

09 PH.

B672

5.8.64

Red

LAND SETTLEMENT ON EYRE PENINSULA

SOUTH AUSTRALIA

An enquiry into the future of an essentially rural area based on the further development of its agricultural resources.

BY

ROBERT MACHIEL BOERNE

(drs. UTRECHT)

Thesis submitted for the degree of Doctor of
Philosophy in Geography at the Adelaide University
July 1963

STATEMENT

This thesis is based on original research carried out by me during the tenure of a Research Scholarship in the Department of Geography at the University of Adelaide and, to the best of my knowledge, contains no material previously submitted for a degree at any other University either by myself or by any other person.

163/50

ACKNOWLEDGEMENT

I wish to express my gratitude to the University of Adelaide for the financial assistance I received from the University Research Grant which enabled me to carry out this study.

Many thanks are due to the members of the staff of the Geography Department of the Adelaide University for the help they have given me during the preparation of this thesis. In particular I am indebted to my supervisors, Professor G. H. Lawton and Professor K. W. Thomson for their advice and assistance.

I am most grateful to all those who have willingly read the manuscript or parts thereof, and who have been kind enough to give their comments. Frequently these comments were related to spelling and grammar. If the reader does not immediately become aware that the author is not of British origin, this is due to the patience displayed by these persons in explaining to me the many intricacies of the English language.

Much co-operation was received from the various Government departments in providing me with the information I required. Thanks are due, in particular, to the Commonwealth Bureau of Census and Statistics in Adelaide, and the Department of Agriculture and the Department of Lands of South Australia.

All plates are from the author's photographs unless otherwise stated.

TABLE OF CONTENTS

	Page
LIST OF APPENDICES	iv
LIST OF FIGURES	vii
LIST OF PLATES	ix
LIST OF TABLES	x
LIST OF ABBREVIATIONS	xiv
INTRODUCTION	1
CHAPTER 1 THE LAND	6
CHAPTER 2 HISTORY OF LAND SETTLEMENT AND SUBSEQUENT DEVELOPMENTS	30
CHAPTER 3 THE RURAL INDUSTRIES	67
CHAPTER 4 THE PRODUCTIVE CAPACITY OF THE LAND	106
CHAPTER 5 THE SCOPE FOR INCREASING PRODUCTION	128
CHAPTER 6 CLOSER SETTLEMENT AND EYRE PENINSULA	143
CHAPTER 7 THE RURAL SERVICE CENTRES	167
CHAPTER 8 THE EFFECT OF CLOSER SETTLEMENT ON THE SERVICE CENTRES	187
CHAPTER 9 OTHER POSSIBLE EFFECTS OF CLOSER SETTLEMENT	202
CHAPTER 10 CONCLUSION	228
APPENDICES	241
LIST OF REFERENCES	278
SUMMARY	284

LIST OF APPENDICES

APPENDIX		Page
I	Notes on Figure 4 (Relief types)	241
II	Average daily maximum temperature (°F.), absolute maximum temperature for all years, and average number of days over 100°F. per year for some selected stations	242
III	Average daily minimum temperature (°F.), absolute minimum temperature for all years, and average number of days below 32°F. per year for some selected stations	243
IV	Notes on the length of the growing season	244
V	Notes on the "hundred"	245
VI	Notes on Figures 7 and 8 (Increases and decreases of the total population and the farm population between 1933 and 1954)	246
VII	Notes on Figure 9 (Government towns and service centres, 1958)	247
VIII	Notes on Figures 10, 11, 12 and 13 (Occupied land)	248
IX	Notes concerning the method used for computing Eyre Peninsula's contribution to the gross value of rural production in South Australia	249

