low with only 12 per cent of the population below 15 years of age. This is in contrast to all future censuses (except 1933 and 1986) when this proportion was never below 30 per cent.

The population graphs for 1901 and 1933 (Figure 2.2 and Figure 2.5) are similar in terms of the ratio of the sexes and the general pattern of age distribution. Data for 1911 was incomplete but probably had a similar structure with a concentration of males in the working age cohorts between 20 and 40 years, although by 1933 farming had replaced mining as the major employer of labour (refer Table 4). In contrast, the 1921 and 1947 population structures (Figure 2.4 and Figure 2.6) show relatively low proportions of males in the 20 to 40 age cohorts. In both cases, the effects of the two World Wars, together with a general decline in the demand for labour due to downturns in the economy in the years preceding each of these censuses, largely account for the absence of a dominant

FIGURE 2.1



proportion of males in these age cohorts and for the more even proportion of males to females in the population.

TABLE 5
CONJUGAL CONDITION OF YILGARN POPULATION, 1891

Conjugal Condition	Males	Females
Never Married		
Under 15 years of age	19	27
15 years of age and over	211	5
Married	71	30
Widowed	17	-
Total	318	61

Source: Census of Western Australia, 1891.

Since 1947, the Yilgarn population has become more balanced in its structure although there is still an overall majority of males (refer Figures 2.7, 2.8, 2.9 and 2.10). The recent upsurge in mining activity in the area is reflected in the 1986 graph where the proportion of males in the working age cohorts has increased. The relatively small proportions in the 15 to 19 age cohort reflect the lack of upper secondary, education services as well as the paucity of job opportunities in the Yilgarn region (particularly for females) which are discussed further in Section B of this chapter.

