



NEW ZEALAND
ATLAS
EDITED BY IAN WARDS

CONTENTS

TEXTS

| | page |
|--|------|
| NOTES ON THE SECTIONAL MAP AREAS (<i>with maps</i>) | |
| North Auckland | 5 |
| South Auckland, Gisborne | 9 |
| Taranaki, Hawke's Bay, Wellington | 13 |
| Nelson, Marlborough | 17 |
| Westland, Canterbury | 21 |
| Southland, Otago | 25 |
| <i>R. G. Lister, BA(Lond), Professor of Geography, in association with R. P. Hargreaves, MA(NZ and Wis), PhD(Otago), Geography Department, University of Otago</i> | |
| NEW ZEALAND IN THE WORLD (<i>with map</i>) | 44 |
| <i>F. L. W. Wood, CMG, BA(Sydney), MA(Oxon), emeritus Professor of History, Victoria University of Wellington</i> | |
| DISCOVERY (<i>with map</i>) | 51 |
| <i>Janet Davidson, MA, E. Earle Vaile Archaeologist, Auckland Institute and Museum</i> | |
| PATTERNS OF SETTLEMENT (<i>with map</i>) | 53 |
| <i>Raeeyn Dalziel, BA, PhD, Lecturer in History, University of Auckland</i> | |
| GOVERNMENT | 57 |
| <i>Mary Boyd, MA, Reader in History, Victoria University of Wellington</i> | |
| POPULATION (<i>with maps</i>) | 60 |
| <i>Miriam G. Vosburgh, MA, PhD, Assistant Professor of Sociology, Villanova University, Pennsylvania, USA</i> | |
| ADMINISTRATIVE DIVISIONS (<i>with maps</i>) | 66 |
| <i>R. J. Lowe, MA, Investigating Officer, Town and Country Planning Division, Ministry of Works and Development</i> | |
| LANDFORMS AND RESOURCES (<i>with maps</i>) | 71 |
| <i>D. W. McKenzie, MSc, emeritus Professor of Geography, Victoria University of Wellington</i> | |
| GRAVITY, MAGNETISM & SEISMICITY (<i>with maps</i>) | 76 |
| <i>G. A. Eiby, MSc, FRAS, FRASNZ, Seismological Observatory, Geophysics Division, and W. I. Reilly, BA, BSc, DSc, AOSM, Superintendent, Geophysical Survey, Department of Scientific and Industrial Research</i> | |
| THE SEA FLOOR (<i>with map</i>) | 80 |
| <i>D. J. Cullen, BSc, PhD, Scientist, New Zealand Oceanographic Institute, Department of Scientific and Industrial Research</i> | |
| CLIMATE (<i>with maps</i>)* | 82 |
| <i>A. I. Tomlinson, MSc, Dip Stats, Climatologist, New Zealand Meteorological Service</i> | |
| GEOLOGY (<i>with maps</i>) | 90 |
| <i>R. P. Suggate, MA, DSc, Director, New Zealand Geological Survey, and Patricia M. Riddolls, BSc, Geologist, New Zealand Geological Survey, Department of Scientific and Industrial Research</i> | |
| FORESTRY (<i>with maps</i>) | 98 |
| <i>W. J. Wendelken, BSc, BForSc, Assistant Commissioner, Commission for the Environment</i> | |
| FLORA (<i>with photographs</i>) | 108 |
| <i>E. J. Godley, MSc, PhD(Cantab), FRSNZ, FLS, Director, Botany Division, Department of Scientific and Industrial Research</i> | |
| FAUNA (<i>with maps</i>) | 114 |
| <i>R. A. Falla, KBE, CMG, MA, DSc, FRSNZ, Chairman, Nature Conservation Council</i> | |
| SOIL (<i>with maps</i>) | 122 |
| <i>M. L. Leamy, MSc, Chief Pedologist, and M. Fieldes, DSc, formerly Director, Soil Bureau, Department of Scientific and Industrial Research</i> | |
| FARMING | 144 |
| <i>P. R. Stephens, MA, Senior Agricultural Economist, Ministry of Agriculture and Fisheries</i> | |
| FISHING (<i>with map</i>) | 151 |
| <i>V. T. Hinds, BSc, Fisheries Management Division, Ministry of Agriculture and Fisheries</i> | |
| MINERAL RESOURCES (<i>with map</i>) | 154 |
| <i>B. N. Thompson, MSc, Geologist, New Zealand Geological Survey, Department of Scientific and Industrial Research</i> | |
| ENERGY RESOURCES (<i>with map</i>) | 158 |
| <i>Alison D. Allen, BA, Research Officer, Legislative Department</i> | |