APPENDIX

		Page
X	Notes on Figure 17 (Land use)	250
XI	Number of rural holdings and number of persons working permanently full time on rural holdings in the Western Division of South Australia, at 31st March 1958 (by counties)	252
XII	Notes on Figure 21 (Distribution of the farm population, 1958)	253
XIII	Social service costs and population density for the five statistical divisions of Queensland flanking the southern border of that State (1937-38)	254
XIV	List of hundreds and abbreviations used in Figure 24	255
XV	Notes on Figure 24 (Minimum area required per family)	258
XVI	Method used for determining the area of farms, the number of workers and the number of families supported	260
XVII	Notes on the growth of Whyalla and the increased demand for beef, veal, mutton, lamb, pork, and eggs	262
XVIII	Occupations of the active male population for all centres of first, second, third, and fourth order	263
XIX	Notes on Figures 27 and 28 (The service areas of general stores and garages)	269

APPENDIX		Page
XX	Method used for estimating the population of the service centres	271
XXI	Notes on the index of centrality and on Figure 29 (Zones of influence of some major service centres)	272
XXII	Method used for estimating the number of persons served by the centres	275
XXIII	Percentage of secondary students continuing in the higher classes in all higher primary and area schools in South Australia	277

LIST OF FIGURES

FIGURE		Between Pages
1.	Counties, service centres, and railways	6- 7
2.	Geology	7- 8
3.	Elevation	9- 10
4.	Relief types	9- 10
5.	Average annual rainfall	13- 14
6.	Soils	17- 18
7.	Population changes, 1933-1954 (total population)	54- 55
8.	Population changes, 1933-1954 (permanent male rural workers)	54- 55
9.	Government towns and service centres, 1958	56- 57
10.	Occupied land, 1895	59- 60
11.	Occupied land, 1915	59- 60
12.	Occupied land, 1935	59- 60
13.	Occupied land, 1955	59- 60
14.	New land cleared each year, 1907-1941	62- 63
15.	Areas of wheat for grain and all crops, and number of sheep, 1880-1959	62- 63
16.	Number of tractors and horses, and number of acres of improved pastures and barley for grain, 1925-1959	62- 63
17.	Land use, 1958	70- 71
18a.	Distribution of sheep, 1958	77- 78
18b.	Distribution of cattle, 1958	77- 78

FIGURE		Between pages
19a.	Distribution of wheat for grain (acres), 1958	77- 78
19b.	Distribution of barley for grain (acres), 1958	77- 78
20a.	Distribution of oats for all purposes (acres), 1958	77- 78
20b.	Distribution of sown pastures (acres), 1958	77- 78
21.	Distribution of farm population, 1958	103-104
22.	Average wheat yields, 1949-1958	107-108
23.	Potential sheep carrying capacity	110-111
24.	Minimum area required to support one family	156-157
25.	Estimated possible increase of farm population, 1958	159-160
26.	The Tod River Water District, 1959	159-160
27.	Service centres and areas served by general stores, Nov.-Dec. 1958	163-169
28.	Service centres and areas served by garages, Nov.-Dec. 1958	168-169
29.	Zones of influence of Port Lincoln, Streaky Bay, Ceduna, and Whyalla, measured by an eight point index, Nov.-Dec- 1958	180-181

LIST OF PLATES

PLATE		Between pages
1.	The dry pastoral area directly west of Port Augusta	11- 12
2.	Limestone country fifteen miles S.E. of Streaky Bay	11- 12
3.	Aerial view of sand hill country S.E. of Kimba	11- 12
4.	Looking west from Ucontitchie Hill, a granite outcrop in the Hundred of Cocata	11- 12
5.	Road in the mallee near Tola tanks, north of Kimba	11- 12
6.	Cultivation of small pockets of arable land in limestone country near Talia	11- 12
7.	The dam of the Tod reservoir	43- 44
8.	The Tod main south of Kyancutta	43- 44
9.	Land clearing in the mallee	94- 95
10.	Clearing of gum trees near the Tod reservoir	94- 95
11.	Capietha (Hundred of Cungena); an example of a surveyed town that failed to develop	174-175
12.	Tooligie; an example of a centre of first order	174-175
13.	Kielpa; an example of a centre of second order	174-175
14.	Elliston; an example of a centre of third order	174-175
15.	Cowell; an example of a centre of fourth order	174-175
16.	Main shopping centre of Port Lincoln	174-175
17.	Colton (Hundred of Colton); an example of a service centre that lost its function	174-175
18.	Rainshed north of Cowell	174-175