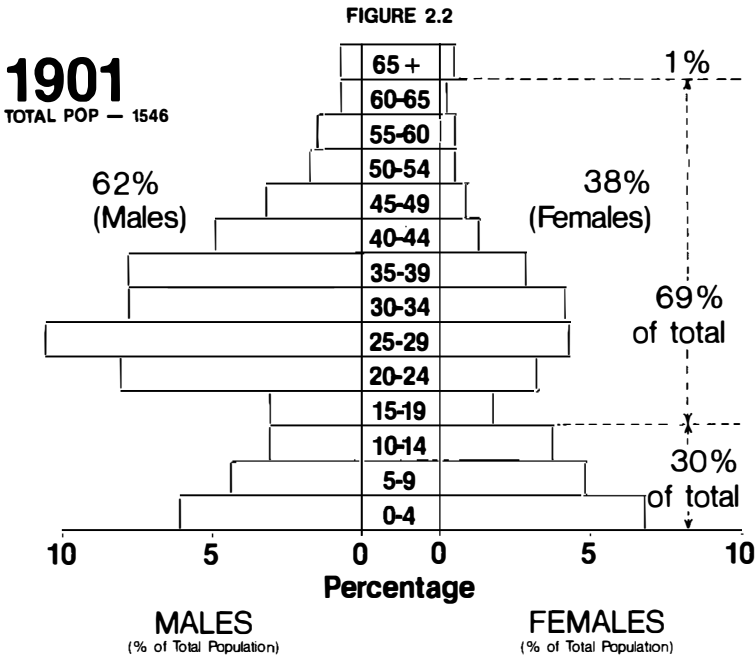


FIGURE 2.3

1911

TOTAL POP — 3950

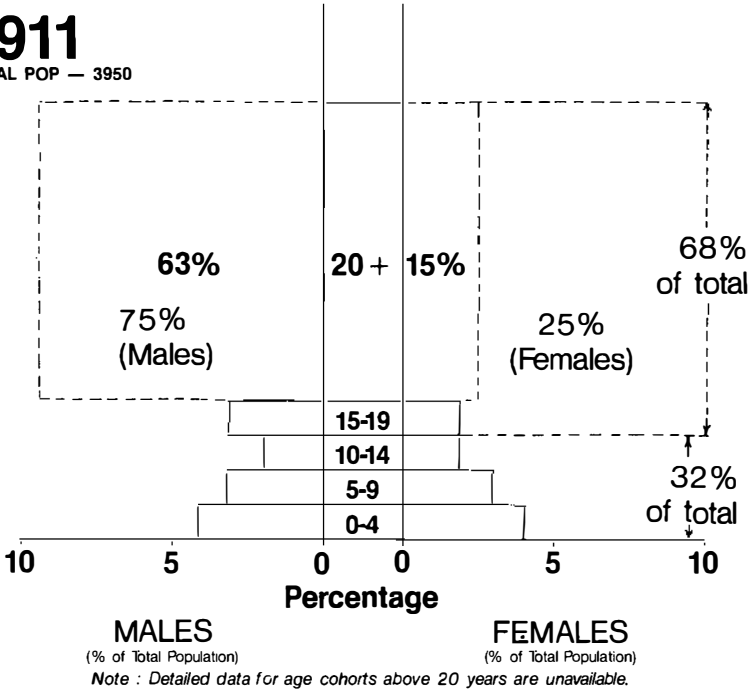


FIGURE 2.4

1921

TOTAL POP — 1210

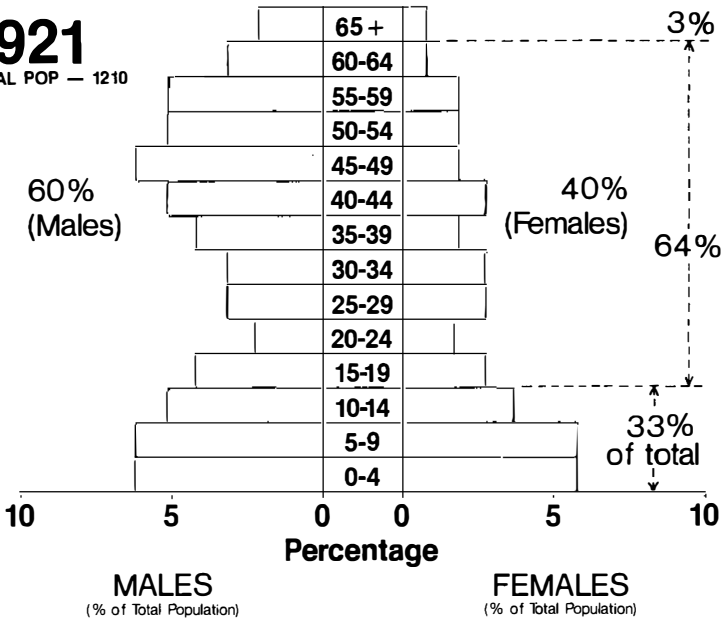


FIGURE 2.5

1933

TOTAL POP — 3540

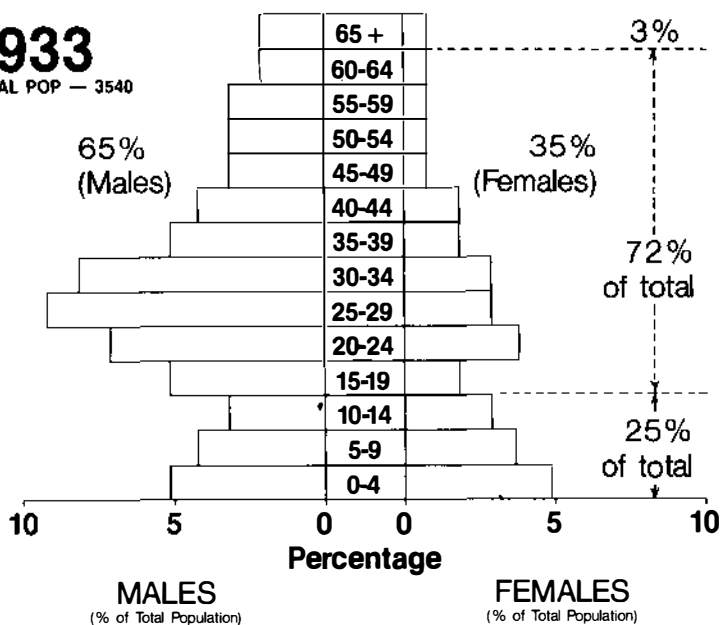


FIGURE 2.6

1947

TOTAL POP — 2039

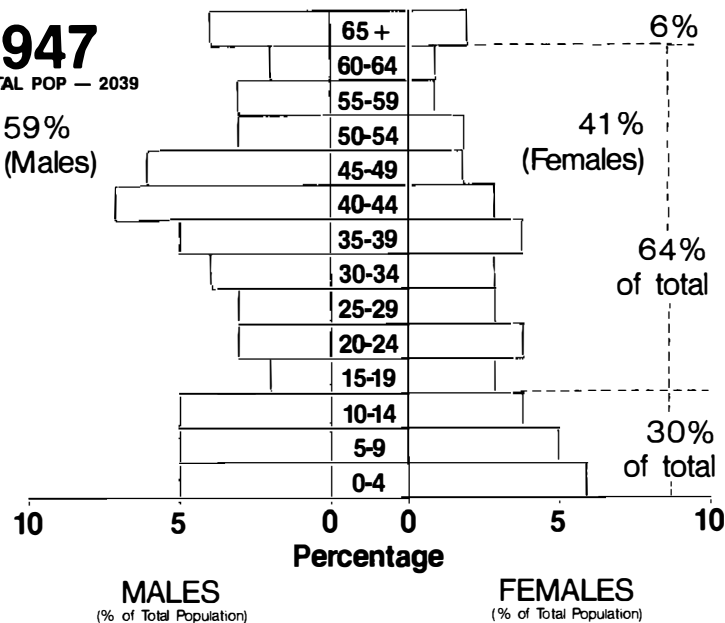


FIGURE 2.7

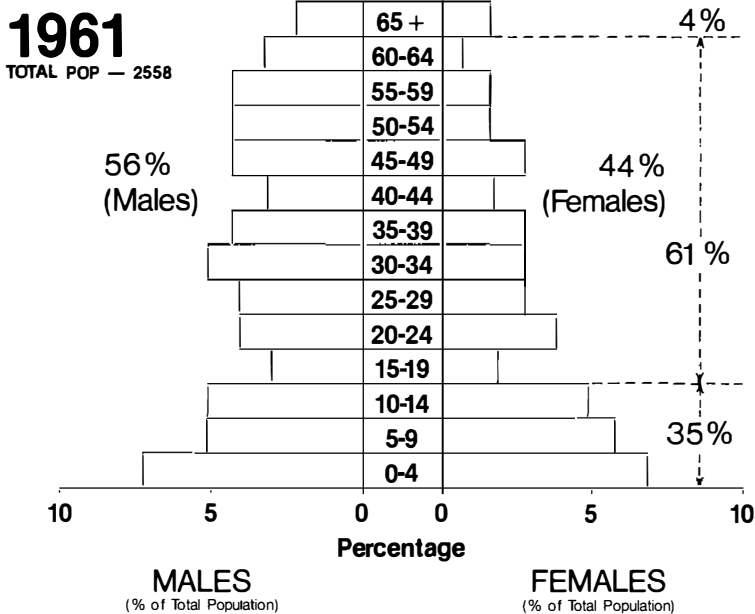


FIGURE 2.8

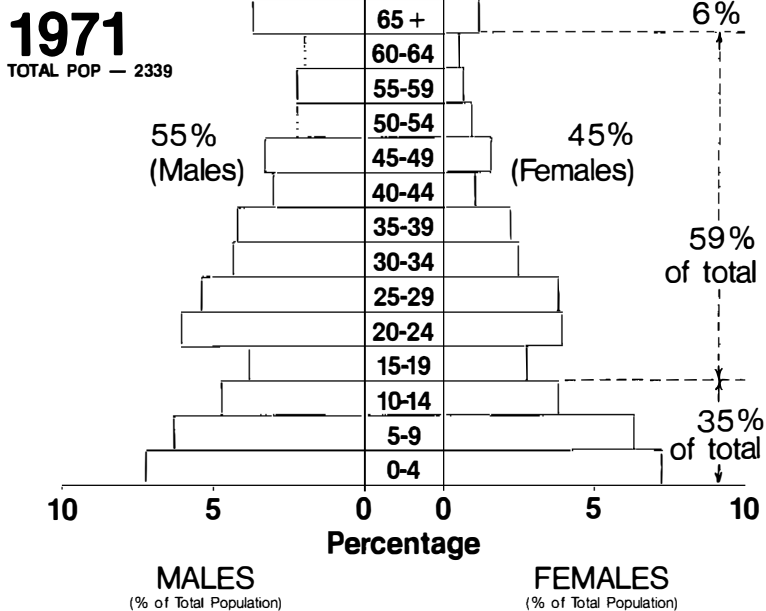


FIGURE 2.9

1981

TOTAL POP — 2048

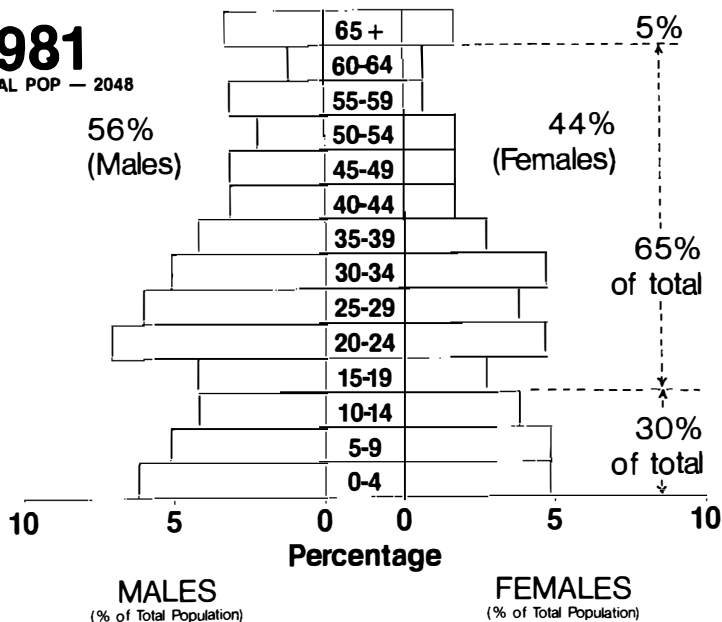


FIGURE 2.10

1986

TOTAL POP — 2053

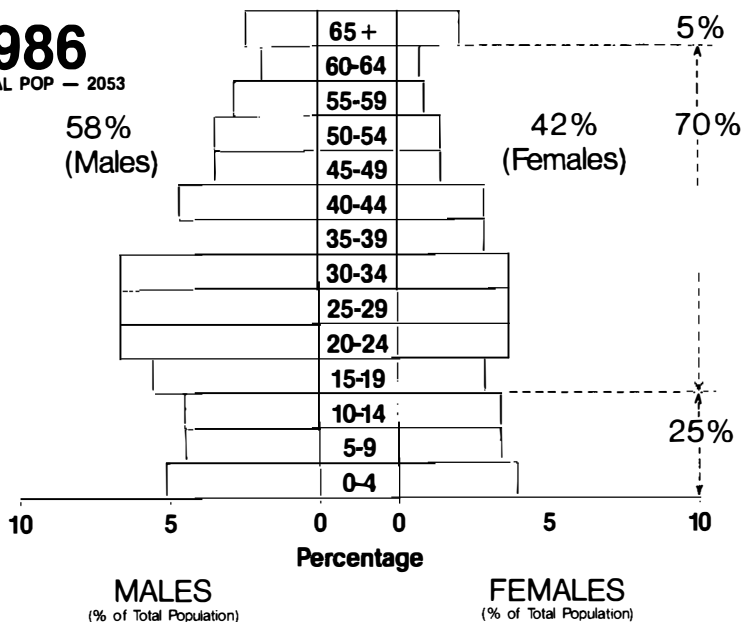
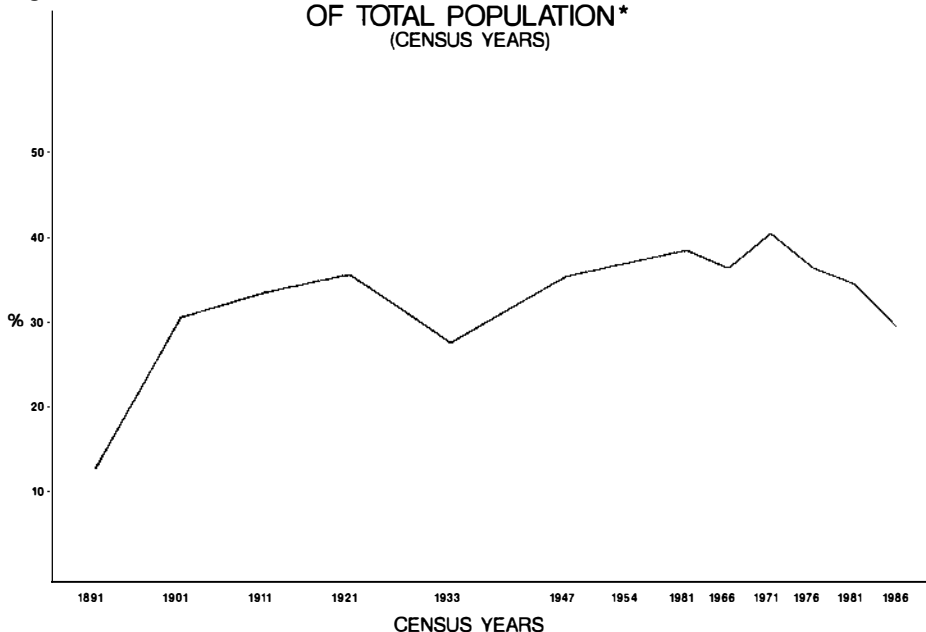


Figure 3

DEPENDANTS AS A PROPORTION
OF TOTAL POPULATION*
(CENSUS YEARS)



* Dependants = 0 — 14 and 65 + age groups.

Section B: Services and Amenities

The services and amenities available within the shire to meet the economic, social and welfare needs of residents and businesses contribute greatly to the well-being of the Yilgarn population. Information on the range of services currently available in the district was provided by the people themselves through a series of personal interviews and mail questionnaire surveys.³ Separate surveys were conducted with the following groups; Southern Cross residents; Shire rural residents; Southern Cross business houses; shire farmers and representatives of recreational organisations. As well, physical surveys were made of the service facilities and amenities available in the shire. Where sample surveys were necessary, appropriate steps were taken to obtain as representative a sample as possible and, although the degree of representation varied with different groups, it is believed that, in most cases, the generalisations drawn from the data are a valid indication of contemporary patterns and trends.⁴

The provision of economic and social services within the shire is almost totally confined to the township of Southern Cross which undoubtedly acts as the “hub of the Yilgarn”. In fact, Southern Cross is the only urban centre of note within the shire although the settlements of Bodallin, Bullfinch, Marvel Loch and Moorine Rock do perform very limited central place, service functions for nearby farming and mining residents as well as occasional tourists. A list of the services and facilities available in each of the above centres is provided in Table 6.

Because the shire is located at the margin of the state's agricultural region and extensive farming is not conducted throughout the shire but confined to the western portion, the characteristic urban hierarchy of urban, central places has not developed as in other agricultural areas of the state. Rather, Southern Cross is a primate centre dominating the other urban settlements of the region in terms of population size, economic power and the provision of social and community services. However, some functional relationships outside the shire with the larger centres of Merredin and Perth to the west and Kalgoorlie to the east were established from the surveys. These relationships will be considered below.



TABLE 6
CENTRAL PLACE SERVICES AND FACILITIES IN THE YILGARN 1985
SOUTHERN CROSS:

Retail Facilities

Baker
Butcher
Chemist
Coffee shop/smallgoods
Computers
Drapers (three)
Greengrocers/smallgoods
Hairdressers
Hardware (two)
Hotels (two)
Machinery dealers
(several)
Milk vendor
Motor cycles
Newsagency
Outdoor garden centre
Secondhand clothes
Stock agencies
Supermarket
Vehicle dealers (several)
Video hire

Accommodation Services

Club Hotel
Motel
Palace Guest House
Caravan Park

Transport Services

"Prospector" rail service
Interstate and Perth bus services
Air service

Vehicle Services

Ampol, BP, Golden Fleece and Shell
Service Stations
Ford and Toyota dealers
Panel beater
Tyre Service

Other Services

Post Office
Accountants
Totalisator Agency Board
District High School
Primary schools (Government and Catholic)
Pre-primary school
Churches - Anglican, Roman Catholic and Uniting
Shire Library
Shire Offices
Fire Service - volunteer brigade
Museum
Tourist Centre
Police

Banking Services

Branches of ANZ and Westpac
 Agencies for Commonwealth Bank and R
 & I Bank

Medical Services

District Hospital
 Medical Centre
 General practitioner
 Visiting dentist and optometrist
 Ambulance

Clerk of Courts
 Mining Equipment hire
 S.E.C. power
 Goldfields scheme water
 Television and Radio — ABC and commercial services
 Cartage contractors
 Exploration Engineers
 Maintenance service
 Grading contractor
 Roadmaking supplies
 Plumbing services
 Electrical services

BODALLIN:

Community hall, Primary school, Service station/General Store (incl. agencies for Australia Post and R&I Bank).

BULLFINCH:

General Store (incl. Agency for Australia Post), Hotel

MARVEL LOCH:

General store/Fuel retailer, Hotel (with accommodation), Post Office, Primary school

MOORINE ROCK:

Community hall, General store/Fuel retailer, Hotel (with motel units), Post Office, Primary school

MT HAMPTON:

Primary school, Community Hall

SOURCES: Landuse Surveys, (1985).

Shire of Yilgarn; Community Information Directory, (1985).