CONTENTS

| | page |
|---|------|
| MANUFACTURING AND INDUSTRY (with maps) G. R. Sanderson, MA, Executive Officer, Industrial Development Division, Department of Trade and Industry | 162 |
| TRANSPORT AND COMMUNICATIONS (with maps) R. J. Polaschek, BA, MCom, DPA, ACA, FCIT, Secretary for Transport | 172 |
| TRADE AND COMMERCE J. C. Mosley, MA, PhD, Department of Trade and Industry | 178 |
| ANTARCTICA Trevor Hatherton, OBE, DSc, PhD, DIC, FRSNZ, Director, Geophysics Division, Department of Scientific and Industrial Research | 186 |
| THE PACIFIC NEIGHBOURHOOD (with maps) Barrie K. Macdonald, BA, PhD, Lecturer in History, Massey University | 190 |
| TOURISM (with map) J. S. McBean, MA, Assistant Director, Development and Research Division, Tourist and Publicity Department | 200 |

*Note: In the section headed 'Water Balance', '760 millimetres' should read '76 millimetres'.

MAPS

| | |
|--|-----|
| NEW ZEALAND TOPOGRAPHICAL This map, and the thematic base maps, are on the Lambert conformal (or orthomorphic) conic projection with two standard parallels, the meridians being straight lines, the parallels arcs of concentric circles. The standard parallels have been selected at latitudes 37° and 45°, the scale variation reading a maximum of +0.40 per cent near North Cape. The scale at any point is independent of direction; between the standard parallels it is a little smaller, and outside them a little greater, than the nominal scale of the map. For most purposes the scale can be regarded as constant. | 2-3 |
|--|-----|

| | |
|--|---|
| ISLANDS OF NEW ZEALAND, in the Pacific For compilation notes, see under 'Pacific Islands' | 4 |
|--|---|

SECTION MAPS

| | |
|---|-------|
| North Auckland | 6-7 |
| South Auckland, Gisborne | 10-11 |
| Taranaki, Hawke's Bay, Wellington | 14-15 |
| Nelson, Marlborough | 18-19 |
| Westland, Canterbury | 22-23 |
| Southland, Otago | 26-27 |

These maps are on the Lambert conformal (or orthomorphic) conic projection with two standard parallels, the meridians being straight lines, the parallels arcs of concentric circles. The standard parallels have been selected at latitudes 36½° and 45½°. The scale at any point is independent of direction; between the standard parallels it is a little smaller, and outside the standard parallels a little greater, than the nominal scale of the map, giving a range of scale variation of ± 0.35 per cent over the land area. For most purposes the scale can be regarded as constant.

URBAN AREAS

| | |
|---|-------|
| Auckland | 30-31 |
| Christchurch | 32 |
| Dunedin | 33 |
| Wellington | 34-35 |
| Tauranga, Wanganui, Whangarei | 36 |
| New Plymouth, Hamilton, Palmerston North, Masterton | 37 |
| Gisborne, Napier, Rotorua, Hastings | 38 |
| Nelson, Blenheim, Ashburton, Oamaru | 39 |
| Greymouth, Invercargill, Timaru, Bluff | 40 |

These maps are compiled from the most recent New Zealand Map Service, Series 1, and are at a scale of 1:125 000. The relief shading was drawn by D. W. Lawrence. The Reference notes and symbols are shown at page 29.

| | |
|------------------------------------|----|
| THE WORLD FROM NEW ZEALAND | 41 |
|------------------------------------|----|

This map, freshly presented, is repeated from *A Descriptive Atlas of New Zealand, 1959*. 'This map is drawn on an oblique equidistant azimuthal projection centred on Wellington. This resulted in every great circle through Wellington becoming 'unrolled' into a straight line in the projection plane, with its correct length and its correct initial direction preserved. The antipodes of Wellington, a point in Spain, therefore becomes the external circular boundary of the map. The scale is correct along every straight line (great circle) through Wellington; but when a direction is transverse to any such straight line the scale increases with increasing distance from the centre of the map, slowly within the central hemisphere and more rapidly in the outer hemisphere. This results in very great distortion of shape near the margins of the map.