LIST OF TABLES

TABLE	Page
1. Number of farms, area under crops, number of livestock, etc., in the Western Statistical Division, in absolute figures, and as a percentage of the total for all counties in South Australia (3 year average 1955-56 to 1957-58)	68
2. The relative importance of various commodities produced on Eyre Peninsula farms, measured by their contribution towards the district's gross value of rural production (1955-56)	69
3. Number of holdings, area of holdings, and number of sheep carried in the essentially pastoral counties of the Peninsula (1955-56)	73
4. Number of holdings in the essentially pastoral counties of the Peninsula, classified according to total area (1955-56)	74
5. Recommended superphosphate dressings	85
6. Shipments of wool, wheat, and barley from each port on Eyre Peninsula as a percentage of the total amount shipped from the Peninsula during the year ended 30th June 1958	97

TABLE		Page
7.	Minnipa Research Centre. Number of sheep carried, average wool cut per head, and rainfall (1948-1950)	137
8.	Index of centrality of the main centres serving Eyre Peninsula	180
9.	General stores. Number of persons served by the centres, per business in the centres, and per person (males and females) permanently employed in these businesses	183
10.	Garages (general repairs only). Number of persons served by the centres, per garage in the centres, and per male permanently employed in the garages	184
11.	The effect of closer settlement on the size of centres of first, second, third, and fourth order, assuming that the population in the centres will increase at the same rate as the rural population in the surrounding district	188
12.	Centres with no garage which are situated at more than fifteen miles from a garage, and the rural population that could be served by these centres if a garage were established	192
13.	Centres with a higher primary or an area school on Eyre Peninsula, and the number of students enrolled in 1960	204

TABLE		Page
14.	Distribution of the rural population on Eyre Peninsula living at more than twenty miles from a secondary school (1958)	206
15.	Population living within a twenty mile radius of centres with a higher primary or an area school (1958)	208
16.	Population living within a twenty mile radius of centres analysed for their scope as sites for secondary schools (1958)	210
17.	Distribution of the rural population on Eyre Peninsula that will live at more than twenty miles from a secondary school assuming a population increase as estimated, and the establishment of schools at Lock, Ungarra, and Poochera	214
18.	Centres with a doctor in 1959 and an estimate of the population served	217
19.	Summary of the economic results of the Port Lincoln Division of the South Australian Railways (1955-56 to 1958-59)	223
20.	Average daily maximum temperature ($^{\circ}$ F.), absolute maximum temperature for all years, and average number of days over 100° F. per year for some selected stations	242
21	Average daily minimum temperature ($^{\circ}$ F.), absolute minimum temperature for all years, and average number of days below 32° F. per	

TABLE	Page
year for some selected stations	243
22. Number of rural holdings, and number of persons working permanently full time on rural holdings in the Western Division of South Australia at 31st March 1958 (by counties)	252
23. Social service costs and population density for the five statistical divisions of Queensland flanking the southern border of that State (1937-38)	254
24. Occupations of the active male population, number of retired farmers, and the estimated present and future population, males and females, for all centres of first, second, third, and fourth order (November - December 1958)	264
25. Numbers of male workers by industry, and the total population (males and females) of Port Lincoln and Whyalla (1954 Census)	268
26. Percentage of secondary students continuing in the higher classes in all higher primary and area schools in South Australia	277

LIST OF ABBREVIATIONS

Com. Bur. Agr. Econ.	Commonwealth Bureau of Agricultural Economics
Com. Bur. Cens. and Stats.	Commonwealth Bureau of Census and Statistics
Com. Bur. Met.	Commonwealth Bureau of Meteorology
Com. Dep. Nat. Dev.	Commonwealth Department of National Development
Rur. Rec. Com.	Rural Reconstruction Commission
P.D. S.A.H.A.	Parliamentary Debates, South Australian House of Assembly
S.A.P.P.	South Australian Parliamentary Papers