The great majority of Yilgarn residents surveyed used Southern Cross as their main service centre for groceries and household necessities. However, the accessibility and proximity of alternative supplies influence residents living towards the borders of the shire for they frequently use centres such as Merredin, Narembeen and Bruce Rock. The range of goods and services available in Southern Cross is limited. A number of respondents also mentioned the lack of competition as a disadvantage because of reduced choice and high prices. However, a high degree of loyalty to local businesses was evident: Answers from some residents suggest that the loyalty is pragmatically based in that they realise the necessity of supporting local businesses to maintain their existence. This local loyalty was also highlighted in a survey of business houses in Southern Cross in which several persons mentioned that they try to support local business whenever possible even though this led in some cases to paying higher prices for goods and services. Despite this loyalty, the fact that approximately 20 per cent of business establishments in the main Antares Street business section were vacant at the time of survey, suggests that Southern Cross, like many small rural service centres, is suffering not only from population decline but also

from changing consumer behaviour. To remain viable, businesses require a minimum threshold population or demand. The overall decline in the shire's population as identified in the first part of this chapter together with the increased mobility of shoppers and the increasingly competitive attractiveness of the larger regional centre of Merredin all combine to threaten the economic viability of Southern Cross businesses. Evidence of this came from a number of respondents who indicated that they obtained groceries from Merredin and sometimes from Perth when visiting these centres for other purposes. Greater choice was stated by a number of residents as an important attraction of Merredin. One respondent claimed to travel 240 kilometres in a round trip to Merredin "just for a change of environment".

The continuing threat to economic viability may lead in the future to the necessity for certain economic services such as grocery stores, hotels, service stations and other essential services to be subsidised or operated by the shire council or the community, with local co-operative stores or private community clubs replacing traditional free enterprise shops and hotels. This alternative has already occurred at other rural centres in Australia. ⁶



The social and community welfare services available in Southern Cross are quite extensive for a town of such size and highlight its significance as the regional centre for the Yilgarn shire. These services and amenities include all those organisations which directly or indirectly assist people in their personal welfare and in coping with a rural environment. They include a broad range of welfare, community, social, educational, recreational and other personal and community services. The degree of support for local services and the active involvement of residents suggest a local loyalty even stronger than the support for local economic services. However, the support was variable, with recreational and leisure-type activities receiving the greatest following. These various services will be discussed below in the light of responses to a broad range of survey questions related to such activities.

With regard to health and personal welfare, Southern Cross and shire residents generally are fortunate in having the services of a resident, general practitioner, a local pharmacist and the Southern Cross District Hospital (the new hospital was opened in 1969). Regular visits by a travelling dentist and an optometrist further augment the medical services of the district. Surveys revealed virtually unanimous support and confidence in the local doctor for general medical needs with only one respondent going to Merredin for such services.

For specialist, medical needs most people saw Perth as the main centre, although Kalgoorlie and Merredin were also cited as alternative sources of certain specialist services. Despite Kalgoorlie being acknowledged as a provider of a limited range of specialist services, nearly 90 per cent of respondents saw Perth as the more attractive centre. This was not only because of the far wider range of medical and hospital services available but also because of the attractiveness of multi-purpose visits to the city for shopping (particularly for higher-order goods, such as fashion clothing, furniture and other specialised items), personal business and to visit friends and relatives. Despite the distance from Perth, most respondents did not perceive difficulties in obtaining specialist medical services although several respondents who lacked private transport remarked that the time and distance involved in train travel to Perth presented problems.

Most respondents who needed a dentist or optometrist were content with the present services provided by the regular visits approximately every two and six weeks respectively. Nearly half the respondents used these services while the remainder travelled to Merredin or Perth to satisfy their needs. The school dental service was also seen as a means of meeting children's general dental requirements. The absence of a resident or visiting professional physiotherapist was seen by a significant number of people as a serious deficiency. Although the local doctor provides a limited physiotherapy service, most people travel to Merredin or Perth and this can sometimes mean a rather painful trip. The lack of a comprehensive physiotherapy service may seem surprising in light of the considerable involvement of local residents in sporting and other recreational pursuits; but all such specialist services require a larger threshold population than is available in the Yilgarn to maintain viability.

Although home nursing and "meals-on-wheels" services are available for aged persons living in Southern Cross, several respondents cited the need for transport assistance around the town. A limited number of aged-person homes is available in Southern Cross. Six "homes for the aged" flats were opened in 1973 and a further six new flats were opened in 1980 alongside the existing flats in Antares Street. The present trend to an ageing population in Australia indicates an increasing demand for particular health and personal welfare services for aged persons in the Yilgarn.

Residents' perceptions of how they would cope with a medical or personal crisis which affected the normal functioning of the family exemplified the supportive and close-knit nature of Yilgarn society both with regard to rural residents and Southern Cross townspeople. Neither group perceived a major problem in this regard and cited family and friends or neighbours as their main sources of help which they thought would be readily forthcoming. Some respondents made the point that they felt such help would be more readily and willingly given than in metropolitan Perth. In general, the Yilgarn community has confidence in local medical services and people do not see themselves as isolated or disadvantaged by the apparent lack of choice in such health and personal welfare services and facilities.



By contrast, the satisfaction of the educational needs of the Yilgarn community is the source of some concern, particularly among rural residents. Primary and pre-primary education is available at the following locations in the shire: Bodallin, Marvel Loch, Moorine Rock, Mount Hampton and Southern Cross. Table 7 shows primary enrolments at the various schools in the shire for the years 1971, 1981 and 1986 (earlier data for government schools is not readily available from the Education Department). The table reveals that enrolments have declined in the ten year period. Overall there has been a 30 per cent decrease in total enrolments. Even ignoring the data for Koolyanobbing school which closed in August, 1983, there has been nearly a 20 per cent decrease within the shire. Although this is not surprising in view of the general decline in total population and the trend to an ageing population, it does raise concern for the future viability of some of the smaller schools in the shire.

One of the major problems perceived by rural residents was the considerable distance from home to school and the time involved for children in travelling. This problem would

be exacerbated if some of the smaller schools closed and children had to travel to Southern Cross or to Merredin. Already some children travel over 50 kilometres each way to school. Generally, respondents were satisfied with primary education in small schools and, in fact, several expressed the opinion that they thought it was better than education in large schools because of the smaller classes and the greater community involvement of teaching staff.

TABLE 7
PRIMARY SCHOOL ENROLMENTS IN THE YILGARN SHIRE

1976-1986	1976	1981	1986
SCHOOL			
Bodallin Primary School	35	29	30
Koolyanobbing Primary School	64	61	**
Marvel Loch Primary School	21	25	22
Moorine Rock Primary School	20	12	14
Mount Hampton Primary School	31	25	24
Southern Cross District High School	187	175	144
St Joseph's Primary School	43	44	47
TOTAL	401	371	281

* Includes Pre-Primary Enrolments

** Koolyanobbing Primary School closed in 1983

Sources: Education Department of WA

Catholic Education Commission



Bodallin Primary School, 1987. Back, left to right: Leo Marafioti, Geoffrey Donovan, Bruno Marafioti, Susie Donovan, Naomi Della Bosca, Louise Butcher, Corinne Donovan, Kathryn Ivey, Jane Bliss, Rachel Ivey, Carmen Della Bosca. Front: Timothy Butcher, Ricky Ivey, Colin Blyth, Andrew Blyth, Kelvin Kretschmer, Jason Kretschmer, Sharele Quinlivan, Rhys Della Bosca, Adrian Lee, Bo-Marie Della Bosca, Antionette Marafioti, Jamie Ryan, Holly Trutwein, Christopher Price.

(Photo: Geoff Lovell, Western Australian College of Advanced Education.)



Mt Hampton Primary School, 1987. Back, left to right: Sarah Williamson, Vanessa Pringle, Natalie Pringle, Sally Rose, Ruth Williamson, Bryn Campbell (teacher), Justin Eiffler, Dylan Lundy, Jarrad Butcher, Stuart Lapsley. Front: Chantelle Crook, Rebecca Butcher, Craig Gordon, Karena Goodhill, Andrew Gordon, Theresa Williamson, Matthew Butcher, Joel Lundy.

(Photo: Geoff Lovell, Western Australian College of Advanced Education.)

The major educational problem identified in the surveys was the unavailability of upper secondary education — a problem common to many rural areas of the state. Secondary education is available for school years eight to ten at the district high school at Southern Cross where secondary enrolments in 1986 totalled seventy eight. But for students wishing to continue their education beyond year ten the choice is either to board at Merredin or Perth or at some other centre offering upper secondary education, for example, an agricultural college. Despite the considerable costs involved in children attending private secondary schools in Perth, a significant number of respondents was prepared to pay such costs for their children's secondary education.

Tertiary education was seen to be available only in Perth despite the existence of several tertiary institutions in Kalgoorlie. No respondents perceived Kalgoorlie as a source of either secondary or tertiary education even though it is closer to Southern Cross than is Perth. Residents were also surveyed about their interest in correspondence-type education. Although a small number had or were at present taking such courses a surprisingly large number indicated a desire for such an education service. The range of interests was extremely varied but with farm related studies having the greatest demand.

Several survey questions were directed towards establishing how the Yilgarn people spent their leisure time. Responses to these questions revealed a wide range of activities. In fact, over 50 different leisure activities were identified by respondents. Although many of these were individual and family-orientated activities, for example, gardening and television watching, a large proportion of respondents was actively involved in sporting recreational activities.

Sport plays a major role in promoting Southern Cross as the functional hub of the Yilgarn. A modern sporting centre (opened in 1979) caters for basketball, badminton, gymnastics and other indoor sporting activities. The grassed oval adjacent to the centre provides for football, cricket and school sports while other facilities include a two-thirds Olympic size swimming pool opened in 1963; netball and tennis courts (for day and night use); bowling, golf, rifle, clay pigeon, pony and riding clubs; motor cycle scramble and BMX tracks as well as hotel orientated darts clubs. Not only are facilities for most popular sports available in Southern Cross but many of the sports are conducted on a shire or even wider geographical basis.

Several of the sporting clubs and associations which were surveyed had memberships of over 100 persons and many of these players and spectators regularly travelled throughout the shire, and in some cases beyond, to participate in their sporting pursuits. The survey of rural residents also revealed a wide participation in sporting activities. Surprisingly, all the farming families that replied were involved in regular sport, either passively or actively, and many travelled 50 to 80 kilometres per round trip to participate. A number of people were involved in one sport or another throughout the year while some managed to participate in more than one sport on a regular basis.

Although it is impossible to say whether Yilgarn residents are more or less involved in sporting activities than other communities, either rural or metropolitan, there is no doubt that interest in sport-orientated recreation ranks high in the Yilgarn community. Many respondents recognised the importance of participating in order to maintain the viability of certain sports. Others suggested that such activities provided a much needed social focus, particularly for rural residents for whom physical and social isolation are a reality.

Despite the relatively wide choice of sporting opportunities there are unmet wants. A number of people expressed a desire for squash facilities. Roller skating and skate-board facilities together with competition pool and snooker, fitness and aerobics, and a youth club were also identified. However, as with so many activities already discussed, demand must be sufficient to justify establishment and to maintain viability. In light of the numbers who indicated a desire for squash facilities this could be a future project for the shire council to investigate. Squash courts could relatively easily be added to the present excellent sports centre.

With regard to non-sporting leisure pursuits, a number of respondents expressed regret at the lack of culturally-orientated activities such as music or choral societies, repertory and dance clubs and other artistic groups. However, the relatively small population within the shire does not enable such activities to be viable.