'Azimuths and distances from the centre are correctly represented and can be measured with the scales provided. The azimuth, reckoned eastward from north, of any point from Wellington is obtained by drawing a straight line from Wellington to that point and producing it to the external circular scale. For example, the azimuth to New York is 66° 20'; the distance, measured on the linear scale below the map, is 8,950 miles.'

| | |
|----------------------------------|-------|
| NEW ZEALAND IN THE WORLD | 42-43 |
|----------------------------------|-------|

These maps, with different colours, are repeated from *A Descriptive Atlas of New Zealand, 1959*. 'These two maps are drawn on oblique Hammer projection. . . . Designed primarily to show transport routes from New Zealand to Europe, they have been arranged to feature the sea route westward through Suez . . . and the sea route eastward through Panama. . . . In each case the sphere is represented within an ellipse whose major and minor axes are in the ratio 1.75:1. The major axis is a great circle which crosses the equator at the centre of the map and crosses the parallels of 40° latitude at a longitude interval of 80° from the centre. Thus [on p 42] the major axis crosses the equator at longitude 75° E, and passes through the points, 40° N, 5° W, and 40° S, 155° E. [On p 43] the major axis crosses the equator at longitude 90° W, and passes through the points, 40° S, 170° W, and 40° N, 10° W. 'The area scale is constant over the whole extent of the maps. As the linear scale at any point is dependent on direction, these maps are not readily adapted to the measurement of distances.'

| | |
|------------------------------------|-------|
| NEW ZEALAND IN THE PACIFIC | 46-47 |
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This map shows the entire Pacific coastline, including the Antarctic and the entrances from the Arctic, Indian and Atlantic oceans. The

area can be contained within an approximate ellipse, with a centre at 10° S latitude and 165° W longitude and with a minor axis inclined at about 17½° to the meridian of the origin. Mr L. P. Lee found that a conformal projection of this area could be devised from a transformation of the stereographic, as already demonstrated by O. M. Miller. The scale coefficient ranges from 0.721 at the centre to 1.279 at the boundary, considerably less than in any projection so far used for the Pacific. Air routes are those being used in July 1973 to the principal airports of the main island groups and all countries bordering the Pacific. Major routes to Europe and the Middle East are also shown. Generally, the shortest route with the least number of stops has been shown.

DISCOVERY

50

The base map is a modern outline from the New Zealand Map Service, Series 1. The information of the early Polynesian settlement of the Pacific and their voyage path to New Zealand was supplied by the author based on her reading of most recent sources. The voyage path of **Abel Janszoon Tasman** was plotted by Graham Jeune, assisted by information from Commander G. B. W. Johnson, Wellington Harbour Board, and Commander I. S. Monro, Hydrographer RNZN, from the following sources:

Tasman, Abel Janszoon, Journal of his discovery of Van Diemen's land and New Zealand in 1642 . . . photo-lithographic facsimiles of the original manuscript in the Colonial Archives at the Hague with an English translation and facsimiles of original maps to which are added life and labours of Abel Janszoon Tasman by J. E. Heeres and observations made with the compass on Tasman's voyage by W. van Bemmelen, Amsterdam, 1898, Abel Janszoon Tasman & the Discovery of New Zealand, Department of Internal Affairs, Wellington, MCMXLII; The voyages of Abel Janszoon Tasman, Andrew Sharp, Oxford [1968]; photostat of F. J. Visscher's chart from the Huydecoper MS in the Mitchell Library, Sydney (Turnbull Library Map Collection); photostat from Tasman's chart, State Archives, The Hague (Turnbull Library Map Collection).