Another leisure activity investigated was dining out. Over 75 per cent of respondents indicated that they dined out, although the frequency varied and the proportion of regular diners was much lower for the rural residents of the shire. The Southern Cross Motel

restaurant ranked the highest in popularity and in frequency of use, followed by service station roadhouse cafes and then home entertainment at friends' houses. A small number of people patronised restaurants in Merredin and Perth but these were usually frequented as part of multi-purposes visits to those centres. Over a third of respondents who utilise Southern Cross facilities expressed a need for a "good" restaurant in the town implying perhaps that a wider choice of facilities is desired.

Survey responses highlighted the popularity of the video tape hire service in Southern Cross. In fact, a local drive-in cinema recently ceased operating undoubtedly due to the impact of competition from video tape entertainment, as nearly one half of respondents who had previously been cinema patrons stated that they no longer attended due to the availability of video facilities. Of course, this trend is not isolated to Southern Cross. However, it does emphasise the somewhat precarious viability of rural services. Cinemas and theatres are still a significant leisure attraction for Yilgarn residents. A quarter of respondents indicated that they had attended such facilities in Perth in the past six months and that this was one of the reasons why they had organised a trip to Perth. A very small number of respondents indicated Merredin and Kalgoorlie as other venues for cinema and theatre attendance.

Another area of community involvement relates to the various community services, clubs and activities operating within the shire. Table 8 is an inventory of such organisations identified through the various surveys. Although this list may not be exhaustive it is believed to include most of the organisations active in 1986. The list demonstrates a wide choice of activities available to Yilgarn residents but it was apparent from the survey data that such organisations do not enjoy the same patronage as the recreational activities discussed above. Of all householders surveyed, only a third indicated that one or both partners were active in such organisations. It was not uncommon for these people to be involved with more than one activity. Yilgarn rural residents indicated a greater degree of membership than Southern Cross residents which was somewhat surprising considering the distances involved for these people to participate in meetings and other activities.

TABLE 8
YILGARN COMMUNITY SERVICES/ACTIVITIES

Parents' & Citizens' Association	Local Business Association
Parents' & Friends' Association	Shire Council
Rotary	Hay Committee
Our Lady of Montserrat Catholic Church	Anglican Ladies' Guild
Council	R.S.L. & R.S.L. Women's Auxiliary
Southern Cross Historical Society	Southern Cross Hospital Board
Meals on Wheels	Weight Watchers' Exercise Group
Southern Cross Welcoming Committee	Local Political Party (both the Australian Labor Party and the Liberal Party of Australia have branches in the Yilgarn)
St. John Ambulance Association	Alcoholics Anonymous Branch
Masonic Lodge	Southern Cross Agricultural Society
Country Women's Association	Homes for the Aged
Brownies	Southern Cross Pensioners' League
Volunteer Fire Brigade	
Tidy Towns Committee	

Although few residents indicated a need for other community organisations, activities such as Lions, Apex, Junior Farmers, Business Women's Association and Girl Guides were identified. A particular general need was seen for activities orientated to the youth population. It was felt that besides sporting clubs there was little else to interest young people. The view was expressed that this gap was a factor helping to drive the youth of the community to larger urban centres and was partly the reason for juvenile unrest and under-age drinking. The inadequacy of facilities and activities for young people in the shire as well as a perceived apathy among this group in the community, was a general theme which was highlighted in several of the surveys. This, therefore, is another area to which the shire council could direct attention although it is realised that there is no general or simple answer to this problem which is not confined only to the Yilgarn or to rural areas in general but is endemic to modern western society.

A specific survey question related to the shire library service. Just under 20 per cent of respondents indicated that they used the service although most were not frequent patrons. A small number of people use other library facilities such as at the high schools at Southern Cross or in Merredin. Negative comments relating to book display arrangements, limited opening hours and the general poor conditions in which the library is housed were noted in the survey responses.

Another particular community service that was surveyed related to maintenance of the road network by the Yilgarn shire. On this item the farming community was overwhelmingly positive in its reaction and comments. Farmers recognised the extensive road network for which the shire is responsible and the general feeling was that roads were maintained in an adequate to excellent condition. Several respondents made comparisons with nearby shires and ranked Yilgarn roads as the best maintained.

Despite the limited criticisms identified above, it would appear that the majority of Yilgarn citizens are generally satisfied with the range and quality of community services and amenities and are appreciative of the problems of viability related to a relatively small local population and the added factor of the distances involved for rural residents to participate.



Specific surveys were conducted of both the Southern Cross business sector and a sample of shire farmers. The objects of both surveys were similar in that they were designed to establish the characteristics of the particular business operation with respect to the following: the sources of their business supplies and/or raw materials; the methods of obtaining these; to whom and how their products were sold and delivered; and the major problems related to their economic activities.

Due both to the relatively small number of businesses at present operating in Southern Cross and the small proportion who responded to the mail questionnaire survey, valid generalisations are difficult to make in relation to the business sector survey. Therefore, the following are general comments gleaned from the limited data obtained and may not be representative of the total business community of Southern Cross.

Most of the businesses that responded received their stock and supplies from Perth or from the eastern states via Perth. The distances and transport costs involved were seen as major problems adding significantly to the final cost to consumers. Another distance-



Rev. Steve Warren, Anglican Rector.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



Ida Lisignoli, storekeeper.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



Betty Teale, cook, Southern Cross Hospital.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



Erna Forrester, Yilgarn History Museum.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



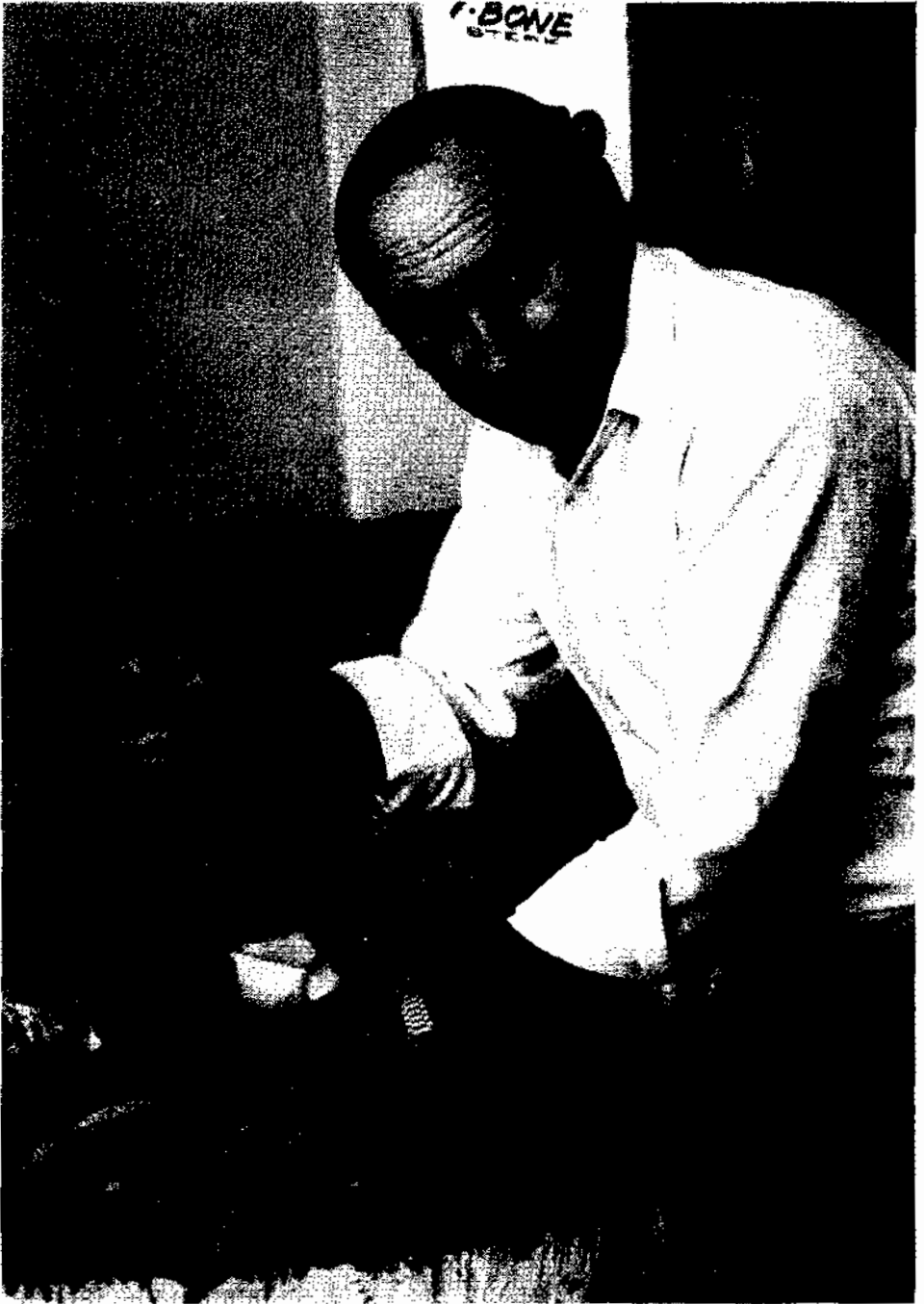
Lyndon Hood, Kal-Assay.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



Wally Bonetti, machine operator.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



Harvey Carlson, butcher.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



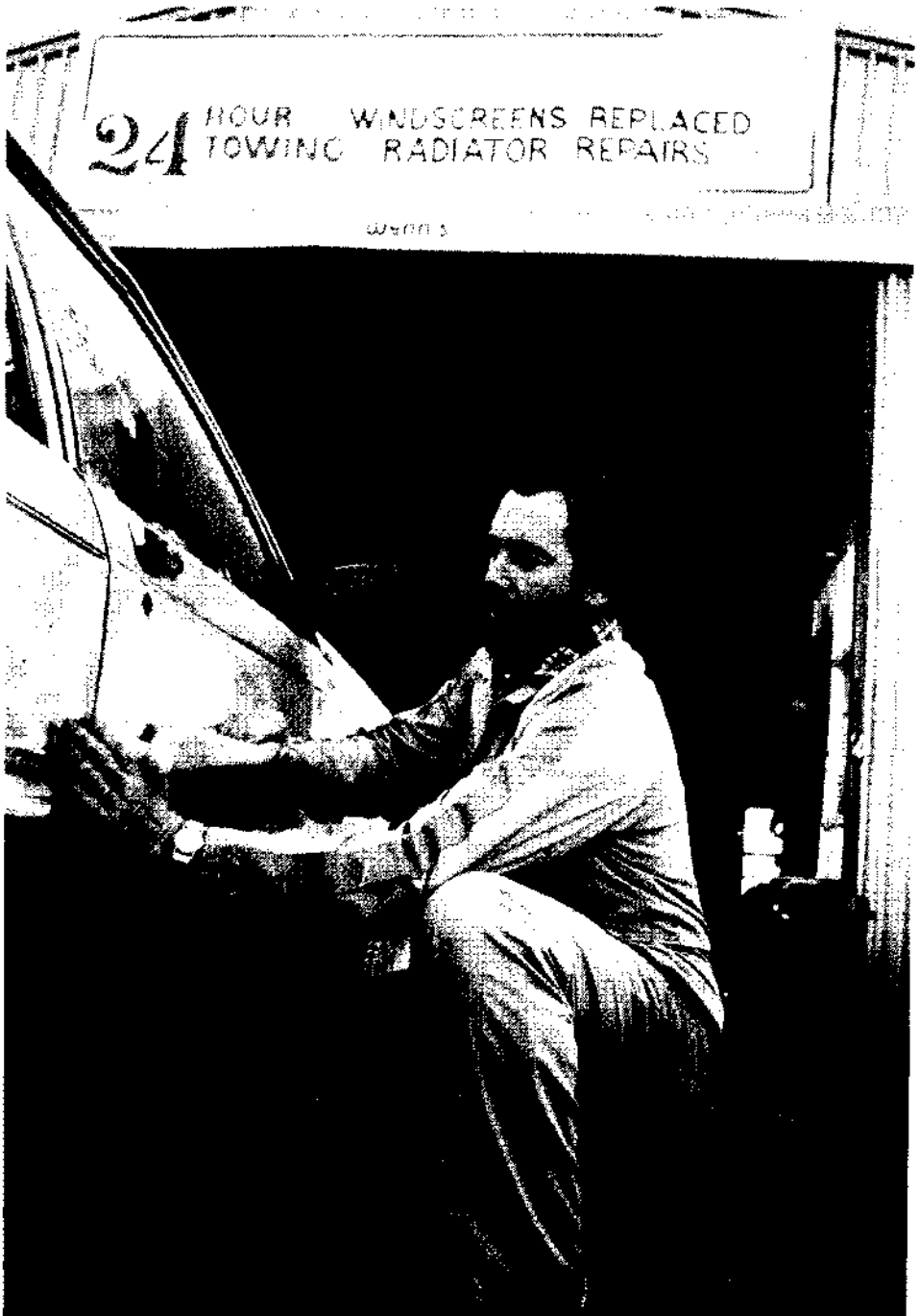
Lil Metzke.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



Olwen Beaton, Yilgarnia Drapery.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



Peter Chrisp, panel beater.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



Tim McManus, chemist.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



Elaine Carnicelli, Golden Fleece Roadhouse.

(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)



*Debbie Bailey, hairdresser and Janice Franklin.
(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)*



*Frank Currie, steel fabricator.
(Photo courtesy Geoff Lovell, Western Australian College of Advanced Education)*

associated factor identified was that entrepreneurs were unable to select goods personally and had to rely mainly on telephone ordering. Both road and rail transport services were used for obtaining supplies from Perth although road was the more popular. Several businesses were critical of the rail service complaining of delays in delivery. Although overall freight costs were seen as the single most critical problem for the business community, few could offer positive suggestions for improving the system. However, one business suggested that the shire lease a railway goods carriage for business use while another proposed that all businesses use the one road transport company and try to obtain a volume discount.

Despite the freight costs, the relative distance from Perth and the isolation of Southern Cross were not seen as problems in relationship to the ordering and obtaining of supplies. As most businesses were small and many were family concerns, obtaining suitable employees was also not perceived as a problem except to the two larger businesses that responded. On the other hand, most businesses were conscious of their viability in relationship to the vagaries of the farming industry and many mentioned the strains imposed upon them by the downturn in agriculture in recent years. Some businesses went as far as to say they had been saved only by the recent mining boom in the area. As regards the immediate future, the majority of businesses were philosophical and saw little change providing the overall population in the area did not decline to any great extent.



The basic function of Southern Cross as a rural service centre, the importance of Merredin as a higher-order regional centre and the significance of Perth in the hierarchy of service provision were highlighted in the survey of shire farmers. Table 9 below shows the frequency with which farmers visited these centres for farm production related reasons.

TABLE 9
YILGARN FARMERS: FREQUENCY OF VISITING URBAN CENTRE
FOR FARM PRODUCTION RELATED NEEDS

	%	%	%	%	%
	More than once weekly	Weekly	Fortnightly	Monthly	Under once per month
SOUTHERN CROSS	35	15	15	12	23
MERREDIN	—	11	19	58	12
PERTH	—	4	4	23	69

Although the distances from Southern Cross to those farms that responded to the survey ranged from a few kilometres to over seventy kilometres, only two farmers stated that Merredin was their closest centre. This is reflected in the frequency of visits to Southern Cross with 50 per cent of farmers visiting that centre at least once per week and a further 15 per cent at least once per fortnight. However, the importance of Merredin is also highlighted with nearly 90 per cent of farmers visiting this regional centre at least once per month. Furthermore, approximately 30 per cent of farmers visit Perth at least once per month. Southern Cross and Merredin were seen as approximately equal in importance as supply centres for both minor and major farm equipment and machinery as

well as fuel supplies. Superphosphate was ordered from Perth and delivered by rail to Merredin and Southern Cross.

All farms which responded to the survey indicated some degree of product diversification. Although wheat is generally the dominant product of Yilgarn farms, its actual contribution to total farm income varies from as low as 20 per cent to over 90 per cent. Other products of this mixed farming community include other grains, sheep for wool, sheep for meat, pigs and cattle. Nearly all farmers carted their own wheat to the nearest railway siding or wheat storage bin which for most is within 20 kilometres of their farms. However, approximately a quarter of farmers were required to travel between 20 and 40 kilometres to deliver their wheat. There are seven grain bins located throughout the shire and operated by Co-operative Bulk Handling. Where necessary, the grain from these bins is transported by road to silos located adjacent to the standard gauge railway and from there the grain is transported by rail to the main storage silo at Kwinana.⁷ Most farmers also carted their own wool, but in this case more farmers were required to travel greater distances to Southern Cross, Merredin, Bodallin or Moorine Rock to deliver this product. Merredin and Perth (Midland) were the two main destinations for sheep for meat and for this product most farmers used contract truck transport.

The relatively high costs of transportation was the most common complaint of Yilgarn farmers. Fuel costs were seen by all farmers to be a major component of their total farm production costs. This component ranged from 10 per cent to 45 per cent of total costs with the majority of farmers (over 65 per cent) estimating fuel costs to contribute between 20 and 30 per cent of total farm production costs. Fuel costs, together with distance and isolation from urban centres were seen to be the greatest problems facing the rural community. The problems of isolation were not simply those of distance from towns and community services and amenities but also isolation from services related to farm production such as machinery parts and servicing, veterinary services and professional advice on farm management and accounting, together with the difficulties of keeping up with changing technology, farming education and crop and livestock developments.



This final section deals with generalisations developed from a number of survey questions dealing with respondents' personal perceptions of living in the Yilgarn. There is no doubt that the majority of Yilgarn residents are generally satisfied with existing economic, social and welfare services and amenities. In fact, in response to a question aimed at identifying the disadvantages of the area, nearly 30 per cent volunteered that there were no major disadvantages. The major problems that were identified have been discussed above and relate mainly to the lack of competition and choice with regard to shopping facilities and the problems faced by the younger population with regard to a sufficient range of employment and leisure activities to attract them to stay in the area both in the short and long term.

Despite distance from Perth and other urban centres, isolation was not perceived as a problem by nearly 70 per cent of Southern Cross residents: A number of them suggested that social isolation is more a problem of the "big-city dweller". In contrast, however, isolation was identified as a general concern of the farming community as the extensive nature of agriculture in the area necessitated relatively long distances to be travelled for the satisfaction of economic and social needs.

Within the Yilgarn community there appears to be a general feeling of belonging, a community consciousness and a willingness to help people in need. Respondents identified the community spirit, friendship, lack of peer group pressures, congenial climate, lack of traffic congestion and air pollution, and the general peace and quiet as advantages of living in the area. There was some evidence of a minority group, mainly composed of younger professional people who were unlikely to remain in the district for a great number of years, who found certain shortcomings both with respect to the adequacy of services and facilities available in the shire and a difficulty in winning ready acceptance by the majority of long-term residents. However, the perception of a closed community appeared to dissolve with length of residence. As one respondent put it, "People in general are friendly once you've served your apprenticeship!" Most of the residents of the Yilgarn are there by choice and see little or no reason to alter their lifestyle. Newcomers or visitors to the town soon learn that in order to be accepted and to remain welcome one cannot hope to bring about radical or rapid change to the status quo.

In relation to the size of both the shire and Southern Cross populations, the Yilgarn community is well endowed with most of the economic, social and welfare services and amenities necessary for the adequate functioning of individuals and of the community. For most people the mobility provided by the motor car and the quality of roads has overcome potential problems of isolation. Considerable economic and social interaction takes place both within the shire and with urban centres outside such as Merredin and metropolitan Perth. However, a major factor affecting the successful viability of the community is that of population decline. Although the economic base of the region has widened with the current up-surge in the mining sector, general population trends identified in the first section of this chapter provide evidence for concern — but then this is a general concern for many rural communities in Australia.

Alan May

End Notes

1. There is a dearth of detailed statistical evidence available for the Shire of Yilgarn. The most valid and comparable data is that available in the various population censuses conducted for the Colony of Western Australia and then for Australia from 1901 onwards. Some of the early statistics were for the magisterial district of Yilgarn. Later statistics were for the Yilgarn local government area but boundary changes cause variations in the data so that it is not always strictly comparable from census to census. However, where necessary, efforts have been made to make the data as comparable as possible. Other data was obtained from the Statistical Register of W.A. as well as the W.A. Municipal Directory. These two sources were used mainly to check on changes in the intervening years between censuses. Population data for Southern Cross municipality is available until 1918 when it was dissolved as a separate municipality and absorbed into the Yilgarn Road Board. It is only in recent censuses that data for the Southern Cross township was again published by the Australian Bureau of Statistics.

2. Statistical Registers of W.A. 1937-1938; 1938-1939; 1939-1940. Section XI — Local Government Statistics.
3. Acknowledgement and thanks is made to the following students of the Mount Lawley Campus of the W.A. College of Advanced Education for the conduct of surveys and the initial analysis of collected data: Jack Byrne, Judy Cockram, Freida French, Gaye Goddard, Viv McAlpine, Kieran Motherway, Leonie Veale.
4. Representativeness of Surveys.
 - (a) Southern Cross residents — an approximate 13 per cent sample (82 in number) of residents aged 10 years and above. This sample was representative in terms of the age and sex ratios in each of the five year age cohorts.
 - (b) Southern Cross business houses — an approximate 30 per cent sample of business houses (11 in number) responded to a mail questionnaire. This was disappointingly low considering the relatively small number of actual businesses in Southern Cross.
 - (c) Yilgarn Shire farmers — an approximate 11 per cent (26 in number) sample of farmers from a variety of localities within the shire responded to a mail questionnaire survey related to farm production and management.
 - (d) Farming Families — an approximate 11 per cent (26 in number) of farming families responded to a separate questionnaire related to economic, social and welfare needs.
 - (e) Recreational Clubs and Organisations — representatives from approximately 25 per cent (11 in number) of identified groups were interviewed. These included most of the major sporting clubs in the district.
5. Jones, R. Changing Patterns of Rural Service Provision in the Midlands Statistical Division of Western Australia, 1898-1979, a paper delivered at the session on “Australasian Country Towns Towards the Year 2000” at the A.N.Z.A.A.S. Conference, Adelaide, 1980.
6. Jones, R.
7. Shire of Yilgarn: *Community Information Directory*, Yilgarn Shire, Southern Cross 1985.