The voyage path of **James Cook** is compiled from:

'A chart of New Zealand . . . by Lieut. J. Cook . . .' Reproduced from the original chart in the British Museum, The Friends of the Turnbull Library, 1969; *The Journals of Captain James Cook on His Voyages of Discovery: The Voyage of the Endeavour 1768-1771, Vol. 1, with folio of charts, edited by J. C. Beaglehole; the point of entry into New Zealand waters, 6/7 Oct 1769, and the voyage path to the south-west of the South Island, were amended from information by Commander G. B. W. Johnson.*

The voyage path of **De Surville** was compiled from:

'Plan de la Baye de Lauriston . . . 1769' and 'Carte de la Nouvelle Zelande . . . 1769', both photocopies from MSS in the Bibliothèque Nationale, Paris (Turnbull Library Map Collection).

Place names and spelling;

The place names and chart information of Tasman's voyage (green) have been translated.

The places named by Cook (red) are a selection of places from Cook's chart of his first voyage.

The Maori place names (brown), from material supplied by the author, have been given modern spellings/translations for ease of identification.

PATTERNS OF SETTLEMENT

56

The base map is from the New Zealand Map Service, Series 1. The main areas of Maori settlement are shown from information supplied by K. Gorbey, Director of the Waikato Art Museum, and with particular reference to the South Island and the Taupo area by D. R. Simmons of the Auckland Institute and Museum, collated by the editor. The special settlements are shown from information supplied by the editor and the more recent immigration from information from the Department of Statistics.

POPULATION

60

Age and Sex Structure, *diagram*

Prepared by Professor J. McCreary, Sociology Department, Victoria University of Wellington.

Population

64-65

Prepared from information supplied by the Department of Statistics on a base map from the New Zealand Map Service, Series 1. The area of any one screened (light red) circle is centred on and proportional to the population it represents, and is completely independent of any other screened circle and/or solid (dark red) symbols that fall within it. All population within gazetted Urban Statistical Divisions has been shown as urban, which will account for the apparent lack of rural population around larger cities.

Some of the cities and boroughs in the Auckland vicinity have been grouped within four main areas represented by individual screened circles:

| | | | |
|----------------------|---------------------|---------------------|-------------------|
| Northshore | Auckland West | Auckland Central | Auckland South |
| Takapuna (city) | Henderson (borough) | Auckland City | Papatoetoe (city) |
| Devonport (borough) | Glen Eden (borough) | Newmarket (borough) | Otahuhu (borough) |
| Northcote (borough) | New Lynn (borough) | Mt Albert | " |
| Birkenhead (borough) | | Mt Eden | " |
| | | Mt Roskill | " |
| | | One Tree Hill | " |
| | | Onehunga | " |
| | | Ellerslie | " |
| | | Mt Wellington | " |

Other screened circles in the vicinity of Auckland are centred on:

| | | | |
|---|-------------------------------|-------------------------|-----------------------------------|
| East Coast Bays (borough) | Te Atatu (county subdivision) | Titirangi (county town) | Manukau (city) |
| Glenfield (county town) | Kelston (county town) | Howick (borough) | Papakura (borough) |
| Groupings in the Wellington vicinity are: | | | |
| Wellington (city) | Upper Hutt (city) | Tawa (borough) | Wainuiomata (county borough) |
| Lower Hutt (city) | Porirua (city) | Petone (borough) | Heretaunga-Pinhaven (county town) |
| Groupings in the Christchurch vicinity are: | | | |
| Christchurch (city) | Riccarton (borough) | Hornby (county borough) | |
| Waimairi (county) | Sockburn (county borough) | | |
| Groupings in the Dunedin vicinity are: | | | |
| Dunedin (city) | St Kilda (borough) | Green Island (borough) | |

ADMINISTRATIVE DIVISIONS

| | |
|--|----|
| Local Authorities, Statistical Areas, Education & Land Districts | 67 |
| Health and Works Districts | 68 |
| Water and Electricity Districts | 69 |

Unless the date is shown on the face of the map, the information on local authorities and statistical areas is dated to November 1974; on Education Board boundaries and electricity distribution to February 1973. All boundaries are as shown in the *Atlas of New Zealand Regional Statistics*, Town and Country Planning Branch, Ministry of Works, Wellington 1968, with later amendments by the relevant authority to the date shown.