Notes on Contributors

Bill Foulds, B.Sc.(Hons), Dip. Ed., M.Sc., Ph.D., a senior lecturer in science education at the Western Australian College of Advanced Education, was educated at the University of Sheffield. His research interests are ecological genetics and ecology. He has published widely in these fields, co-authored two reports for the Australian Heritage Commission and contributed to *Handbook of Legumes of World Economic Importance*.

Neville J. Green, M.Ed., B.A., a lecturer in Aboriginal education at the Western Australian College of Advanced Education, has a special interest in the frontier experience of Western Australia. His publications include *Nyungar the People* (ed.) (1979), *Desert School* (1983) and *Broken Spears* (1984). He also contributed to *Westralian Portraits* (1979) and *A New History of Western Australia* (1981).

Lyall Hunt, M.A., Dip.Ed., lived in the Yilgarn at the Miners' Settlement, Marvel Loch and Parker's Range and was educated at the University of Western Australia. He taught history in Western Australian schools and colleges of advanced education and followed a research interest in political biography. He is an active oral historian. His publications include articles on Premier Walter James and contributions to the *Australian Dictionary of Biography* and *Australians a Historical Dictionary*. He edited *Westralian Portraits* (1979).

Lynne Hunt, B.A.(Hons), Dip.Ed., M.Sc., who was educated at Liverpool University and the London School of Economics, taught sociology in Liverpool and then at Mount Lawley College in 1973-82. She currently teaches sociology of health at the Western Australian College and has recently produced a series of television programmes on women's health issues. In addition, she has contributed to the *Journal of Advanced Education* and *The Australian Education Researcher*.

Lindsay Hunter, B.A., Dip.Ed., B.A., Dip.Ed.Admin., Assoc. Soc. Sc., M.Sc., teaches geography at the Western Australian College of Advanced Education. His studies at the University of Western Australia and post-graduate work at London University stimulated his interest in Western Australian geography. He currently specializes in landscape analysis and perceptions of the environment.

Alan May, B.A. (Hons). is a lecturer in social science education at the Western Australian College of Advanced Education and was previously a lecturer in economic geography at the University of Melbourne. He is co-author of *Geography of Central*

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7. Shire of Yilgarn; *Community Information Directory*, Yilgarn Shire, Southern Cross 1985.

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Alan May, B.A. (Hons). is a lecturer in social science education at the Western Australian College of Advanced Education and was previously a lecturer in economic geography at the University of Melbourne. He is co-author of *Geography of Central*

Places (1971) and *The Australian Urban Network* (1979), and developed the multi-media learning programmes "Urban Australia" (1975) and "The Australian City" (1976).

John McKenzie, B.A. (Hons), Dip.ED., A.Mus.A., was born at Boulder of a pioneer goldfields family. He was educated at the University of Western Australia and spent forty years in education, specialising in history, and was inaugural head of the Social Sciences Department at Secondary Teachers' College. His writings on Western Australian history include *Twenty-five Years*, a history of Claremont Teachers' College, *An Exile at Marble Bar*, the story of a telegraph linesman, *Wise Man from the East*, the educational career of Senior Inspector Miles, and *Old Bush Schools*.

David Murray, B.A., M.A. (Hons), senior lecturer in geography at the University of Western Australia, was educated at Auckland University. His research interests include farming systems and the history of land settlement in the outer marginal wheatbelt of Western Australia. He has published on the tobacco industry of Mareeba, North Queensland and on the Esperance region, and contributed to *Western Landscapes* (1979).

Graham Pike, B.Sc. (Hons), Dip.Ed., M.Sc., Grad.Dip.Comp.Ed., was educated at the University of Tasmania and James Cook University. He had wide experience as a field geologist prior to his appointment as lecturer in geology at Mount Lawley College. He is prominent in geological education in Western Australia having chaired both the Geology Syllabus Committee and the Examiners' Panel of the Secondary Education Authority.

John R. Prestage, B.A., M.Ec., Ph.D., is a graduate of the University of Western Australia and Murdoch University. His doctoral research concerned the impact of transnational corporations on the Egyptian economy. He is the co-author of numerous primary mathematics texts and is currently a lecturer in economics at the Western Australian College of Advanced Education.

Dennis Rumley, B.A. (Hons), M.A., Ph.D., was born in County Durham, England, and, after studying at the University of Newcastle-Upon-Tyne, completed doctoral research in political geography at the University of British Columbia, Canada. He is a senior lecturer in geography at the University of Western Australia. He has published widely on the electoral geography of Western Australia and elsewhere, as well as on urban, local government and regional planning issues.

Appendix 1

YILGARN LOCAL GOVERNMENT PERSONALITIES

Compiled by Anthony Hunt, B.A.
from Yilgarn Shire records

Municipality of Southern Cross

Established: March 1892.

Mayors of Southern Cross

William Oats	March 2, 1892	May 6, 1895
Isidore James Knight Cohn	May 18, 1895	November 12, 1897
Joseph Wall Byrne	November 15, 1897	November 14, 1899
William Montgomery	November 14, 1899	November 19, 1902
	December 1, 1903	November 16, 1904
Frank H. Snook	November 19, 1902	December 1, 1903
	November 13, 1906	November 24, 1909
Herbert Gaston	November 16, 1904	November 7, 1905
John Edwin Chadwick	November 7, 1905	November 13, 1906
	November 24, 1909	November 23, 1910
	November 15, 1911	November 20, 1912
Archibald McPherson McIntyre	November 23, 1910	June 7, 1911
	November 20, 1912	June 30, 1913
Edmond Patrick Mackey	June 21, 1911	October 8, 1911
Francis James Rashleigh	November 26, 1913	December 9, 1915
William Perry Dunstan	December 9, 1915	April 15, 1918

Yilgarn Road Board

Established: March 2, 1892

First Chairman: William Oats

Members: V. Black

A. Arnold

N. Sayer

H. Hampson

T. Farren

F. Murphy

Yilgarn Road Board and Shire of Yilgarn

Chairmen/Presidents — 1892-1987

William Oats	March 2, 1892	June 6, 1895
Isidore J. K. Cohn	June 6, 1895	December 16, 1897
Joseph W. Byrne	December 16, 1897	October 5, 1899
Archibald T. Wilson	October 5, 1899	March 8, 1900
William Montgomery	March 8, 1900	August 30, 1900
Archibald T. Wilson	August 30, 1900	May 19, 1905
Frederick S. Baker	May 19, 1905	October 12, 1906
Richard R. Roberts	March 28, 1907	November 2, 1910
Samuel West	November 2, 1910	May 18, 1911
Owen McMahon	May 18, 1911	May 2, 1912
Edmond P. Mackey	May 2, 1912	March 12, 1914
George H. Howlett	April 9, 1914	March 31, 1915
William P. Dunstan	June 11, 1918	March 27, 1920
William E. Bynon	May 5, 1920	May 5, 1921
Braidwood Evans	May 5, 1922	May 8, 1922
James Nunn	May 8, 1922	May 10, 1923
Gordon Sprunt	May 10, 1923	December 10, 1923
James Nunn	January 7, 1924	May 6, 1924
Edwin C. McInnes	May 6, 1924	August 18, 1924
(Commissioner appointed August 18, 1924-October 27, 1924)		
James Nunn	October 27, 1924	May 6, 1927
J. W. Worthing	May 6, 1927	May 12, 1928
James Nunn	May 12, 1928	May 10, 1929
J. R. B. Crewe	May 10, 1929	April 12, 1930
F. Rowe	May 9, 1930	October 10, 1930
Lionel Kelly	October 10, 1930	May 8, 1931
James Nunn	May 8, 1931	April 15, 1932
James F. Worthing	April 15, 1932	June 9, 1933
Peter T. McMahon	June 9, 1933	May 11, 1934
J. W. Worthing	May 11, 1934	May 10, 1935
James Nunn	May 10, 1935	May 8, 1936
Lionel Kelly	May 8, 1936	March 12, 1943
John S. Whinfield	March 12, 1943	April 21, 1945
E. St. J. Page	May 11, 1945	April 27, 1946
John B. Stacey	May 1946	April 19, 1947
William E. Clough	May 9, 1947	April 21, 1951
Philip F. Demamiel	May 11, 1951	April 24, 1954
Clarence C. Roberts	May 14, 1954	June 21, 1968
Joseph N. Temby	June 21, 1968	June 30, 1972
Kenneth M. Beaton	June 30, 1972	May 21, 1982
John H. Panizza	May 21, 1982	May 15, 1987
Romolo P. Patroni	May 15, 1987	

Yilgarn Road Board

Secretaries 1892-1961

W. T. Lowe	March 2, 1892	June 15, 1894
C. Wilson	June 15, 1894	November 1, 1897
P. Aisbett	November 1, 1897	May 9, 1904
J. H. Stubbs	September 8, 1904	June 3, 1909
M. H. Kelly	June 3, 1909	September 5, 1918
R. P. Hogg	September 5, 1918	July 17, 1922
G. H. Bickford	August 7, 1922	December 10, 1923
S. Coleman	February 5, 1924	September 10, 1927
C. Alday	November 5, 1927	May 11, 1934
N. F. Haynes	July, 1934	December 12, 1942
F. J. Keaney	July 3, 1943	December 1, 1954
R. H. Green	December 10, 1954	August 8, 1955
D. G. Ferris	September 7, 1955	June 27, 1956
R. W. Mangini	July 9, 1956	June 30, 1961

Yilgarn Shire

Shire Clerks 1961-1988

R. W. Mangini	July 1, 1961	December 11, 1987
L. E. Hills	January 4, 1988	

Yilgarn Road Board and Shire Council

Members 1892-1987

NOTE: In those cases where it has been impossible to verify election or resignation dates, the term of members has been established from the date of first or last attendance at meetings.