LANDFORMS IN RELIEF

74-75

This map was drawn by J. Petro, then Cartographic Branch, Department of Lands and Survey, in 1963-64 on a base from the New Zealand Map Service, Series 1. It was subsequently revised by the Cartographic Branch.

SEISMICITY, MAGNETIC AND GRAVITY FIELDS

| | |
|---|----|
| Seismograph Stations, 1972; Deep Earthquakes, 1964-65; Shallow Earthquakes, 1961-65; Historic Earthquakes | 78 |
| Cross Section of the Main Seismic Region; the Magnetic Field in 1975; the Gravity Field | 79 |
| From information supplied by the Geophysics Division, Department of Scientific and Industrial Research. | |

THE SEA FLOOR

81

This map is based on Lawrence, P., 1967: *New Zealand Region; Bathymetry, 1:6 000 000, N.Z. Oceanogr. Inst. Chart, Miscellaneous Series, 15.*

CONTENTS

| | page |
|---|---------|
| CLIMATE | |
| Weather Map with associated Satellite Cloud Picture; Climate Districts | 83 |
| Average Annual Rainfall; Days of Rainfall; Annual Variation of Rainfall | 85 |
| Mean Annual Temperature; Wind Flow Characteristics; Annual Variation of Temperature | 87 |
| Average Annual Duration of Bright Sunshine; Average Number of Days per year with a maximum Temperature of 25°C or greater; Average Number of Screen Frosts per year; Monthly Accumulated Sunshine Hours; Average Daily Incoming Radiation; Fluctuation of Average Temperature | 88 |
| The Variability of Average Rainfall; Average Annual Water Deficit; Highest Rainfall for One Day; Heating Degree Days; Average Annual Number of Days on which Thunder is heard; Damaging Hailstorms | 89 |
| These maps are all based on material supplied by the Meteorological Service. | |
| GEOLOGY | |
| The New Zealand Coastline throughout the Cenozoic Era, <i>diagram</i> , after C. A. Fleming | 90 |
| Geology | 96-97 |
| Compilation material is based on 'Geological Map of New Zealand, 1:1 000 000, 1952'. | |
| FORESTS | |
| Vegetation <i>circa</i> 1840 | 104-105 |
| This map is based on information from <i>National Forest Survey of New Zealand, 1955</i> , Vol 1, <i>The Indigenous Forest Resources of New Zealand</i> , by S. E. Masters, J. G. Holloway and P. J. McKelvey, Wellington 1957. | |
| Contemporary Forest Cover | 106-107 |
| This map is compiled from: F.S. Mapping Series No 1, updated by Forest Service Conservencies and by the Forest Research Institute; F.S. Mapping Series No 12, 2nd Edition, June 1973; F.S. Mapping Series No 15, 1st Edition, 1974. | |
| FAUNA | |
| This map is compiled from information supplied by P. Morrison, Wildlife Service, Department of Internal Affairs. | |
| SOILS, LAND CLASSIFICATION AND USE | |
| Land Classification and Land Use, <i>photographs and diagrams</i> | 136 |
| Reefton and vicinity | 137 |
| Satellite photograph of area of North and Central Otago, using, for <i>diagram</i> , key on p 141 | 138-139 |
| Soils | 138-139 |
| The base map is from the New Zealand Map Service, Series 1, and the information is based on figs. 3.1.1 and 3.1.2, in <i>Soils of New Zealand</i> , Vol 1, Wellington 1968, and from material collated by M. L. Leamy from soil surveys by officers of the Soil Bureau, Department of Scientific and Industrial Research. The reference table is the conception of D. J. Pimblott and B. K. Bradley, Cartographic Branch, Department of Lands and Survey. | |
| Land Classification | 140-141 |
| The information on this map was supplied by the author, M. L. Leamy, Chief Pedologist, Soil Bureau, Department of Scientific and Industrial Research. The reference table is by D. J. Pimblott and B. K. Bradley. | |
| Land Use | 142-143 |
| The information on this map was supplied by M. L. Leamy, W. R. Dale, Department of Scientific and Industrial Research, and D. G. Jeffrey, Department of Lands and Survey. | |
| FISHING | |