Captain Willaim Oats	March 2, 1892	June 6, 1895
Dr V. Black	March 2, 1892	January 5, 1893
A. Arnold	March 2, 1892	September 1, 1892
W. A. Sayer	March 2, 1892	June 2, 1892
Thomas Farren	March 2, 1892	March 2, 1893
H. Hampson	March 2, 1892	July 7, 1892
	March 20, 1893	May 5, 1893
F. Murphy	March 2, 1892	June 14, 1894
Isidore J. K. Cohn	June 20, 1892	June 17, 1899
I. S. Bruce	July 25, 1892	July 9, 1894
G. Mellon	September 26, 1892	October 19, 1893

I. I. Phillips	January 23, 1893	October 19, 1893
David A. Mackey	May 22, 1893	September 16, 1893
Raeside	November 1, 1893	June 14, 1894
Harper	November 1, 1893	June 20, 1894
Roger Lisle	July 9, 1894	October 14, 1894
R. Cobham	September 7, 1894	May 3, 1895
Albert Jacobsen	February 4, 1896	December 13, 1896
Walter F. Black	June 2, 1896	September 16, 1896
Archibald T. Wilson	October 14, 1896	March 21, 1900
	September 9, 1907	March 19, 1907
James Allen	September 16, 1897	December 21, 1897
Fletcher	September 1897	
Joseph W. Byrne	September 28, 1897	December 13, 1897
Henry McKenna	September 28, 1897	June 17, 1899
John Honeycombe	September 28, 1897	June 17, 1899
Herbert Gaston	June 17, 1899	March 17, 1900
George Hogg	June 17, 1899	August 14, 1900
Frederick Wells	June 17, 1899	August 14, 1900
George Wilson	December 13, 1899	August 14, 1900
William Montgomery	December 13, 1899	August 14, 1900
James Fairclough	December 13, 1899	February 11, 1902
Harold Cocking	August 14, 1900	December 23, 1902
	March 17, 1904	December 7, 1902
John H. Stubbs	August 14, 1900	December 23, 1902
Joseph Payne	August 14, 1900	December 23, 1901
Frank Holmes	August 14, 1900	December 23, 1901
Thomas Ellenby	December 23, 1901	November 6, 1902
Joseph Hammer	December 23, 1901	October 30, 1902
Owen McMahon	March 19, 1902	November 6, 1902
	November 27, 1902	May 1, 1918
William Brown	December 23, 1902	August 8, 1907
John Cocking	December 23, 1902	March 16, 1904
Frederick Samuel	December 23, 1902	March 21, 1907
Jacob Hutchins	March 16, 1904	June 7, 1906
Thomas Moodie	April 14, 1906	June 18, 1910
Richard R. Roberts	July 23, 1906	November 2, 1910
A. Praetz	March 21, 1907	December 15, 1909
Samuel West	March 21, 1907	May 18, 1911
John Hosken	March 19, 1908	October 29, 1910
	October 25, 1914	February 3, 1915
George Montgomery	December 7, 1908	January 14, 1911
John Taylor	December 15, 1909	July 4, 1912
Mitchell Volich	June 18, 1910	September 19, 1912
George H. Howlett	October 29, 1910	June 1, 1918

William A. Patterson	November 19, 1910	April 10, 1912
	June 1, 1918	October 18, 1924
Christian H. Andre	January 14, 1911	April 10, 1912
	April 20, 1916	May 1, 1918
Edmond P. Mackey	May 24, 1911	March 13, 1914
James Vaughan Miles	April 10, 1912	May 22, 1913
Braidwood Evans	April 10, 1912	April 20, 1916
	November 6, 1918	August 5, 1924
Edwin G. McInnes	August 1, 1912	September 19, 1912
	May 26, 1915	May 13, 1927
Gilbert H. Forrester	December 17, 1912	May 31, 1915
Joseph Jones	January 3, 1913	September 5, 1914
	June 1, 1918	November 6, 1918
S. Hockley	June 10, 1913	July 14, 1915
John Bowman	April 9, 1914	August 2, 1914
William Henry	April 9, 1914	October 25, 1914
Charles Taylor	August 2, 1914	April 12, 1916
Robert Brown	September 5, 1914	May 1, 1918
William D. Cole	July 14, 1915	May 1, 1918
Joseph J. Windsor	April 12, 1916	May 1, 1918
J. J. Quinlan	June 4, 1917	May 1, 1918
John E. Chadwick	May 1, 1918	April 9, 1919
William P. Dunstan	May 1, 1918	March 27, 1920
Francis J. Rashleigh	April 27, 1918	November 2, 1919
Leslie Stewart	May 1, 1918	November 27, 1918
Frederick Liddle	May 1, 1918	April 24, 1920
W. E. Bynon	June 1, 1918	May 5, 1921
Frederick J. Mann	June 1, 1918	May 5, 1921
Albert Eaglestone	November 27, 1918	April 9, 1919
James Nunn	April 9, 1919	April 19, 1941
Maurice E. Solomon	April 9, 1919	September 5, 1921
Gordon Sprunt	November 29, 1919	December 22, 1923
Frederick W. Hilton	March 27, 1920	September 6, 1923
Charles J. H. Stewart	April 24, 1920	April 7, 1924
Peter T. McMahon	June 4, 1921	April 14, 1923
	October 18, 1924	April 13, 1929
	April 12, 1930	April 27, 1935
George W. Mann	June 4, 1921	April 8, 1922
William F. Single	September 24, 1921	November 5, 1923
Percy E. Forrester	March 13, 1922	June 18, 1927
Stanley J. Hammer	April 8, 1922	May 8, 1926
Clyde F. Snook	October 7, 1922	January 7, 1924
Joseph Simcock	May 8, 1923	September, 1924
Allan Doust	April 12, 1924	August 5, 1924

Francis E. Brown	May 8, 1924	August 5, 1924
George B. Hunt	October 18, 1924	April 16, 1925
Enas J. Tuckey	October 18, 1924	June 15, 1925
A. E. Faul	July 6, 1925	March 3, 1926
Walter Johnson	May 8, 1926	September 13, 1930
Benjamin O. Pearson	May 8, 1926	February 13, 1928
William Rose	May 8, 1926	April 9, 1927
James F. Worthing	May 8, 1926	April 14, 1928
	July 23, 1931	April 17, 1937
	May 8, 1943	June 1943
Michael Dennis	April 9, 1927	August 11, 1928
H. V. Courtayne	June 18, 1927	April 14, 1928
Augustine B. O'Rourke	February 13, 1928	June 8, 1929
James V. B. Crewe	February 14, 1928	April 12, 1930
James E. Keightley	February 14, 1928	September 6, 1933
Victor D. Wieland	August 11, 1928	April 13, 1929
Arthur E. Laslett	April 13, 1929	April 1930
Reginald T. Stacey	April 13, 1929	April 12, 1930
Lionel F. Kelly	June 8, 1929	December 11, 1931
	April 4, 1932	March 12, 1943
Frank Rowe	April 12, 1930	October 10, 1930
John B. Stacey	April 12, 1930	April 19, 1947
Walter Pickworth	April 12, 1930	April 8, 1931
Wilfred R. Trundle	September 15, 1930	April 4, 1932
Edward J. T. Pearse	November 10, 1930	July 23, 1931
John H. Hulme	April 28, 1931	February 19, 1932
Walter K. Leggett	September 12, 1931	April 21, 1934
Charles H. Beer	September 12, 1931	April 18, 1936
Louis Anderson	April 11, 1931	April 21, 1933
Thomas Deane	February 13, 1932	April 26, 1933
Thomas W. Green	May 9, 1933	January 8, 1937
George Yule	September 30, 1933	April 21, 1934
Walter E. Landon	April 26, 1934	April 17, 1937
John Barber	April 26, 1934	March 12, 1937
E. St. J. Page	April 27, 1935	April 27, 1946
William St. C. Brockway	April 18, 1936	July 23, 1938
James P. Doust	April 17, 1937	February 9, 1940
George A. Marston	April 17, 1937	December 9, 1938
William E. Clough	April 17, 1937	April 21, 1951
John S. Whinfield	April 17, 1937	April 21, 1945
David Hatt	July 23, 1938	November 30, 1945
David G. Morgan	February 14, 1939	April 15, 1939
Albert E. Liddell	April 15, 1939	March 15, 1944
	April 27, 1946	April 23, 1949

Clarence C. Roberts	April 20, 1940	May 24, 1975
Allen S. Mold	April 19, 1941	April 23, 1949
John W. Clements	January 30, 1943	April 15, 1944
	June 3, 1944	March 8, 1946
William P. Forrester	July 3, 1943	April 19, 1952
Arthur A. Price	May 12, 1944	April 18, 1959
John D. Neil	April 21, 1945	April, 17, 1948
Colin Scott	April 27, 1946	April 15, 1950
Thomas W. Howlett	April 19, 1947	March 11, 1949
George M. Hewitt	April 17, 1949	April 24, 1954
William Nicholson	April 23, 1949	May 21, 1973
John K. Dixon	April 23, 1949	April 15, 1950
Philip F. Demamiel	April 27, 1949	April 24, 1954
	April 21, 1956	February 23, 1963
Hector A. Parker	April 15, 1950	May 24, 1965
William A. Robinson	April 15, 1950	April 21, 1956
John Taylor	April 21, 1951	April 24, 1954
Aubrey B. Smith	April 19, 1952	May 4, 1964
Leslie J. Hart	April 24, 1954	April 21, 1956
William J. Grace	May 24, 1954	May 29, 1972
Bortola Panizza	April 24, 1954	May 29, 1972
William Harvey	April 21, 1956	May 24, 1971
Joseph N. Temby	April 18, 1959	May 28, 1977
Kenneth M. Beaton	May 27, 1963	
William Alick Barr	May 4, 1964	January, 1972
Horace A. Della Bosca	May 24, 1965	May 7, 1983
Eugene Granich	May 24, 1971	May 25, 1974
Edward S. Barkla	May 29, 1972	May 24, 1975
David A. Norrie	May 29, 1972	June 14, 1976
Nicholas A. Posa	May 29, 1972	May 24, 1975
Rodney W. Nicholson	May 21, 1973	
Bruce Harvey	May 25, 1974	
John Panizza	May 24, 1975	
Romolo P. Patroni	May 24, 1975	
Morris R. Troy	May 24, 1975	May 2, 1980
Raymond R. Della Bosca	June 14, 1976	
Peter M. Capito	May 28, 1977	
Raymond W. Miller	May 27, 1978	May 3, 1982
Edward Della Bosca	May 2, 1980	
Giovanni P. Panizza	May 3, 1982	
Arthur M. Roberts	May 7, 1983	
Nola E. Gobetti	December 12, 1987	

Appendix 2

Statistical Data

J. R. Prestage

1. Gold Production — Yilgarn Goldfield and Western Australia 1889-1987.
2. Value of Agricultural Commodities Produced in Yilgarn and Western Australia 1977-1986.
3. Wheat for Grain, Yilgarn and Western Australia, 1951-1985.
4. Oats for Grain, Yilgarn and Western Australia, 1951-1985.
5. Co-operative Bulk Handling Grain Deliveries, Yilgarn, 1960-1986.
6. Sheep and Wool Clip, Yilgarn and Western Australia, 1951-1985.

GOLD PRODUCTION — YILGARN GOLDFIELD AND WESTERN AUSTRALIA 1889-1987 (kg)

YEAR	YILGARN	W.A.	YEAR	YILGARN	W.A.	YEAR	YILGARN	W.A.	YEAR	YILGARN	W.A.
1889.....	51.6	430.4	1914.....	2655.6	38211.2	1939.....	1921.5	37709.3	1963.....	552.6	24933.5
1890.....	63.3	633.6	1915.....	2830.0	37581.1				1964.....	86.5	22138.1
1891.....	356.6	843.8	1916.....	2633.6	32962.7	1940.....	1971.8	27002.5	1965.....	69.0	20479.4
1892.....	589.3	1654.4	1917.....	2310.5	30134.1	1941.....	1702.6	34450.9	1966.....	31.3	19527.2
1893.....	2104.4	3080.8	1918.....	2133.6	27220.8	1942.....	984.3	26341.0	1967.....	42.2	17888.9
1894.....	875.1	5754.6	1919.....	1867.7	22797.1	1943.....	469.1	16971.3	1968.....	34.3	15900.6
1895.....	584.6	6432.0				1944.....	291.1	14480.3	1969.....	52.1	14937.9
1896.....	466.9	7814.3	1920.....	1185.1	19187.6	1945.....	160.7	14551.2			
1897.....	449.9	18753.0	1921.....	692.4	17196.6	1946.....	305.8	19160.4	1970.....	93.3	12298.1
1898.....	324.9	29176.7	1922.....	456.7	16715.7	1947.....	626.4	21859.8	1971.....	58.4	11149.1
1899.....	466.9	45670.1	1923.....	233.4	15668.1	1948.....	335.3	20651.7	1972.....	41.7	10848.0
			1924.....	270.8	15063.2	1949.....	209.2	20137.5	1973.....	204.7	9264.0
1900.....	817.3	43922.8	1925.....	403.3	13703.5				1974.....	57.3	7173.0
1901.....	830.0	52901.1	1926.....	334.7	13582.1	1950.....	210.7	18954.4	1975.....	253.8	6305.0
1902.....	690.6	58106.8	1927.....	256.1	12681.8	1951.....	144.8	19496.2	1976.....	88.0	7644.0
1903.....	706.9	64124.2	1928.....	153.8	12217.7	1952.....	242.9	22670.0	1977.....	58.8	7619.0
1904.....	931.5	61591.0	1929.....	136.0	11713.5	1953.....	1783.7	25587.3	1978.....	43.1	13653.0
1905.....	785.4	60724.0				1954.....	1873.9	26769.9	1979.....	72.5	12231.0
1906.....	800.3	55731.2	1930.....	191.7	12930.7	1955.....	2071.7	25910.7			
1907.....	723.9	52719.0	1931.....	296.1	15856.3	1956.....	2611.5	25267.6	1980.....	112.5	11598.0
1908.....	648.0	51177.1	1932.....	469.8	18806.2	1957.....	2575.4	26389.5	1981.....	210.3	10532.0
1909.....	657.2	49542.6	1933.....	667.8	19789.0	1958.....	2538.5	27168.3	1982.....	346.2	16135.0
			1934.....	779.0	20227.9	1959.....	2276.5	26738.2	1983.....	458.6	22389.0
1910.....	746.9	45671.8	1935.....	854.3	20156.8				1984.....	909.0	32111.0
1911.....	584.2	42573.5	1936.....	1376.5	26279.8	1960.....	2195.3	27017.6	1985.....	2694.0	41262.0
1912.....	952.6	39834.1	1937.....	2006.5	31076.0	1961.....	1996.0	27039.1	1986.....	4177.0	53639.0
1913.....	2278.5	40808.8	1938.....	2053.6	36266.8	1962.....	2011.1	26709.3	1987.....	6010.0	78438.0

Source: Australian Bureau of Statistics
W.A. Mines Department (84-87)

**VALUE OF AGRICULTURAL COMMODITIES PRODUCED
YILGARN AND WESTERN AUSTRALIA 1977-1986
(\$'000)**

Year	Yilgarn				Western Australia				Yilgarn % (Total)
	Crops and Pasture	Livestock Slaughtering	Livestock Products	Total	Crops and Pasture	Livestock Slaughtering	Livestock Products	Total	
1977.....	6188	891	1649	8728	463728	164967	328669	957364	0.91
1978.....	6886	747	1456	9091	487116	190774	315180	993070	0.92
1979.....	25339	570	1950	27889	765390	227239	345628	1338257	2.08
1980.....	23300	1423	2811	25534	810679	360174	416423	1587276	1.73
1981.....	19462	1579	2525	23566	778253	422842	483716	1684811	1.40
1982.....	27430	1570	2550	31550	1067289	349487	451988	1868764	1.69
1983.....	42904	1596	2670	47170	1367999	354948	470664	2193616	2.15
1984.....	19128	1453	2441	23022	1107538	347325	483906	1938770	1.19
1985.....	49854	1644	3520	55018	1721343	374706	599858	2675906	2.10
1986.....	25295	1684	4387	31366	1185557	372002	654139	2211698	1.40

Source: Australian Bureau of Statistics

WHEAT FOR GRAIN YILGARN AND WESTERN AUSTRALIA 1951-1985

Year	YILGARN			WESTERN AUSTRALIA			Yilgarn area as a % of state area	Yilgarn crop as a % of state crop
	Area (ha)	Production (tonnes)	Yield (t/ha)	Area (ha)	Production (tonnes)	Yield (t/ha)		
1950/51	16016	10445	0.65	1289082	1358056	1.05	1.2	0.76
1955/56	20873	23330	1.18	1169375	873619	0.74	1.7	2.67
1960/61	38299	38717	1.01	1627334	1739073	1.06	2.4	2.23
1965/66	90805	110455	1.22	2488708	2808507	1.12	3.6	3.93
1970/71	126332	128547	1.02	2361145	2956969	1.25	5.3	4.34
1971/72	116254	70504	0.61	2041887	2165160	1.06	5.7	3.25
1972/73	128728	82714	0.64	2437412	2002975	0.82	5.3	4.13
1973/74	152147	219701	1.44	2977920	4216782	1.41	5.1	5.21
1974/75	136332	170490	1.25	2809883	3277071	1.17	4.9	5.20
1975/76	154932	167562	1.08	3171289	4122011	1.30	4.9	4.07
1976/77	159689	62990	0.39	3313942	3248780	0.98	4.9	1.93
1977/78	182833	65101	0.36	3608871	2945461	0.82	5.1	2.21
1978/79	200429	205705	1.03	3705610	4399520	1.19	5.4	4.68
1979/80	213245	131355	0.62	4120784	3739139	0.91	5.2	3.51
1980/81	217493	119589	0.55	4333144	3315248	0.77	5.0	3.61
1981/82	219600	164800	6.80	4592900	4803400	1.00	4.8	3.43
1982/83	232600	231700	1.00	4865400	5534000	1.14	4.8	4.19
1983/84	224800	111300	0.50	4746200	4315500	0.91	4.6	2.60
1984/85	243400	282000	1.08	4651600	6580400	1.41	5.2	4.28

Source: Australian Bureau of Statistics.

**OATS FOR GRAIN
YILGARN AND WESTERN AUSTRALIA 1951-1985**

Year	YILGARN			WESTERN AUSTRALIA			Yilgarn area as a % of State
	Area (ha)	Production (tonnes)	Yield (t/ha)	Area (ha)	Production (tonnes)	Yield (t/ha)	
1950/51	1449	1003	0.69	237000	144000	0.61	0.01
1951/56	5320	4500	0.86	425000	300000	0.61	1.25
1956/61	5723	5078	0.87	498000	366000	0.68	1.14
1961/66	4572	4492	0.98	487000	422000	0.84	0.09
1966/71	10802	9879	0.91	519558	519939	1.00	2.01
1971/72	9061	5935	0.66	453885	413902	0.91	2.00
1972/73	6038	2367	0.39	296666	212001	0.71	2.00
1973/74	7398	6495	0.88	324890	383107	1.18	2.30
1974/75	5984	5011	0.84	262347	249526	0.95	2.30
1975/76	7145	5309	0.74	319877	385670	1.21	2.20
1976/77	10266	3212	0.31	372299	347396	0.93	2.80
1977/78	9379	2809	0.30	414978	415645	1.00	2.30
1978/79	9300	7298	0.78	427505	490892	1.15	2.20
1979/80	8878	4283	0.48	369553	399272	1.08	2.40
1980/81	9863	4205	0.43	381871	383545	1.00	2.60
1981/82	10300	5400	0.50	432200	441800	1.00	2.40
1982/83	10900	7000	0.64	460900	533600	1.16	2.36
1983/84	9000	3600	0.40	448200	455600	1.02	2.00
1984/85	7900	4300	0.55	350600	459900	1.31	2.25

Source: Australian Bureau of Statistics

CO-OPERATIVE BULK HANDLING GRAIN DELIVERIES, YILGARN 1960-1986 (t)

Year	Bullfinch	Marvel Loch	Dulyalbin	Southern Cross	Moorine Rock	Bodallin
1960.....				5149	5570	7245
1961.....				11369	8354	11562
1962.....				13429	9267	8734
1963.....				11306	9262	9086
1964.....				32362	13803	10098
1965.....			5230	22911	10667	13108
1966.....			11171	44163	21232	21149
1967.....	9493		18751	41071	17276	23668
1968.....	7686	9070	15018	28899	13186	24267
1969.....	10836	14097	16489	36808	15689	23398
1970.....	961	4252	8331	6391	5036	9064
1971.....	7844	17678	15433	30495	15783	29722
1972.....	4945	9174	8897	12457	8082	15536
1973.....	4151	11121	7588	17961	9514	19494
1974.....	13217	22783	17455	44083	23808	32465
1975.....	19545	19977	15960	47923	19427	33539
1976.....	14140	15289	16163	43567	17248	29013
1977.....	590	5280	8749	6412	6596	13256
1978.....		5329	7204	3526	9175	17429
1979.....	9999	25667	27375	49272	24959	47540
1980.....	5247	14983	15339	17856	16798	29654
1981.....	6156	9490	9605	31432	18604	32480
1982.....	8457	19130	13911	27619	17225	44005
1983.....	7348	27612	16871	52043	30228	62114
1984.....	1477	7686	14469	7748	9613	21988
1985.....	24420	29089	30409	60312	25200	57796
1986.....	2454	8345	22678	16655	9009	29864

Source: Co-operative Bulk Handling.

**SHEEP AND WOOL CLIP
YILGARN AND WESTERN AUSTRALIA 1951-1985**

Year	YILGARN			WESTERN AUSTRALIA	
	Sheep and Lambs Shorn	Wool Clip Sheep & Lambs kg	Average Weight Clip kg	Sheep and Lambs Shorn	Average Weight Clip kg
1951.....	100954	351612	3.5	12916254	3.8
1956.....	154228	618756	4.0	14893084	4.6
1961.....	190515	761821	4.0	18424054	4.2
1966.....	211709	790806	3.8	25473304	4.2
1971.....	258153	1014591	3.9	37134000	4.1
1972.....	256829	1148050	4.3	38115000	4.4
1973.....	240457	989460	4.1	33645000	4.1
1974.....	250814	1005747	4.0	35763000	4.0
1975.....	279756	1220966	4.4	37992000	4.5
1976.....	306262	1319304	4.3	35289000	4.3
1977.....	233320	915165	3.9	33873000	4.4
1978.....	185125	738962	4.0	33855000	4.2
1979.....	209136	870062	4.2	34895000	4.4
1980.....	224609	848249	3.8	35330983	4.2
1981.....	243039	963387	4.0	36066937	4.4
1982.....	NA	NA	NA		
1983.....	NA	NA	NA		
1984.....	216000	837500	NA		
1985.....	251600	1116900	4.44	35724300	4.49

Source: Australian Bureau of Statistics