| This map is based on information from <i>New Zealand Fisheries</i> , compiled by J. G. Watkinson and R. Smith, Wellington 1972; <i>Fisheries Research Publication No. 219</i> , undated; information Dr G. Eggleston, Ministry of Agriculture and Fisheries. | |
| MINERAL RESOURCES | |
| Extensive Aggregate and Mineral Deposits | 157 |
| Localised Metallic and Non-Metallic Minerals | 157 |
| These maps are based on information supplied by B. N. Thompson, Geological Survey, Department of Scientific and Industrial Research, to 31/12/73; information from Mines Department. | |
| ENERGY RESOURCES | |
| This map is compiled from information supplied by C. E. Nixon, Electricity Department; T. G. Shadwell, Maui Pipeline Project; Ministry of Works; <i>World Energy Conference, Development of Energy in New Zealand</i> , Wairakei, 1972. | |
| MANUFACTURING | |
| Historical Summary, 1900-01 to 1971-72, <i>diagram</i> | 162 |
| Size of Establishments according to number of persons engaged, 1971-72, <i>diagram</i> | 165 |
| Manufacturing | 170-171 |
| The diagrams and maps are based on information supplied by the Department of Trade and Industry and the Department of Statistics. | |
| TRANSPORT & COMMUNICATIONS | |
| For the sake of clarity, the air routes on this map are diagrammatic, not actual. The map is based on information from the Ministry of Transport, the Ministry of Works and Development, the Post and Telegraph Department, New Zealand Railways, the New Zealand Broadcasting Council, Air New Zealand, the National Airways Corporation, Mt Cook Airlines, Air North and Safe Air. | |
| ANTARCTICA | |
| Ross Dependency | 184 |
| McMurdo Sound - Scott Base areas | 185 |
| These maps are based on NZMS 135, Ross Sea Regions, 2nd Ed, January 1970. They are on a stereographic projection centred on the South Pole, the parallels being represented by circles and the meridians by their radii. The scale, which is independent of direction, is constant along any one parallel, but increases outwards from the Pole. | |
| PACIFIC ISLANDS | |
| Fiji, Western Samoa | 193 |
| Tonga, Cook Islands | 194 |
| Niue, Tokelau Islands | 195 |
| These maps were drawn from information supplied by the Cartographic Branch, Department of Lands and Survey; Ministry of Foreign Affairs; J. B. McEwen, and Professor Bruce Biggs, Department of Anthropology, University of Auckland. | |
| THE SOUTH-WEST PACIFIC | |
| This map was compiled by the Cartographic Branch, Department of Lands and Survey. Bathymetric information was supplied by the Oceanographic Institute, Department of Scientific and Industrial Research; information on nomenclature by the Ministry of Foreign Affairs, the Ministry of Defence and the Department of Maori and Island Affairs; Professor Bruce Biggs and J. B. McEwen supplied information on contemporary spellings. | |

CONTENTS

The map is on a Lambert conformal (or orthomorphic) conic projection with two standard parallels, these being at 0° and 45° S. The meridians are straight lines and the parallels arcs of concentric circles. The scale at any point is independent of direction; between the standard parallels it is a little smaller, and outside the standard parallels a little greater than the nominal scale of the map. The variation from the nominal scale of 1 : 25 000 000 ranges from -8 per cent at latitude $22^{\circ} 30'$ S to $+11$ per cent at latitude 12° N and 55° S.

| | |
|---------------------------|---------|
| TOURIST RESOURCES | 202-203 |
|---------------------------|---------|

This map was designed in the Cartographic Branch, Department of Lands and Survey. For a base, a cardboard model was made by L. P. Lee, which was then photographed by National Publicity Studios (who also prepared the sea vignette). The drawing was then done by D. W. Lawrence from a selected perspective. Type sizes reflect tourist density.